

Romantic Relationships and Relationship Satisfaction Among Adults With Asperger Syndrome and High-Functioning Autism

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Objective: Individuals with autism spectrum disorder (ASD) often experience difficulties in maintaining romantic relationships. In this study high-functioning adults with ASD were examined concerning their romantic relationship interest and experience. **Method:** Participants, 31 recruited via an outpatient clinic and 198 via an online survey, were asked to answer a number of self-report questionnaires. The total sample comprised 229 high-functioning adults with ASD (40% males, average age: 35 years). **Results:** Of the total sample, 73% indicated romantic relationship experience and only 7% had no desire to be in a romantic relationship. ASD individuals whose partner was also on the autism spectrum were significantly more satisfied with their relationship than those with neurotypical partners. Severity of autism, schizoid symptoms, empathy skills, and need for social support were not correlated with relationship status. **Conclusion:** Our findings indicate that the vast majority of high-functioning adults with ASD are interested in romantic relationships. © 2016 Wiley Periodicals, Inc. *J. Clin. Psychol.* 00:1–13, 2016.

Keywords: autism spectrum disorder; Asperger syndrome; romantic relationship; partnership, sexuality

Romantic relationship experience among high-functioning adults with autism spectrum disorder (ASD) is a relevant yet understudied area of research. Because social interaction and communication skills and the ability to take the perspective of others are important for initiating and maintaining intimate relationships (Byers, Nichols, & Voyer, 2013), ASD individuals, who may have deficits in these abilities, often experience difficulties in developing and understanding romantic relationships. Specifically, adults with ASD without accompanying intellectual impairments often achieve lower levels of socially adaptive functioning than would be expected from their cognitive and language skills (Renty & Roeyers, 2007; Howlin, 2000). The failure to interpret nonverbal cues such as eye contact or facial expressions together with difficulties in theory of mind skills make social judgments difficult for ASD individuals.

In addition, limited experiences with friendship due to lack of contact with peers prevent those with ASD from learning important relationship skills (Prendeville, Prelock, & Unwin, 2006). Difficulties in decision making, lack of flexibility, self-absorption, emotional dysregulation, and sensory sensitivities further impede ASD individuals' attempts to establish romantic relationships (Urbano, Hartmann, Deutsch, Bondi Polychronopoulos, & Dorbin, 2013). Given the above-mentioned impairments, social relationships are nevertheless seen as an essential domain of quality of life for people with as well as without disabilities (Verdugo, Navas, Gómez, & Schalock, 2012), and social participation is seen as an important aspect of quality of life for ASD individuals (Orsmond et al., 2013).

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Research on ASD and Romantic Relationships

A meta-analysis of follow-up studies examining outcomes of ASD individuals revealed that, compared to the general population, many of them lagged behind their typically developing cohort regarding employment, physical and mental health, and social relationships. On average only 14% of the individuals included in the reviewed studies were married or have a long-term, intimate relationship (Howlin, 2012). However, the studies included in the meta-analysis examined very heterogeneous samples. Many of them included ASD individuals with intellectual impairment, which makes it difficult to ascertain whether the difference in groups is due to autistic symptoms or intellectual impairment.

Studies that analyze outcomes exclusively for ASD adults without intellectual impairment are rare. Available studies of this population report varying results on romantic relationship outcome measures. Engström, Ekström, and Emilsson (2003) recruited previous patients with an ASD diagnosis from four psychiatric clinics in Sweden. They reported that 5 (31%) of 16 adults with ASD had "some form of relation with a partner." Hofvander et al. (2009) analyzed data from 122 participants who had been referred to outpatient clinics for autism diagnosis. They found that 19 (16%) of all participants had lived in a long-term relationship.

Renty and Roeyers (2006) recruited, via newsletter advertisements, 58 ASD adults as well as ASD adults who had previously participated in their research studies. They reported that at the time of the study 19% of 58 ASD adults had a romantic relationship and 8.6% were married or living with a partner. Cederlund, Hagberg, Billstedt, Gillberg, and Gillberg (2008) conducted a follow-up study of male individuals (aged 16–36 years) who had been diagnosed with Asperger syndrome at least 5 years before. They reported about 76 male ASD individuals and analyzed that at the time of the study, three (4%) of them were living in a long-term romantic relationship and 10 (13%) had had romantic relationships in the past.

Byers et al. (Byers, Nichols, Voyer, & Reilly, 2012; Byers et al., 2013) published results of two studies examining ASD participants recruited for an internet study about the sexual well-being of ASD adults without accompanying intellectual impairment. In the first of their studies (Byers et al., 2012), they examined only ASD adults with relationship experience. Of the 141 adults with romantic relationship experience, 85 were currently in a romantic relationship (60%) and 56 had been in one 3 months or longer in the past (40%). In their second publication (Byers et al., 2013), they compared a group of 53 ASD individuals who had never been in a romantic relationship for 3 months or longer with a group of 76 ASD individuals who were not currently in a romantic relationship but had been in at least one in the past. Because their studies exclude either participants with no romantic relationship experience (study 1) or participants with current relationship experience (study 2), no total number of participants with romantic relationship experience compared to those without relationship experience could be calculated.

From the available data cited above, it is difficult to ascertain how many ASD adults without intellectual impairment have romantic relationship experience. Some studies reported only current romantic relationships but not relationships in the past (Engström et al., 2003; Renty & Roeyers, 2006) or vice versa (Hofvander et al., 2009). In addition, one study (Cederlund et al., 2008) included only male ASD individuals. Still, the results of these studies suggest that the occurrence of romantic relationships among ASD individuals is not that rare.

To the best of our knowledge, only one study has investigated the needs of ASD individuals in romantic relationships. In a sample of 24 high-functioning male adults with ASD institutionalized in residential care, 10 individuals (42%) reported a need for a close affective and/or sexual relationship (Hellemans, Colson, Verbraeken, Vermeiren, & Deboutte, 2007). Because the sample size was small, these results cannot be generalized to the total population of ASD individuals without intellectual impairment. Also, the fact that the subjects lived in residential care suggests that although they did not have intellectual impairment, their overall level of intellectual and psychosocial functioning was at the lower end of the normal range.

None of the above-cited studies advanced knowledge on the quality of ASD individuals' relationships. Considering the deficits in social interaction skills of individuals with ASD, both relationship partners probably have to adapt to a number of unique difficulties that such a relationship brings. Problems in relationships with one neurotypical partner and one autistic

partner are often due to a mismatch of needs and expectations. Therefore, individuals with ASD whose partners are also on the autistic spectrum might have higher relationship satisfaction. On the other hand, individuals with ASD might prefer to be with nonautistic partners because these partners can help them with difficulties they experience in everyday life.

To the best of our knowledge, only one study to date has examined relationship satisfaction among ASD individuals with ASD partners compared to ASD individuals with nonautistic partners. Lau and Peterson (2011) compared global marriage satisfaction, measured using Norton's Quality of Marriage index (Norton, 1983), among nonautistic couples with an autistic child, autistic couples with an autistic child, and a nonclinical control group with no family member with an ASD diagnosis. Marital satisfaction was similarly high, irrespective of the presence versus absence of an ASD diagnosis in the family.

Aim of the Study

The overall aim of the study was to examine whether individuals with ASD or high-functioning autism are interested in engaging in and motivated to engage in romantic relationships and whether there are factors predicting relationship status (currently, previously, or never been in a relationship). In addition, we aimed to examine how experienced and satisfied high-functioning ASD individuals are with romantic relationships. We sought to specifically answer the following questions: To what degree do high-functioning adults on the autistic spectrum wish to be involved in a romantic relationship? Which factors have an influence on whether an individual with ASD or high-functioning autism has romantic partnership experience? Are high-functioning ASD individuals who are in a romantic relationship with a partner who is also on the autistic spectrum more satisfied with their relationship? Do individuals with ASD or high-functioning autism who are currently not in a romantic relationship lack the skills to get involved with a romantic partner? If so, what makes engaging in a romantic relationship difficult for high-functioning adults with ASD?

This study examined a large sample of ASD individuals concerning their romantic relationship interest and experience for the first time. In contrast to other studies, only high-functioning adults with ASD were included.

Method

Participants and Procedure

A subsample of the participants in this study was recruited via an outpatient clinic for adults with ASD. A total of 78 patients who were registered at this outpatient clinic and had been diagnosed with ASD were contacted and asked to participate in a study about interest in romantic relationships, romantic relationship satisfaction, and sexuality of adults with ASD. Of those 78 patients, 35 participants agreed to take part. After being informed about the study, they received a code and a link to a website with the questionnaires. Three of the 35 participants did not give written consent authorizing the use of their data for the study and one only filled out the first few questions of the questionnaire; thus, 31 participants from our outpatient clinic remained in the final sample: 27 (87%) patients with ASD, 3 (10%) patients with high-functioning autism, and one (3%) patient with pervasive developmental disorder not otherwise specified.

In this document, we use the term ASD to collectively refer to these different groups. By including patients who had been diagnosed in the outpatient clinic, we obtained a sample of participants, whose diagnosis had been assured by experienced psychiatrists and psychologists using gold standard diagnostic instruments for autism, i.e., the Autism Diagnostic Observation Schedule (Lord, Rutter, DiLavore, & Risi, 2002) and—if the patient agreed and parents were not yet deceased—the Autism Diagnostic Interview-Revised (ADI-R: Lord, Rutter, & Le Couteur, 1994). In addition, a semistructured clinical interview, based on the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association [APA], 2000) ASD criteria, was used (see Dziobek et al., 2006, 2008).

Table 1

Clinical Characteristics of ASD Individuals Without Intellectual Impairment (Comparison Between Online and Outpatient Sample, Controlled for Gender)

Questionnaire	<i>N</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>df</i>	<i>p</i>
AQ-k				2.239	1	0.136
Online sample	198	27.7	3.6			
Outpatient sample	31	26.5	5.1			
SCID-Screening schizoid PD				0.293	1	0.589
Online sample	198	4.4	1.4			
Outpatient sample	31	4.2	1.3			
DAS-total score				0.267	1	0.607
Online sample	81	103.6	23.0			
Outpatient sample	15	105.1	23.7			
MSP (CEEQ)				0.386	1	0.535
Online sample	198	7.2	5.8			
Outpatient sample	31	6.6	4.8			
Personal Distress (IRI)				0.464	1	0.496
Online sample	198	15.6	3.4			
Outpatient sample	31	15.0	3.4			
BSSS				0.261	1	0.610
Online sample	198	8.6	3.0			
Outpatient sample	31	8.8	2.9			

Note. *M* = mean; *SD* = standard deviation; *df* = degree of freedom; ASD = autism spectrum disorder; AQ-k = Autism Spectrum Quotient – short version; SCID = Structured Clinical Interview for DSM disorders; DAS = Dyadic Adjustment Scale; MSP = Mental State Perception; CEEQ = Cognitive and Emotional Empathy Questionnaire; IRI = Interpersonal Reactivity Index; BSSS = Berlin Social Support Scales.

To enlarge the sample, an additional 603 participants were recruited between July 2012 and March 2013 via German Internet forums that were frequented by the autistic community. Interested participants were directed via a link to informational text about the study and its investigators and then asked to complete the same online questionnaires as the outpatient clinic participants. Throughout the whole process, all participants recruited via Internet forums remained anonymous.

Of these 603 participants, individuals were included only if they scored above the cutoff score of 17 points on the short version of the Autism Spectrum Quotient (AQ-k; Freitag, Retz-Junginger, Retz, Rösler, & von Gontard, 2007; see the Measures section for details), were at least 18 years old, and had graduated from school. After exclusion using the above-cited criteria, 257 participants remained in the study. An additional 38 participants were excluded because they had not received an official ASD diagnosis from a professional (i.e., psychiatrist, psychologist, general practitioner, or a professional working in a special outpatient clinic for autism diagnostics). Of the remaining 219 participants, 21 were excluded because information about relationship experiences was not provided. Therefore, the final number of participants additionally recruited was 198; together with the 31 patients from the outpatient clinic, the final sample comprised 229 participants.

There were no significant differences between the outpatient clinic sample (mean [*M*] = 33) and the online sample (*M* = 35) regarding age, $t(227) = 0.897, p = 0.370$, and whether individuals were currently in a romantic relationship, $\chi^2(1) = 0.325, p = 0.569$. There were, however, significantly more males in the outpatient clinic sample (61%) than in the online sample (37%), $\chi^2(1) = 6.651, p = 0.01$. We therefore controlled for gender when comparing the means of the questionnaire scales between the outpatient clinic sample and the online sample but did not find any significant effects (see Table 1). Hence, we report results for the entire sample.

Of the entire sample (outpatient clinic sample and online sample), 92 (40%) were male. The mean age ranged from 18 to 58 years (*M* = 34.9, standard deviation [*SD*] = 10.3). Two hundred

and three (88%) participants had been diagnosed with ASD (AS), 22 (10%) with autism, two (1%) with “other autism spectrum diagnosis,” and one (0.4%) with atypical autism. Of the participants, 158 (69%) had superior school education (general qualification for university entrance) and 71 (31%) had a basic school diploma (~ 9 years). One patient from the outpatient clinic had no educational qualification but was intellectually unimpaired. Based on the level of education, it can be assumed that none of the participants was intellectually impaired: 70 (31%) participants held a university degree and an additional 84 (37%) had completed vocational training. At the time of the study, 91 (40%) were employed, 61 (27%) were studying at a university or engaged in vocational training, 39 (17%) were unemployed, and 38 (16%) received disability benefits. Of all 229 participants, 159 (69%) self-identified as heterosexual, 17 (7%) as homosexual, 22 (10%) as bisexual, and 31 (14%) were not able to indicate their sexual orientation.

Measures

We measured the degree of autistic symptoms and traits with the self-report instrument AQ (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley 2001), which is used as a screening instrument in clinical settings. For this study, we applied the short version of the AQ (AQ-k) because it contains the most powerful items (Freitag et al., 2007). The AQ-k comprises 33 items assessing social skills, attention shifting, attention to details, communication, and imagination and responses are rated on a 4-point Likert-type scale ranging from “definitely agree” to “definitely disagree”. Freitag et al. (2007) suggested a total score of ≥ 17 as a cutoff score for the diagnosis autistic disorder and found high sensitivity (89%) and specificity (92%) when using the instrument for different samples (healthy controls, forensic patients, and autistic patients).

Despite high levels of sensitivity and specificity, a diagnosis should not be based solely on the AQ-k; rather, it should always be confirmed using standardized diagnostic instruments, for example, the Autism Diagnostic Observation Schedule (Lord et al., 2002) and the ADI-R (Freitag et al., 2007). A main component analysis of the AQ-k showed a three-factor structure with internal consistencies between $\alpha = .65$ and $\alpha = .87$. Retest reliability ($r_{tt} = .79$) and external validity are satisfactory. The authors of the AQ regard the AQ-k as a good alternative (Hoekstra et al., 2011).

To estimate the extent of schizoid symptoms, we applied the items of the schizoid personality disorder screening questionnaire of the Structured Clinical Interview for DSM-IV personality disorders (SCID-II; First, Spitzer, Gibbon, & Williams, 1997). These are seven dichotomous (yes/no) items that screen for the presence of a schizoid personality disorder as classified in the *DSM-IV-TR* (APA, 2000).

We used the Need for Social Support subscale of the Berlin Social Support Scales (Schulz & Schwarzer, 2003, 2004), which measures both cognitive and behavioral aspects of social support. The Need for Social Support subscale assesses whether the need for support plays a role in committing to romantic relationships. This subscale contains four items (“When I’m down, I need someone to boost my spirits”; “It is important for me to always have someone who listens to me”; “Before making any important decisions, I absolutely need a second opinion”; “I get along best without any outside help”) that are rated on a 4-point Likert-type scale ranging from “strongly disagree (1)” to “strongly agree (4)”. Internal consistency for this subscale is $\alpha = 0.63$ and validity has been demonstrated (Schulz & Schwarzer, 2003, 2004).

We used the Personal Distress subscale of the Interpersonal Reactivity Index (IRI; Davis, 1980) to measure affective aspects of empathy, especially feelings of agitation and discomfort in close interpersonal contexts. Participants respond to each item using a 5-point Likert-type scale ranging from “does not describe me well (A)” to “describes me well (E)”. The IRI comprises four seven-item scales, two assessing cognitive empathy and two assessing affective empathy. Each scale has been shown to measure a discrete component of empathy, including the Personal Distress subscale. The IRI has good internal consistency, with alpha coefficients ranging from $\alpha = 0.63$ to $\alpha = 0.79$ (Christopher, Owens, & Stecker, 1993; Davis, 1980). Construct validity has been demonstrated by correlating the IRI with other measures of empathy (Davis, 1980).

To quantify mental state perception, we used the Mental State Perception (MSP) subscale of the Cognitive and Emotional Empathy Questionnaire (CEEQ; Savage, Dziobek, Teague &

Borod, 2010). The MSP subscale captures cognitive empathy in terms of the ability to identify mental states and emotions in others and comprises eight items rated on a 5-point Likert-type scale ranging from “not true at all” (0) to “very true” (4). Various communication tools for the identification of emotions are considered: facial expressions, prosody, gestures, and body language. Internal consistency is $\alpha = .84$. Validity has been documented through correlation with other measures of empathy (Savage, Dziobek, Teague & Borod, 2010).

The Dyadic Adjustment Scale (DAS; Spanier, 1976) is a well-established self-report measure of relationship adjustment and determines the degree of dissatisfaction that couples are experiencing. The DAS contains 32 items rated on a 6-point Likert-type scale ranging from “all the time (0)” to “never (5)”, capturing relationship satisfaction in terms of dyadic consensus, dyadic satisfaction, affectional expression, and dyadic cohesion. Internal consistency is $\alpha = .96$ (Spanier, 1976). A total score of 100 was identified by Spanier (1976) as a cutoff distinguishing distressed from nondistressed couples.

Because no appropriate questionnaires existed, original questionnaire items that assessed the desire for romantic relationships and the reasons for not being in a romantic relationship were included. Reasons for not being in a relationship were drafted on the basis of the authors’ extensive clinical experience with ASD individuals. The self-drafted questions are as follows:

- “How much do you desire a romantic relationship?” Item is rated on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*very much*).
- “How distressed are you about not being in a romantic relationship?” Item is rated on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*very much*).
- “What prevents you from entering into a romantic relationship?”

Participants chose from the following true or false answers:

- “Contact with others is too exhausting for me”
- “I haven’t yet met anybody with whom I could imagine having a romantic relationship”
- “I am afraid of not fulfilling my partner’s expectations”
- “I don’t know how to meet a potential partner”
- “I don’t know how a romantic relationship works or how to behave in a romantic relationship”
- “I don’t like the physical contact a romantic relationship brings with it”
- “Sexual activities are unpleasant for me”
- “I simply don’t feel the need for a romantic relationship”
- “Other reasons” (open response question)

Results

Experience With Romantic Relationships and Relationship Status

A total of 166 (73%) of the 229 participants endorsed currently being in a romantic relationship or having a history of being in a relationship; 100 (44%) reported current involvement in a romantic relationship; 66 (29%) endorsed that they were currently single but have a history of involvement in a romantic relationship; and 63 (27%) participants did not have any experience with romantic relationships. Table 2 shows relationship status by gender.

Participants without any romantic relationship experience were significantly more likely to be male, $\chi^2(1) = 8.55, p = 0.01$; Cramer’s $V = 0.19$. They were on average younger than participants with romantic relationship experience: $M = 30.2$ ($SD = 9.2$) versus $M = 36.7$ ($SD = 10.2$), $t(227) = -4.436, p = 0.00$.

Factors Predicting Relationship Status

The severity of autistic symptoms measured using the AQ-k did not significantly predict relationship status group (currently, previously, and never in a relationship), $F(2, 228) = 1.241, p = 0.291$. Similarly, the total score of schizoid symptoms, measured by the SCID-screening

Table 2
Romantic Relationship Status Analysed by Gender in ASD Participants Without Intellectual Impairment

	Male	Female	Total
Romantic relationship experience			
Never in a relationship	35 (38%)	28 (21%)	63 (27%)
Previous relationship	23 (25%)	43 (31%)	66 (29%)
Current relationship	34 (37%)	66 (48%)	100 (44%)
Total	92 (100%)	137 (100%)	229 (100%)

Note. ASD = autism spectrum disorder.

questionnaire, failed to significantly predict relationship status group, $F(2, 228) = 2.901$, $p = 0.057$.

There were no significant differences between the three relationship status groups (currently, previously, and never in a relationship) in terms of their need for social support, $F(2, 228) = 1.481$, $p = 0.23$. In addition, the three relationship status groups (currently, previously, and never in a relationship) did not differ significantly on cognitive empathy, measured with the CEEQ's MSP subscale, $F(2, 228) = 0.190$, $p = 0.827$, or emotional empathy, measured with the IRI's Personal Distress subscale, $F(2, 228) = 0.001$, $p = 0.999$.

Desire for a Romantic Relationship

Only 17 (13%) of the 129 participants who were not currently involved in a romantic relationship reported that they had no desire at all to be in a relationship, which represents 7% of the total sample. On the other hand, 37 (29%) of the 129 participants who were single stated that they were not distressed at all about not being in a romantic relationship (5-point Likert-type scale; see the Measures section).

On a five-point Likert-type scale, single males ($M = 3.43$, $SD = 1.3$) had a greater desire to be in a romantic relationship than single females ($M = 2.75$, $SD = 1.3$), $t(127) = -2.954$, $p = 0.04$. Accordingly, more males ($M = 3.09$, $SD = 1.5$) than females ($M = 2.35$, $SD = 1.3$) reported that they were distressed about not being in a romantic relationship, $t(127) = -2.928$, $p = 0.04$. There was no significant effect of romantic relationship experience on the desire to be in a romantic relationship, $F(1, 128) = 3.203$, $p = 0.08$.

Relationship Satisfaction

Relationship adjustment, measured with the DAS, is defined as obtaining a total score of at least 100 points on the DAS (Spanier, 1976). ASD individuals who were currently in a romantic relationship with a partner who was also on the autistic spectrum were significantly more satisfied with their relationship ($M = 119$, $SD = 10.6$) than were those whose partners were not autistic ($M = 100$, $SD = 23.7$), $t(96) = -3.519$, $p = 0.00$.

According to participants' self-report, one fifth (20%) of the 100 participants who were currently involved in a romantic relationship were with an ASD partner. As stated by the participants, 17 (85%) of these partners were diagnosed with Asperger syndrome, one partner had been diagnosed with atypical autism, and two partners selected "other ASD" on the online questionnaire. None of the participants who were currently single but had been involved in a romantic relationship in the past had been in a relationship with a partner who was on the autistic spectrum.

Reasons for Not Being in a Romantic Relationship

Of the participants who were currently single, 65% said that contact with another person was too exhausting for them, 61% were afraid that they would not be able to fulfil the expectations of

Table 3

Reason Given by Single ASD Participants (N = 129) for Not Being in a Romantic Relationship (Multiple Answers Possible)

	N	%
Contact with others is too exhausting for me	84	65
I am afraid of not fulfilling my partner's expectations	78	61
I don't know how to meet a potential partner	74	57
I don't know how a romantic relationship works or how to behave in a romantic relationship	65	50
I haven't yet met anybody with whom I could imagine having a romantic relationship	52	40
Sexual activities are unpleasant for me	38	30
I don't like the physical contact a romantic relationship brings with it	36	28
I simply don't feel the need for a romantic relationship	24	19
Other reasons	35	27

Note. ASD = autism spectrum disorder.

a romantic partner, and 57% said that they did not know how they could find and get involved with a partner; and 50% stated that they did not know how a romantic relationship works or how they would be expected to behave in a romantic relationship (see Table 3).

Discussion

Our findings provide evidence that a high number of high-functioning adults with ASD have experiences with romantic relationships. Nearly half of the sample (44%) was currently involved in a romantic relationship. An additional 29% had romantic relationships in the past, so that a total of 73% of our sample had experience with romantic relationships. This percentage is higher than the results of previous studies, which often had the limitation of reporting results for very heterogeneous samples of individuals with and without intellectual impairments (Howlin, 2012) or samples of institutionalized individuals (Hellemans et al., 2007) with low levels of psychosocial functioning.

However, previous studies that exclusively examined adults with ASD without intellectual impairment reported lower levels of romantic relationship experience than the current study, with numbers varying between 16% and 31% (Engström et al., 2003; Hofvander et al., 2009; Renty & Roeyers, 2006; Cederlund et al., 2008). Although one study (Cederlund et al., 2008) reported on current as well as previous romantic relationship experience, it had the limitation of including only male participants. Regarding high-functioning ASD individuals, our data argue that male gender is related to less romantic relationship experience compared to females.

Another important difference might be that some of the previous studies reported on ASD individuals with lower levels of psychosocial functioning, although participants were not intellectually impaired. For example, Cederlund et al. (2008) mention that some of their participants, although living independently, were still dependent upon their parents for support. Engström et al. (2003) recruited their sample from previous psychiatry patients, which also suggests more impaired functioning than in the current study.

The results of our study can be best compared with the results of Hofvander et al. (2009) and Renty and Roeyers (2006): They selected their samples (patients from outpatient clinic, from previous research studies, or recruited via advertisements in newspapers) using methods that are comparable to ours. Hofvander et al. (2009) found that 16% of their participants have had romantic relationship experience in the past, compared to 29% in our sample; and Renty and Roeyers (2006) report that 28% of their participants were either married or engaged in a romantic relationship at the time of their study, compared to 44% in our study. Because these studies found results that are comparable to ours, their samples probably had similar high levels of psychosocial functioning as ours.

Compared to typically developed individuals the percentage of ASD individuals with a romantic relationship partner is relatively low (Weimann, 2010). In the group aged 27–59 years, 68% of German males live together with a partner, 27% are single, and 5% still live with their parents. In the same age group, 73% of all females live with a partner, 26% live on their own, and 2% still live with their parents. Couples not living together were not considered in this statistic (Weimann, 2010).

Since the ASD individuals of our sample achieved high levels of education, one can assume that their level of overall psychosocial functioning was high. All but one of the participants had graduated from school, 37% had completed vocational training, and 31% participants held a university degree. Also, participants from our outpatient clinic had all been diagnosed with ASD in adulthood, which probably indicates that their social dysfunction in childhood was mild enough to go unnoticed by caregivers or professionals. Lehnhardt et al. (2013) report that individuals with a late diagnosis of ASD have relatively “mild” manifestations of autism and possess highly effective social and cognitive compensation skills. The authors argue that they achieve a comparatively high level of psychosocial functioning because of their high verbal competence and introspective ability. Because our online sample achieved statistically comparable mean scores for the questionnaires (see Table 1), the online participants probably possessed equally high levels of psychosocial functioning as the outpatient clinic participants.

Another explanation for the high number of ASD individuals with romantic relationship experience might be the fact that a high percentage of females (60%) participated in our study. Our results show that ASD individuals without any romantic relationship experience were significantly more likely to be male. Similarly, Byers et al. (2013) report that ASD individuals who had not had romantic relationship experience were significantly more likely to be male, whereas ASD individuals with relationship experience were significantly more likely to be female. Byers et al. (2013) argue that men are traditionally expected to be more active in initiating an intimate relationship than women, whose traditional role is to react to advances instead. For males with ASD, it might therefore be more difficult to initiate and develop a romantic relationship. As our results show, it is not the case that male ASD individuals do not feel a need for romantic relationships. In fact, the contrary is true. Single males had a greater desire to be in a romantic relationship than single females, and males were more distressed than females about not being in a romantic relationship.

Interest in Romantic Relationships

Our results suggest that a majority of high-functioning individuals on the autistic spectrum are both interested and engage in romantic relationships. We found no evidence for a schizoid subgroup without any interest in romantic relationships among ASD adults without intellectual impairment. In total, only 13% of those participants who were not currently involved in a romantic relationship reported that they had no desire at all to be in a relationship. This indicates that most ASD adults or adults with high-functioning autism consider romantic relationships to be desirable. Not all of those without a romantic partner, however, were distressed about being alone—28% of the single participants in our group stated that they were not at all distressed about being single. However, that leaves 72% of our single participants who experience at least some degree of distress related to not having a romantic partner.

Factors Influencing Romantic Relationship Status

The severity of autistic symptoms or the need for social support did not have an influence on whether someone was currently, had previously been, or had never been in a romantic relationship. The participants from these three relationship status groups also did not differ with regard to cognitive and emotional empathy skills. These findings are in line with the results of Byers et al. (2013), who did not find any differences in terms of psychological factors and/or skill deficits between a group of ASD participants without any relationship experience and a second group with relationship experience. Byers et al. (2013) conclude that a lack of relationship experience might be a developmental issue rather than the consequence of a skills

deficit. However, the high amount of approval of our questions assessing reasons for being single reveals that deficits in social skills do play a role.

More than half of the participants without a romantic partner agreed that they were afraid of not fulfilling a partner's demands, did not know how to find a partner, and/or did not know how a relationship works. The reason single participants (65%) endorsed most often, though, was that they found contact with others too exhausting. This indicates that a romantic relationship, even if desired, might overextend what ASD individuals are able to cope with. Close social contact might cause sensory overload.

Also, familiar routines cannot be followed as much as when being alone. Not being flexible enough to react to a partner's needs or not being socially skilled enough to know what is expected from oneself in a romantic relationship probably also explains why contact to a romantic partner is exhausting for ASD individuals. Stress reduction training might be a useful therapeutic intervention in these cases. Moreover, communication training might be another helpful therapeutic intervention. For example, ASD individuals could learn how to communicate to their romantic partner that withdrawal from social interactions is an important and urgent need for them.

Relationship Satisfaction

Being with a partner who is also on the autism spectrum might reduce a lot of these issues. For example, if both partners have a strong need for social withdrawal and wish to spend a lot of time on their own, it is likely that neither partner will feel rejected. Our findings showed that being with a partner who also has an ASD diagnosis makes a romantic relationship more satisfying for ASD individuals. None of the participants, who had been with a partner in the past but then separated, had been together with an ASD partner. This might indicate that once a person with ASD has found a partner who is also on the spectrum, a relationship might be very stable and long lasting. Self-help groups or other leisure activities for ASD individuals might be a good opportunity to meet others with an ASD diagnosis. It might be useful to encourage individuals who are diagnosed with ASD to take advantage of these opportunities.

On average, respondents with a nonautistic partner also obtained relationship satisfaction scores that exceeded the DAS cutoff for satisfaction. This means that on average those with nonautistic partners are not unsatisfied with their relationships. Future research could ask both the ASD individuals and their nonautistic partners about their relationship satisfaction. It is possible that nonautistic partners experience the relationship as less satisfactory. According to Myhill and Jekel (2008), it is primarily the nonautistic partner who seeks out self-help groups because of partnership issues. On the other hand, despite the deficits in social interaction skills, ASD individuals have a number of characteristics that can promote the successfulness of a romantic relationship such as reliability, steadiness, and loyalty (Myhill & Jekel, 2008).

Sexual Orientation

Of our ASD sample, 10% reported being bisexual, 7% identified as homosexual, and 14% were not able to label their sexual orientation using the provided categories. These rates are higher than those published for the German population, in which 93% of males are heterosexual, 2% bisexual, and 3% homosexual; and 95% of German females are heterosexual, 2% bisexual, and 1% homosexual (Schmidt et al., 1998, cited in Beier, Bosinski, & Loewit, 2005, p. 84). Other studies have also found increased rates of homosexuality and bisexuality among adults with ASD (Hellemans et al., 2007; Byers et al., 2012), and in Bejerot and Eriksson (2014), women with ASD report bisexuality four times more frequently than female controls.

Sexual identity is influenced by, and usually develops in the context of, societal expectations. One explanation for increased homosexuality and bisexuality rates might be that ASD individuals are not aware of the heterosexual norm or the concept of sexual orientation in our society. Impaired social learning, which has been identified in autistic individuals (Bushwick, 2001), might play a role here. Alternatively, increased bisexuality in ASD could be a sign of independence toward social norms (Bejerot & Eriksson, 2014). Deficits in developing and finding one's own identity, including sexual identity, might be another reason. A different explanation could be that ASD individuals tend to answer in a less socially desirable way. A

study assessing personality traits of ASD found that ASD individuals scored significantly higher on straightforwardness (frankness in expression) than other patient groups and clinical controls (Strunz et al., 2015). Hence, their answers on homosexuality and bisexuality might reflect more the actual numbers in the general population.

Limitations

A limitation of our study is that a majority of our sample was an online sample recruited via Internet forums. However, compared to other Internet studies (Byers et al., 2012, 2013), a subsample comprised previous patients from our outpatient clinic, whose ASD diagnosis had been assured by experienced psychiatrists and psychologists using gold standard diagnostic instruments for autism. There were no statistically significant differences in any of our outcome measures between the outpatient clinic sample and the online sample (see Table 1). In addition, we analyzed all data separately for the online sample and the outpatient clinic sample and no major differences between the results of the two samples were found.

Another limitation was that we were not able to compare our findings to a neurotypical sample because we did not include a matched nonclinical control group. Also, comorbid psychiatric disorders and psychopharmacological medication status in the participants from the online sample were not explored. Depression and anxiety disorders, which have been found to be increased in ASD individuals (Hofvander et al., 2009, Lugnegard, Hallerbäck, & Gillberg, 2011, Strunz, Dziobek, & Roepke, 2014), are likely to have an influence on relationships and relationship satisfaction.

It is possible that individuals who already have relationship experience were particularly interested in participating in a study about this subject. If such a selection bias exists, then those who are not interested in romantic relationships might be underrepresented in our sample. In addition, the large proportion of females (60%) in our study makes our results less comparable to previous studies. However, the *DSM-V* (APA, 2013) states that “girls [with ASD] without accompanying intellectual impairments or language delays may go unrecognized, perhaps because of subtler manifestation of social and communication difficulties” (p. 57).

It is likely that females with ASD might be diagnosed only late in life and might therefore have been underrepresented in previous studies. Lai, Lombardo, Auyeung, Chakrabarti, and Baron-Cohen (2015) argue that “the longstanding underrepresentation of females in research and clinical practice may have generated a male-biased understanding of autism” (p.11). More recent research on adults with ASD (Byers et al., 2012, 2013; Hofvander, 2009; Lugnegard et al., 2011) report percentages of female participants between 33% and 60%. ASD in females might be diagnosed late in life if they have more adaptation skills and their more subtle symptoms of autism are therefore not detected by the traditionally used diagnostic instruments (Lai et al., 2015).

This study relied exclusively on self-report instruments, which, especially if measuring complex concepts like empathy, have limited ecological validity. ASD individuals particularly have problems with introspection and abstraction, both of which are needed to respond validly to such questionnaires (Dziobek et al., 2008). In addition, no exact definition for romantic relationship, for example, in form of a time frame, was given. Some ASD individuals might have needed guidance to correctly identify whether they are or were in a romantic relationship. Reasons for not being in a relationship were drafted on the basis of our extensive clinical experience with ASD individuals. In future research, an open-ended question might generate more diverse responses.

Conclusion

A vast majority of high-functioning adults with ASD are interested in romantic relationships. The predominant reasons ASD individuals cite for being single are having difficulty with initiating and maintaining romantic relationships, rather than a lack of interest, which keeps them from being romantically involved. In other words, although people with ASD are social at heart, they do not have the social skills to realize their social needs. These findings help to better

understand the needs of adults with ASD and thereby inform the provision of better therapy and health services for these individuals.

References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The Autism-Spectrum Quotient (AQ): Evidence from Asperger syndrome/high-functioning autism, males and females, scientists and mathematicians. *Journal of Autism and Developmental Disorders*, 31(1), 5–17.
- Beier, K. M., Bosinski, H., & Loewit, K. (2005). *Sexualmedizin*. München: Urban & Fischer.
- Bejerot, S., & Eriksson, J. M. (2014). Sexuality and gender role in Autism Spectrum Disorder: A case control study. *Plos One*, 9(1), e87961.
- Bushwick, N. L. (2001). Social learning and the etiology of autism. *New Ideas in Psychology* 19(1), 49–75.
- Byers, E. S., Nichols, S., & Voyer, S. D. (2013). Challenging stereotypes: Sexual functioning of single adults with high functioning autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 43(11), 2617–2627.
- Byers, E. S., Nichols, S., Voyer, S. D., & Reilly, G. (2012). Sexual well-being of a community sample of high-functioning adults on the autism spectrum who have been in a romantic relationship. *Autism*, 17(4), 418–433.
- Cederlund, M., Hagberg, B., Billstedt, E., Gillberg, I. C., & Gillberg, C. (2008). Asperger syndrome and autism: A comparative longitudinal follow-up study more than 5 years after original diagnosis. *Journal of Autism and Developmental Disorders*, 38(1), 72–85.
- Christopher, F. S., Owens, L. A. & Stecker, H. L. (1993). Exploring the darkside of courtship: A test of a model of male premarital sexual aggressiveness. *Journal of Marriage and the Family*, 55, 469–479.
- Davis, M. (1980). A multidimensional approach to individual differences in empathy. *Catalogue of Selected Documents in Psychology*, 10, 85.
- Davis, M. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, 44(1), 113–126.
- Dziobek, I., Fleck, S., Kalbe, E., Rogers, K., Hassenstab, J., Brand, M., . . . Convit, A. (2006). Introducing MASC: A movie for the assessment of social cognition. *Journal of Autism and Developmental Disorders*, 36(5), 623–636.
- Dziobek, I., Rogers, K., Fleck, S., Bahnemann, M., Heekeren, H. R., Wolf, O. T., & Convit, A. (2008). Dissociation of cognitive and emotional empathy in adults with Asperger syndrome using the Multifaceted Empathy Test (MET). *Journal of Autism and Developmental Disorders*, 38(3), 464–473.
- Engström, I., Ekström, L., & Emilsson, B. (2003). Psychosocial functioning in a group of Swedish adults with Asperger syndrome or high-functioning autism. *Autism*, 7(1), 99–110.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. (1997). *Structured Clinical Interview for DSM-IV Axis II Personality Disorders-Clinical Version (SCID-CV)*. Washington, DC: American Psychiatric Association.
- Freitag, C. M., Retz-Junginger, P., Retz, W., Rösler, M., & von Gontard, A. (2007). Evaluation of a German adaptation of the Autism-Spectrum Quotient (AQ)–The short version AQ-k. *Zeitschrift für Klinische Psychologie und Psychotherapie*, 36(4), 280–289.
- Hellems, H., Colson, K., Verbraeken, C., Vermeiren, R., & Deboutte, D. (2007). Sexual behavior in high-functioning male adolescents and young adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 37(2), 260–269.
- Hoekstra, R. A., Vinkhuyzen, A. A. E., Wheelwright, S., Bartels, M., Boomsma, D. I., Baron-Cohen, S., . . . van der Sluis, S. (2011). The construction and validation of an abridged version of the Autism Spectrum Quotient (AQ-Short). *Journal of Autism and Developmental Disorders*, 41(5), 589–596.
- Hofvander, B., Delorme, R., Chaste, P., Nydén, A., Wentz, E., Stahlberg, O., . . . Leboyer, M. (2009). Psychiatric and psychosocial problems in adults with normal-Intelligence autism spectrum disorders. *BMC Psychiatry*, 9, 35.
- Howlin, P. (2000). Outcome in adult life for more able individuals with autism or Asperger syndrome. *Autism*, 4, 63–83.

- Howlin, P., & Moss, P. (2012). Adults with autism spectrum disorders. *The Canadian Journal of Psychiatry*, 57(5), 275–283.
- Lai, M. C., Lombardo, M. V., Auyeung, B., Chakrabarti, B., & Baron-Cohen, S. (2015). Sex/gender differences and autism: Setting the scene for future research. *Journal of the American Academy of Child & Adolescent Psychiatry*, 54(1), 11–24.
- Lau, W., & Peterson, C. C. (2011). Adults and children with Asperger syndrome: exploring adult attachment style, marital satisfaction and satisfaction with parenthood. *Research in Autism Spectrum Disorders*, 5, 392–399.
- Lehnhardt, F. G., Gawronski, A., Pfeiffer, K., Kockler, H., Schilbach, L., Vogeley, K. (2013). The investigation and differential diagnosis of Asperger Syndrome in adults. *Deutsches Ärzteblatt International*, 110(45), 755–63.
- Lord, C., Rutter, M., DiLavore, P. C., & Risi, S. (2002). *Autism Diagnostic Observation Schedule (ADOS)*. Los Angeles: Western Psychological Services.
- Lord, C., Rutter, M., & Le Couteur, A. (1994). *Autism Diagnostic Interview-Revised: A revised version of a diagnostic interview for caregivers of individuals with possible pervasive developmental disorders*. *Journal of Autism and Developmental Disorders*, 24(5), 659–685.
- Lugnegard, T., Hallerbäck, M. U., & Gillberg, C. (2011). Psychiatric comorbidity in young adults with a clinical diagnosis of Asperger syndrome. *Research in Developmental Disabilities*, 32(5), 1910–1917.
- Myhill, G., & Jekel, D. (2008). Asperger marriage: Viewing partnerships thru a different lens. *The National Association of Social Workers Massachusetts (NASWM)*. Focus CE Course, 1–11.
- Norton, R. (1983). Measuring marital quality: A critical look at the dependent variable. *Journal of Marriage and the Family*, 45, 1141–1151.
- Orsmond, G. I., Shattuck, P. T., Cooper, B. P., Sterzing, P. R., & Anderson, K. A. (2013). Social participation among young adults with an autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 43(11), 2710–19.
- Prendeville, J. A., Prelock, P. A., & Unwin, G. (2006). Peer play interventions to support the social competence of children with autism spectrum disorders. *Seminars in Speech and Language*, 27(1), 32–46.
- Renty, J., & Roeyers, H. (2006). Quality of life in high-functioning adults with autism spectrum disorder. *Autism*, 10(5), 511–524.
- Renty, J., & Roeyers, H. (2007). Individual and marital adaptation in men with Autism Spectrum Disorder and their spouses: the role of social support and coping strategies. *Journal of Autism and Developmental Disorders*, 37(7), 1247–1255.
- Savage, K. R., Dziobek, I., Teague, E. B., & Borod, J.C. (2010). A new measure of empathy: psychometric characteristics of the Cognitive and Emotional Empathy Questionnaire (CEEQ). Unpublished manuscript.
- Schulz, U., & Schwarzer, R. (2003). Social support and coping with illness: The Berlin Social Support Scales (BSSS). *Diagnostica*, 49, 73–82.
- Schulz, U., & Schwarzer, R. (2004). Long-term effects of spousal support on coping with cancer after surgery. *Journal of Social and Clinical Psychology*, 23, 716–732.
- Spanier, G. B. (1976). Measuring dyadic adjustment: new scales for assessing the quality marriage and similar dyads. *Journal of Marriage and Family*, 38(1), 15–28.
- Strunz, S., Dziobek, I., & Roepke, S. (2014). Comorbid psychiatric disorders and differential diagnosis of patients with autism spectrum disorder without intellectual disability. *Psychotherapie Psychosomatik Medizinische Psychologie*, 64(06), 206–213.
- Strunz, S., Westphal, L., Ritter, K., Heuser, I., Dziobek, I., & Roepke, S. (2015). Personality pathology of adults with autism spectrum disorder without accompanying intellectual impairment in comparison to adults with personality disorders. *Journal of Autism and Developmental Disorders*, 45(12), 4026–4038.
- Urbano, M. R., Hartmann, K., Deutsch, S., Bondi, Polychronopoulos, G.M., & Dorbin, V. (2013). Relationships, sexuality, and intimacy in autism spectrum disorders. In M. Fitzgerald (Ed.), *Recent advances in autism spectrum disorders (Vol. I)*. doi:10.5772/53954
- Verdugo, M. A., Navas, P., Gómez, L. E., & Schalock, R. L. (2012). The concept of quality of life and its role in enhancing human rights in the field of intellectual disability. *Journal of Intellectual Disability Research*, 56(11), 1036–1045.
- Weimann, J. (2010). *Frauen und Männer in verschiedenen Lebensphasen. [Women and men in different stages of life.]* Wiesbaden: Statistisches Bundesamt (German Census Bureau).