Factors of relationship satisfaction for autistic and non-autistic partners in longterm relationships



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Abstract

Autistic individuals have reported lower satisfaction in their romantic relationships compared to non-autistic individuals. Previous research on the factors that contribute to relationship satisfaction within autism has focused on the characteristics of autistic participants as barriers to relationship satisfaction, while overlooking the role of their partners. This study investigated a range of factors and their association with long-term relationship satisfaction for 95 autistic individuals and 65 non-autistic individuals in current or previous long-term relationships with autistic individuals. Participants completed an online survey, including questionnaires measuring autistic traits, the Big Five personality traits, social loneliness, partner responsiveness, sexual satisfaction and relationship satisfaction. Partner responsiveness significantly predicted relationship satisfaction for both autistic and non-autistic partners. The findings suggest that to enhance relationship satisfaction, service providers working with couples involving an autistic individual would improve the relationship by focusing on assisting their clients to identify each other's needs and how best to meet them.

Lay abstract

Previous research has found that autistic people report lower satisfaction in their romantic relationships compared to non-autistic people. However, the majority of this research has focused on autistic traits as barriers to relationship satisfaction, while overlooking the role of their partners in these relationships. Our study explored a range of factors in both autistic people and non-autistic partners of autistic people and how they may be linked to long-term relationship satisfaction. These factors included social and communication skills, personality traits, social loneliness, partner responsiveness, and sexual satisfaction. We found that partner responsiveness was a strong predictor of relationship satisfaction for both autistic and non-autistic partners, suggesting that rather than focusing intervention solely on the autistic person, the role of their partner should also be considered. Service providers who work with couples involving an autistic person to enhance their relationship satisfaction could focus on assisting their clients to identify each other's needs and how best to meet them.

Keywords

autism, autism and sexuality, relationship satisfaction, romantic relationships, sexuality

Autism and romantic relationships

Existing research indicates that both autistic¹ and nonautistic individuals express similar levels of interest in romantic relationships (Hancock et al., 2019; Strunz et al., 2017) but that autistic individuals are less likely to be involved in one (Renty & Roeyers, 2006). Autistic individuals also report shorter romantic relationships (Hancock et al., 2019) and lower satisfaction with these relationships (Barneveld et al., 2014) compared to their non-autistic peers. The challenge in realising satisfying romantic relationships for autistic people has broad health and social implications: Evidence from the general (predominantly non-autistic) population reveals that romantic relationships

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Mark A Stokes, School of Psychology, Faculty of Health, Deakin University, I Gheringhap St, Geelong, VIC 3220, Australia. Email: mark.stokes@deakin.edu.au are associated with better mental (Braithwaite & Holt-Lunstad, 2017; Proulx et al., 2007) and physical health (Braithwaite et al., 2010), and in autistic samples they are associated with better quality of life (OOL; Mason et al., 2018). But the quality, and not simply the existence, of the romantic relationship, is also important. In non-autistic samples, the quality of that relationship moderates the association between relationship status and mental and physical wellbeing; meaning that being in a committed relationship is associated with higher wellbeing only if that relationship is of good quality, as commonly measured by relationship satisfaction (Chonody et al., 2018; Holt-Lunstad et al., 2008; Leach et al., 2013). Combined with the previously described discrepancy between interest and romantic relationship success for autistic individuals, these findings emphasise the importance of studying relationship satisfaction among autistic individuals. By identifying factors that moderate relationship satisfaction, we can tailor the design and delivery of interventions and education for autistic clients and their partners, to better support them in maintaining satisfying relationships.

Autism research has historically been conducted through the lens of the medical model, emphasising deficits and presuming the need for a cure (Kapp et al., 2013). Increasingly, however, autistic self-advocates and researchers have argued in favour of the concept of neurodiversity, which frames autism as a difference, rather than a disorder to be fixed (Kapp et al., 2013). The concept of neurodiversity indicates that the neurological differences found in autism (and other neurological conditions) are natural variations on a continuum along which all human beings are positioned (Jaarsma & Welin, 2012). Importantly, the neurodiversity movement falls under the social model of disability, which recognises that society is set up for, and by, people with the more common variations in neurodiversity. This frames the challenges experienced by autistic individuals as the product of barriers in the social environment and socially valued differences in behaviour (Bottema-Beutel et al., 2020; Krcek, 2013). This holds implications for the present area of research. A recent systematic review of the existing quantitative research on romantic relationship initiation and maintenance among autistic individuals and their partners found that the majority of studies focus primarily on the characteristics of autistic participants as barriers to relationship success (Yew et al., 2021). From this it seems simple to contextualise the negative relationship outcome as a function of autism and focus the point of intervention with the autistic person. However, often overlooked is the role that partners, both autistic and non-autistic, play in aspects of relationship quality, and what characteristics they might contribute to the dyad that both challenge and support relationship satisfaction.

This study was designed to examine a range of relationship factors in a single sample of autistic people and non-autistic people who are or have been in a long-term relationship with autistic people. A critical distinction of our study is our focus on individuals in long-term relationships rather than individuals reporting on relationships-ingeneral. Previous autism research has explored relationships-in-general and found them to be unsatisfying (Barneveld et al., 2014) or brief (Hancock et al., 2019), suggesting that failed or failing relationships predominate. But autistic people are also involved in satisfying longterm relationships, and this invites speculation about the nature of those relationships, and the characteristics of the autistic person and their partner that support their partnership. For example, do these autistic people lack the autistic traits identified as 'barriers-to-relationships', or do their partners have qualities that mitigate the impact of these barriers?

In this study, we investigated the intra- and interpersonal characteristics of autistic and non-autistic individuals that have been previously identified as barriers to relationship success by Yew et al. (2021). These characteristics refer to relatively stable traits or cognitions of an individual (e.g. self-regulation, personality, intrapersonal) and the characteristic ways that individuals behave when interacting with others (e.g. social and communication behaviours; interpersonal), respectively. A critical difference in our study is that we focused on individuals who are, or who have been, in long-term relationships involving an autistic partner. Although there exists a large range of potential factors that could, and should, be studied in this area, we limited our investigation to the intra- and interpersonal characteristics identified that we considered to be amenable to the provision of support (i.e. characteristics of the individual or relationship that could potentially be enhanced or modified through working with a service provider).

Known barriers to satisfaction in longterm romantic relationships

Personality traits have previously been studied in association with relationship satisfaction in the general population, with findings that the Big Five (McCrae & Costa, 1999) traits of agreeableness, conscientiousness, extraversion, openness to experience and emotional stability (i.e. the opposite of neuroticism) are positively associated with relationship satisfaction (Abbasi, 2017; Malouff et al., 2010; Weidmann et al., 2016). A challenge for autistic people is that they tend to score lower on all of these dimensions compared to non-autistic individuals (Lodi-Smith et al., 2019). However, there is no existing research on the association between these personality traits and relationship outcomes for either autistic individuals or their nonautistic partners, and whether aspects of personality of either partner might mitigate challenges in achieving relationship satisfaction.

Autism is often characterised by difficulties with social interactions (Lai et al., 2014). Non-romantic social functioning, or social skill level, has been studied in association with romantic relationship initiation by autistic individuals (Hancock et al., 2019; Stokes et al., 2007), but not long-term relationship outcomes such as satisfaction. The impacts of poor social functioning are often reflected in social loneliness, with lower levels of social skills associated with higher levels of loneliness (DiTommaso et al., 2003; Jin & Park, 2012). Mund and Johnson (2020) report that higher levels of loneliness in non-autistic individuals predict lower levels of later relationship satisfaction, suggesting that social functioning might play a role in romantic functioning. They also suggest that individuals who have experienced loneliness may be more sensitive to cues of social threat and conflict. The premise that social cognitions differ between individuals who are lonely, and those who are not, is supported by the Social Information Processing (SIP) model of Crick and Dodge (1994). This model proposes that children who do not function well within the predominant social system develop specific social cognitions that lead them to perceive and interpret social cues such that they are less likely to respond in a manner deemed appropriate by the social mainstream (Crick and Dodge, 1994). Similarly, when individuals who feel lonely encounter conflict in their intimate relationships, they may engage in unhelpful cognitions and withdrawing behaviour (e.g. less self-disclosure) that in turn negatively impacts the relationship. Other forms of strain might also occur due to limited social functioning for the dyad, such as restricting the social and support network of the couple or creating tension within the dyad. Because autistic individuals often report limited social membership, including reduced instances of seeing friends, being invited to social activities and feeling socially isolated (Orsmond et al., 2013), social loneliness may be an important indicator of potential relationship challenges in autistic people. However, the impact of social function on relationship quality is likely moderated by characteristics of the partner.

Communication differences have also been observed in autistic individuals (Sng et al., 2020), and communication issues have been reported as a barrier to intimacy and relationship satisfaction by autistic individuals and their nonautistic partners (Sala et al., 2020; Wilson et al., 2017). Compared to non-autistic couples, autistic/non-autistic couples have also reported lower satisfaction with affective communication (the amount of affection and understanding expressed by their partner) and problem-solving comflict; Bolling, 2016). However, communication skills such as the ability to engage in a reciprocal conversation and to 'read between the lines' were not significantly associated with relationship satisfaction for either autistic or non-autistic partners in the only study to date that has investigated this association (Birt, 2015), possibly due to compensatory characteristics of the partner. Further research on communication skills and how they may be linked to relationship satisfaction is likely to be beneficial.

Related to communication is partner responsiveness, which refers to the amount of support, caring and validation that an individual perceives from their partner (Canevello & Crocker, 2010). Perceived spousal responsiveness has been positively associated with relationship satisfaction in the general population (Reis et al., 2004), and perceived spousal support was associated with marital satisfaction for both spouses in autistic/non-autistic couples (Renty & Roeyers, 2007). Spousal responsiveness has been found to mediate the relationship between autistic traits, measured with the Autism Spectrum Quotient (AQ; Baron-Cohen et al., 2001), and relationship satisfaction in a non-clinical sample (Pollmann et al., 2010). Considering the existing research on the importance of perceived spousal responsiveness, we aimed to determine if this is a factor of relationship satisfaction for both autistic and nonautistic partners.

Finally, there are preliminary findings indicating that sexual satisfaction is linked to relationship challenges for autistic/non-autistic couples. Bolling (2016) found that autistic/non-autistic couples reported greater sexual dissatisfaction than non-autistic couples. One possible explanation for this is offered by qualitative studies showing that some autistic adults experience sensory sensitivities and communication differences with partners, which negatively affects their sexual satisfaction (Aston, 2012; Barnett & Maticka-Tyndale, 2015). The extent to which this impacts relationship quality will depend on the characteristics of the partner. There does not yet exist a quantitative study investigating the association between sexual and relationship satisfaction for autistic individuals and their partners. This study therefore aimed to fill this gap in the literature.

Aims and hypotheses

This study is the first of a series to explore characteristics of long-term relationships involving an autistic person. The aim of this study is to establish whether the barriers to relationship satisfaction identified in literature (i.e. personality factors, poor social and communication skills, social loneliness, low partner support and low sexual satisfaction) are experienced by autistic people in long-term relationships. If not, it might be tempting to attribute the relationship success to their absence. If the barriers are present, the next step would be to pursue factors that help the couple overcome the barriers to maintain their relationship in the long term. The factors we evaluated included personality factors, social skills, social loneliness, communication skills, partner support and sexual satisfaction. A single sample of autistic individuals who had current or previous long-term relationship experience and non-autistic individuals in current or previous long-term relationships with autistic individuals contributed data. We aimed to determine how these barriers were associated with relationship satisfaction.

Our hypotheses were:

- 1. In terms of personality traits, higher levels of agreeableness, conscientiousness, extraversion, openness to experience and emotional stability, would predict higher levels of relationship satisfaction for autistic and non-autistic individuals.
- 2. In terms of social interaction, better social skills, lower social loneliness and better communication skills would predict higher levels of relationship satisfaction for autistic and non-autistic individuals.
- 3. In terms of relationship factors, greater partner support and higher sexual satisfaction would predict higher levels of relationship satisfaction for autistic and non-autistic individuals.

Method

Ethics approval

This study received approval from the relevant Human Research Ethics Committee. This clearance was compliant with the ethical standards of the National Health and Medical Research Council of Australia and compliant with the 1964 Helsinki declaration and later amendments concerning ethical standards. Informed consent was obtained from all participants.

Participants

Participants were an international sample of 95 autistic adults (aged 18 years and older) with current or previous long-term relationship experience (defined as a relationship lasting at least 12 months), and 65 non-autistic adults with current or previous long-term relationship experience with autistic individuals. Inclusion criteria for autistic participants were: (1) a formal diagnosis of autism and a score at or above the cut-off score of 32 on the AQ (Baron-Cohen et al., 2001) and (2) currently or previously in a romantic relationship lasting at least 12 months. Inclusion criteria for non-autistic participants were: (1) currently or previously in a romantic relationship lasting at least 12 months with an autistic person and (2) their partner had a formal diagnosis of autism. For the purposes of this study, 'autism' included autism spectrum disorder (ASD), autism, Asperger syndrome, high-functioning autism, autistic disorder or pervasive developmental disorder – not otherwise specified (PDD-NOS). Participants were aged 37.44 years on average (SD=13.69) and their relationship durations

Participants were recruited via advertisements on social media and online forums, through support groups for autistic individuals and their partners, and practitioners who worked with autistic individuals and their families. Participants were offered the opportunity to enter a prize draw to win one of 20 Amazon vouchers valued at \$20 (AUD) each. The survey was open for a period of 12 months.

A priori power analysis for linear multiple regression was conducted using G*Power (version 3.1.9.2; Faul et al., 2009). Correlation coefficients between 0.20 and 0.40 were used to calculate R^2 , based on findings in existing research. A type I error rate of 0.05 and a power of 0.80 were assumed. The power analysis indicated that the minimum sample size needed to detect a small effect was 53. When the R^2 value of 0.32 was halved to obtain a conservative estimate of effect size, the minimum sample size required was 115 (autistic and non-autistic participants combined).

Measures

Autism diagnosis. Participants were asked if they had received a diagnosis of autism from a health professional. Their responses were corroborated with the AQ (Baron-Cohen et al., 2001), which may be used as a screening tool for ASD. The AQ comprises 50 items across five subscales (social skills, attention switching, attention to detail, communication and imagination). An example item is 'I prefer to do things with others rather than on my own'. Participant responses on each item range from definitely agree to definitely disagree on a four-point Likert-type scale, which are then recoded to either 1 or 0 to indicate whether the response indicates an autistic trait or not. Scores are summed for a total score that ranges from 0 to 50. Higher scores indicate a greater degree of autistic traits. A cut-off score of 32 is recommended by Baron-Cohen et al. (2001) as an indication of a clinically significant level of autistic traits. The AQ has demonstrated good reliability, with Cronbach's alpha ranging from 0.63 to 0.77 for the individual domains (Baron-Cohen et al., 2001) and 0.84 for the full scale (Broadbent et al., 2013). It has also demonstrated good discriminative validity, successfully differentiating between 73 individuals with a diagnosis of autism (M=35.62, SD=6.63) and 27 individuals without a diagnosis (M=26.22, SD=9.39), t(98)=-5.59, p<0.0001(Woodbury-Smith et al., 2005). It is important to note that autistic groups of different ages and sexes have been shown to answer several items of the AQ differently, suggesting that the measure may be biased towards certain demographic groups (van Rentergem et al., 2019).

 Table I. Demographic characteristics of participants.

	Autistic (n=95)	Non-autistic (n=65)	
Characteristic	n (%)	n (%)	
Gender identity			
Cisgender woman	50 (52.6)	51 (78.5)	
Cisgender man	26 (27.4)	7 (10.8)	
Transgender man	2 (2.1)	2 (3.1)	
Non-binary	9 (9.5)	2 (3.1)	
Self-described	6 (6.3)	0 (0.0)	
Did not specify	2 (2.1)	l (l.5)	
Missing value	0 (0.0)	2 (3.1)	
Sex assigned at birth	()	()	
Female	67 (70.5)	56 (86.2)	
Male	27 (28.4)	7 (10.8)	
Did not specify	1 (1.1)	2 (3.1)	
Sexual orientation			
Lesbian	4 (4.2)	l (l.5)	
Gay	2 (2.1)	2 (3.1)	
Bisexual	14 (14.7)	8 (12.3)	
Straight/heterosexual	51 (53.7)	46 (70.8)	
Pansexual	9 (9.5)	4 (6.2)	
Asexual	5 (5.3)	I (1.5)	
Self-described	9 (9.5)	I (1.5)	
Did not specify	I (I.I)	2 (3.1)	
Cultural or ethnic group	. ()	2 (3.1)	
Oceanian or Islander	5 (5.3)	(1.5)	
Asian	0 (0.0)	3 (4.6)	
South-East Asian	0 (0.0)	2 (3.1)	
African	l (l.l)	l (1.5)	
North American	34 (35.8)	12 (18.5)	
South or Central American	6 (6.3)	0 (0.0)	
European	40 (42.1)	35 (53.8)	
Other	8 (8.4)	10 (15.4)	
Missing value	l (l.l)	(1.5)	
Country	. ()	. (1.5)	
Australia	23 (24.2)	34 (52.3)	
Canada	9 (9.5)	3 (4.6)	
United Kingdom	4 (4.2)	3 (4.6)	
United States	51 (53.7)	21 (32.3)	
Other	8 (8.4)	2 (3.1)	
Missing value	0 (0.0)	2 (3.1)	
Educational level	e (0.0)	= (0)	
Less than high school degree	3 (3.2)	l (l.5)	
High school graduate	24 (25.3)	10 (15.4)	
Bachelor's degree	54 (56.8)	26 (40.0)	
Master's degree	9 (9.5)	24 (36.9)	
Doctoral degree	I (I.I)	2 (3.1)	
Professional degree (JD, MD)	0 (0.0)	l (1.5)	
Doctor of Philosophy (PhD)	4 (4.2)	I (1.5)	
Income level (\$)	. (. (1.3)	
Less than 10,000	6 (6.3)	l (l.5)	
10,000 to 19,999	7 (7.4)	I (1.5)	
20,000 to 29,999	15 (15.8)	4 (6.2)	
30,000 to 39,999	13 (13.7)	2 (3.1)	
		(Continued)	

(Continued)

Table I.	(Continued)
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	Autistic (n=95)	Non-autistic (n=65) n (%)	
Characteristic	n (%)		
40,000 to 49,999	14 (14.7)	6 (9.2)	
50,000 to 59,999	8 (8.4)	7 (10.8)	
60,000 to 69,999	6 (6.3)	6 (9.2)	
70,000 to 79,999	8 (8.4)	5 (7.7)	
80,000 to 89,999	6 (6.3)	5 (7.7)	
90,000 to 99,999	1 (1.1)	2 (3.1)	
100,000 to 149,999	5 (5.3)	16 (24.6)	
150,000 or more	6 (6.3)	7 (10.8)	
Missing value	0 (0.0)	3 (4.6)	

For our purposes, the measure was used to corroborate the formal diagnosis reported by autistic respondents.

Romantic relationship experience and duration. Autistic participants were asked if they were currently or previously in a long-term relationship, and if they had a current partner, whether their partner had an autism diagnosis. Non-autistic partners were asked if they were currently or previously in a long-term relationship with an autistic individual. Participants were also asked about the estimated duration of their longest long-term relationship.

Big Five personality traits. The Big Five personality traits were measured using the Ten-Item Personality Inventory (TIPI; Gosling et al., 2003). The TIPI is a 10-item measure rated on a seven-point Likert-type scale (responses range from disagree strongly to agree strongly). There are two items for each of the Big Five traits (agreeableness, conscientiousness, extraversion, emotional stability and openness to experience). An example item is 'I see myself as extraverted, enthusiastic'. Five items are reverse-scored, and scores are summed to produce a scale for each Big Five trait. The TIPI has demonstrated good concurrent validity with other Big Five personality measures, with correlations ranging from 0.65 to 87, and good test-retest reliability, with the mean r=0.72 (Gosling et al., 2003). There is also support for the five-factor structure of the TIPI (Ehrhart et al., 2009).

Social loneliness. Social loneliness was measured using the UCLA Loneliness Scale Version 3 (Russell, 1996). The UCLA Loneliness Scale is a 20-item measure with a fourpoint Likert-type scale (responses range from never to often). An example item is 'How often do you feel that you are "in tune" with the people around you?' Nine items are reversescored, and scores are summed for a total score that ranges from 20 to 80. Higher scores indicate greater levels of social loneliness. The UCLA Loneliness Scale has demonstrated good convergent validity (e.g. r=0.72) and discriminant validity (e.g. r=-0.68; Russell, 1996; Russell et al., 1980). *Partner responsiveness.* Partner responsiveness was measured using the Perceived Partner Responsiveness Scale: Romantic Partner Version (PPRS; Reis & Carmichael, 2006). The PPRS is an 18-item measure with a seven-point Likert-type scale (responses range from not at all true to completely true). An example item is 'My partner usually really listens to me'. Scores are summed for a total score that ranges from 18 to 162, with higher scores indicating greater levels of partner responsiveness. The PPRS has demonstrated excellent internal consistency (e.g. Cronbach's alpha=0.93; Reis et al., 2011, 2014).

Sexual satisfaction. Sexual satisfaction was measured using the New Sexual Satisfaction Scale-Short Version (NSSS-S; Štulhofer et al., 2011). The NSSS-S is a 12-item measure rated on a five-point Likert-type scale (responses range from not at all satisfied to extremely satisfied). Participants rate their satisfaction on each item, for example, 'The quality of my orgasms'. Scores are summed to produce a total score ranging from 12 to 60, with higher scores indicating greater sexual satisfaction. The NSSS-S has demonstrated good convergent validity (correlations ranging from 0.44 to 0.67) and internal consistency (Cronbach's alpha ranging from 0.90 to 0.93; Štulhofer et al., 2011).

Relationship satisfaction. Relationship satisfaction was measured using the seven-item short-form of the Dyadic Adjustment Scale (DAS-7; Hunsley et al., 2001). The DAS-7 comprises seven items. The first three items assess the extent of agreement or disagreement between the respondent and their partner on their 'philosophy of life', 'aims, goals, and things believed important' and 'amount of time spent together' and are rated on a six-point Likert-type scale ranging from always disagree to always agree. The next three items assess the frequency with which the respondent and their partner 'have a stimulating exchange of ideas', 'calmly discuss something together' and 'work together on a project' and are rated on a six-point Likert-type scale ranging from never to more often. The final item asks the respondent to indicate the degree of happiness in their relationship on a seven-point Likert-type scale, ranging from extremely unhappy to perfect. Scores are summed for a total score ranging from 0 to 36, with higher scores indicating greater relationship satisfaction. The DAS-7 in its present and previous forms has demonstrated good convergent validity (e.g. r=0.69) and internal consistency (e.g. Cronbach's alpha=0.79; Hunsley et al., 2001; Sharpley & Rogers, 1984).

Procedure

Participants were directed to the online survey from the advertisement displayed in forums and groups or sent to them by practitioners. They were presented with a plain language statement and advised that by clicking on the button to commence the survey, they were providing informed consent to take part. They were then asked the demographic, diagnostic status and romantic relationship experience questions, before completing the various measures. Measures were modified depending on whether the participant was currently or previously in a long-term relationship. Participants entered the prize draw via a separate link at the end of the survey.

Statistical analysis

The data were scanned for errors, and statistical assumptions checked. The assumptions of linearity, normality and homoscedasticity were met, and the variance inflation factor (VIF) values indicated that none of the predictor variables were highly correlated with each other.

A hierarchical regression model was run in Statistical Package for the Social Sciences (SPSS) Statistics 28. Age and autism diagnosis were included as covariates, and the relationship factors of interest were entered into the model in order of their ability to vary across the lifespan (from least to most variable).

Community involvement statement

No autistic individuals were directly involved in the development of this work, and it is important to acknowledge that none of the authors are autistic, limiting our understanding of the lived experiences of autistic individuals. However, we each have research, clinical, practical and familial experience with autism. The senior authors have a collective experience of over 50 years with autism on research, clinical and familial levels.

Results

Descriptive statistics

Descriptive statistics for the variables are presented in Table 2. Having made a Bonferroni adjustment to error rates to all for multiple tests, there was a significant difference between the mean values of all variables for the autistic and non-autistic participants at the p < 0.001 level, except for conscientiousness. Overall, compared to nonautistic participants, autistic participants were younger, had shorter relationships, reported higher levels of social loneliness, scored lower on all the personality traits and reported greater partner responsiveness, sexual satisfaction and relationship satisfaction. As would be expected, autistic participants also reported significantly higher levels of autistic traits and difficulties with communication and social skills than non-autistic participants. The scores of participants in current relationships did not differ from those reporting on previous relationships.

Variable	Autistic $(n=95)$		Non-autistic (n=65)		
	М	(SD)	М	(SD)	
Age (years)	32.24	(10.73)	45.03	(14.07)	**
Relationship duration (months)	76.08	(79.83)	153.26	(159.18)	**
AQ total	39.27	(4.26)	15.80	(10.14)	**
AQ communication	9.27	(1.63)	2.58	(2.81)	**
AQ social	8.43	(1.39)	3.08	(2.71)	**
Social loneliness	59.76	(10.38)	46.91	(13.05)	**
Extraversion	4.39	(2.23)	8.37	(3.74)	**
Agreeableness	8.74	(3.01)	10.43	(2.56)	**
Conscientiousness	9.43	(2.72)	10.43	(2.86)	*
Emotional stability	6.17	(2.90)	8.83	(2.76)	**
Openness	8.96	(2.77)	11.14	(2.46)	**
Partner responsiveness	109.59	(37.11)	67.37	(35.58)	**
Sexual satisfaction	39.50	(10.43)	31.50	(11.44)	**
Relationship satisfaction	28.32	(6.34)	22.55	(7.03)	**

Table 2. Descriptive statistics for variables.

AQ: Autism Spectrum Quotient.

*p < 0.05, **p < 0.001.

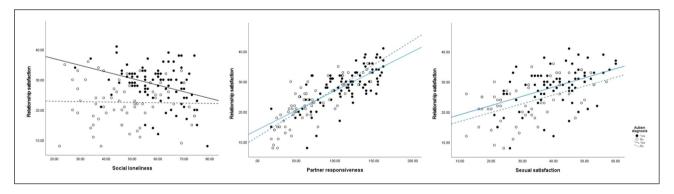


Figure 1. X-Y plots for social loneliness, partner responsiveness and sexual satisfaction against relationship satisfaction, by autism diagnosis.

Regression analysis

X-Y plots for each of social loneliness, partner responsiveness and sexual satisfaction against relationship satisfaction are shown in Figure 1, separated by autism diagnosis group. Social loneliness demonstrated a negative association with relationship satisfaction for the autistic participants, while both partner responsiveness and sexual satisfaction demonstrated positive associations with relationship satisfaction for all participants.

The results for the hierarchical regression model are presented in Table 3. In step 1 of the hierarchical multiple regression analysis, age and autism diagnosis accounted for a significant 20% of the variance in relationship satisfaction. In step 2, AQ communication, AQ social skills and the personality traits were added to the model, and accounted an additional 4% of the variance in relationship satisfaction, but this was not significant. In step 3, social loneliness, partner responsiveness and sexual satisfaction were added to the model, and significantly accounted for an additional 44% of the variance in relationship satisfaction. Only partner responsiveness was a significant predictor of relationship satisfaction at this step. Out of all the predictors of interest, the most important predictor of relationship satisfaction was partner responsiveness, which uniquely accounted for 23% of the variance in relationship satisfaction.

Discussion

This study investigated the associations between a range of relationship factors and relationship satisfaction in longterm relationships involving an autistic individual. Overall, autistic participants reported higher levels of social loneliness than non-autistic participants. This is consistent with findings from previous research comparing loneliness in

Table 3. Results from hierarchical multiple regression analysis with relationship satisfaction as the outcome.

Predictor	Ь	SE	95% CI	Þ	sr ²
Step I	$R = 0.45, R^2 = 0.20, \Delta R^2 = 0.20^{**}$				
Age	-0.14	0.05	-0.23, -0.05	0.003	0.05
Autism diagnosis	-3.77	1.26	-6.26, -1.29	0.003	0.05
Step 2	$R = 0.49, R^2 = 0.24,$	$\Delta R^2 = 0.04$			
Age	-0.14	0.05	-0.23, -0.04	0.005	0.05
Autism diagnosis	-4.04	1.97	-7.93, -0.14	0.042	0.03
AQ communication	0.52	0.34	-0.15, 1.19	0.13	0.01
AQ social	-0.32	0.40	-1.11, 0.48	0.43	0.004
Extraversion	0.14	0.23	-0.32, 0.60	0.55	0.002
Agreeableness	-0.08	0.23	-0.54, 0.38	0.73	<0.001
Conscientiousness	0.19	0.23	-0.26, 0.64	0.40	0.004
Emotional stability	0.33	0.25	-0.16, 0.82	0.18	0.01
Openness	0.10	0.24	-0.38, 0.58	0.68	0.001
Step 3	$R=0.82, R^2=0.68, \Delta R^2=0.44^{**}$				
Age	-0.03	0.04	-0.10, 0.04	0.43	0.002
Autism diagnosis	0.19	1.35	-2.49, 2.87	0.89	<0.001
AQ communication	0.13	0.23	-0.32, 0.58	0.56	0.009
AQ social	0.23	0.27	-0.30, 0.77	0.39	0.002
Extraversion	0.22	0.16	-0.10, 0.53	0.18	0.005
Agreeableness	0.12	0.16	-0.19, 0.43	0.46	0.001
Conscientiousness	0.08	0.15	-0.22, 0.38	0.60	<0.001
Emotional stability	0.13	0.17	-0.31, 0.35	0.99	< 0.00
Openness	0.13	0.16	-0.19, 0.45	0.42	0.002
Social Ioneliness	-0.08	0.04	-0.16, 0.003	0.06	0.01
Partner responsiveness	0.13	0.01	0.10, 0.16	<0.001	0.23
Sexual satisfaction	0.03	0.04	-0.06, 0.11	0.52	0.001

CI: confidence interval; AQ: Autism Spectrum Quotient.

*p < 0.05, **p < 0.001.

autistic and non-autistic individuals (Ee et al., 2019) as well as reports of limited social membership among autistic individuals (Orsmond et al., 2013). Autistic participants also scored lower on each of the Big Five personality traits than non-autistic participants, which again supports prior research (Lodi-Smith et al., 2019).

Interestingly, autistic participants in this study reported greater perceived sexual satisfaction and relationship satisfaction than non-autistic participants. The relatively high perceived sexual satisfaction in autistic participants is inconsistent with the qualitative findings that the sensory sensitivities and communication differences regarding sexual activities can impact on the sexual satisfaction for autistic adults (Aston, 2012; Barnett & Maticka-Tyndale, 2015). And, while there has not been a direct comparison of sexual satisfaction in autistic and non-autistic individuals in the research to date, the previous finding of an association between lower sexual satisfaction and higher levels of autistic traits (Byers & Nichols, 2014) would predict greater sexual satisfaction in non-autistic participants. Similarly, our findings are contrary to previous evidence of lower relationship satisfaction in autistic young adults compared to non-autistic young adults (Barneveld et al.,

2014). We suggest this discrepancy could be explained by the specific subgroup of non-autistic and autistic participants in our study, all of whom were reporting on the nature of their long-term relationship: There may be two critical factors contributing to our findings: First, our participants reported in relation to long-term relationships, suggesting relative success of the relationship, rather than relationships-in-general, which would include brief and failed relationships. It is likely that higher sexual and relationship satisfaction are aspects of relationships that survive. Second, comparatively higher sexual and relationship satisfaction in our autistic participants compared to nonautistic partners, may reflect strain on the part of the nonautistic partner who, over time, is experiencing challenges maintaining the relationship; or that their own needs are not being met while trying to accommodate the needs of their autistic partner. These differences may only emerge over time in long-term relationships. Both of these suggestions are worthy of further empirical attention and provide avenues for future intervention strategies.

The autistic participants reported shorter relationships than non-autistic participants, which may reflect challenges to relationship maintenance. However, it may also be due to the younger mean age of the autistic group who might have had less time to form long-term relationships. The issue may also be due to the method of recruitment. For example, most of the non-autistic participants were recruited from support groups for non-autistic partners of autistic individuals, and these groups tend to comprise women in their middle age who were or had previously been in very long-term relationships with autistic men, and presents a possible bias in our findings.

Our autistic participants also reported higher partner responsiveness compared to non-autistic participants. Given that the non-autistic participants were reporting on their autistic partners, and given that interpersonal responsiveness is not a characteristic of autism (Chan et al., 2017; Kanne et al., 2009), it is perhaps unsurprising that nonautistic participants' rating of the autistic partner's responsiveness was relatively lower. Autistic children, adolescents and adults may experience greater difficulty with forming and maintaining meaningful friendships (Black et al., 2022), which in turn can reduce the number of opportunities to develop the reciprocity and responsiveness important to romantic relationships (Reitz et al., 2014). However, it is important to also consider that high partner responsiveness is a critical feature of long-term relationships involving an autistic person, and that our finding reflects the selection of this partner quality in relationship maintainance.

Partner responsiveness emerged as the only significant predictor of relationship satisfaction in the hierarchical multiple regression analysis, uniquely accounting for 23% of the variance in relationship satisfaction after controlling for age and autism status. This finding indicates that for both autistic and non-autistic participants, the more they perceived that their partner understood them and supported them as they were, the more satisfied they were in their relationship. This is consistent with previous research in both the general population (Reis et al., 2004) and autistic population (Renty & Roeyers, 2007). This finding also holds important implications for service providers who aim to support autistic individuals and their partners in enhancing their relationship satisfaction. It suggests that beyond problem-solving and conflict resolution skills, relationship satisfaction is improved by the social support present in the relationship, including the expression of interest in the needs of and empathy for problems experienced by partners, the appreciation of partner strengths and acceptance of partner shortcomings and the expression of liking and encouragement for partners. Focusing on how each partner can work to identify and meet the needs of their partner as well as express their own needs in such a way that elicits effective support and demonstrates awareness and attunement is likely to be beneficial (Pasch & Bradbury, 1998). It may also be helpful for relationship education programmes to include training on expressing

appreciation and respect for a partner and time spent together.

As far as we are aware, this is the first study to examine the association between personality traits and relationship outcomes for autistic individuals and their non-autistic partners in long-term relationships. None of the Big Five personality traits were significantly associated with relationship satisfaction in this study. This is in contrast to previous research in the general population that has found positive associations between these personality traits and relationship satisfaction (Abbasi, 2017; Malouff et al., 2010; Weidmann et al., 2016). It would be valuable to know whether personality traits contribute to relationship satisfaction in short-term relationships involving autistic people. Hopefully, this question will be answered in future empirical work. Here, we focus our interpretation on personality and relationship satisfaction in long-term relationships, and suggest that the effects of personality may be masked by the unconscious accommodation of partners to each other. Alternatively, it could be that individuals who choose a long-term autistic partner either value the personality traits associated with autism, do not consider these traits a barrier to relationship satisfaction, or are able to accommodate more difficult personality traits. Further research on personality traits and relationship satisfaction should be conducted in this population, across a broader range of relationships.

Communication skills were not significantly associated with relationship satisfaction in long-term relationship, which is consistent with the findings from the only other study to date that has investigated this association using the AQ to measure communication skills (Birt, 2015). It is possible that the communication skills measured by the AQ (i.e. the ability to engage in social conversations), may not be as relevant to relationship satisfaction as the communication of support for a partner (du Plooy & de Beer, 2018). This provides a potential avenue of research on the different types of communication and their link to relationship satisfaction.

This study also did not find a significant association between either of social skills or social loneliness and relationship satisfaction. Social skills had not previously been studied as a relationship satisfaction factor, only as a factor of relationship initiation success (Hancock et al., 2019; Stokes et al., 2007). However, greater social loneliness has been found to predict lower levels of later relationship satisfaction in the general population (Mund & Johnson, 2020). Our study differs from that of Mund and Johnson, in that our study looked at the association between social loneliness and long-term relationship satisfaction. It is possible that other aspects of the long-term relationship may protect against the withdrawing behaviour that can occur in individuals with a history of loneliness as observed by Mund and Johnson. Whether and what relationship or partner characteristics help mitigate the effects of longterm loneliness and lower social skills in autism would be valuable to understand.

Finally, we found no association between sexual satisfaction and relationship satisfaction for autistic adults and their non-autistic partners. This is contradictory to findings from the general population (Maxwell & McNulty, 2019). However, it is possible that the partners in the long-term relationships that we studied were better prepared, or more open, to accommodating or compensating for potential sexual dissatisfaction because of their awareness of the nature of autism and its presentation. How partners work together towards overcoming potential barriers, and how characteristics of the partner might be selected by the autism-relationship niche, are important questions for future research.

Limitations and future directions

The conclusions drawn from the findings of our study are limited by the small sample size, particularly of the nonautistic sample. The low completion rate of the survey may be, in part, due to its length (30-40 min to complete), for which we tried to compensate by using a prize draw. The survey's length was due to the use of multiple measures to cover all the relationship factors of interest, and while we chose the shortest possible measures with good psychometric properties, future studies could examine each of the relationship factors separately to reduce the survey's length. The majority of our participants were also female, cisgender and heterosexual, thus limiting the generalisability of our findings. Future research would benefit from specifically recruiting more male participants, as well as participants who identify as non-cisgender and non-heterosexual. Finally, we had very limited data on the autism diagnostic status of partners of autistic participants and were therefore unable to conduct comparison analyses based on this variable. These data would provide valuable information on whether the associations between the studied predictors and relationship satisfaction are different for autistic individuals with autistic partners, compared to autistic individuals with non-autistic partners.

Implications

Previous research on relationship satisfaction within autism has mainly focused on the traits of autistic individuals as potential barriers to relationship satisfaction, and conceptualised relationships as experiences where autistic people tend to fail. But autistic people do have positive relationship experiences, and there is much to be learned from these. Our study successfully answered our first question – Do autistic people in long-term relationships share the characteristics identified as barriers to relationships in general population and autism studies? Our answer – yes. Our participants were not in long-term relationships because they were low on autistic traits. Our participants faced the same challenges as other autistic individuals identified in autism-relationship research literature. Our study also successfully answered our second question – Are those 'barriers' associated with poor relationship satisfaction in long-term relationships? Our answer – no. The absence of this association raises questions about moderating factors within the relationship that help to overcome the barriers. Our third question was also partially answered – Do characteristics of the partner help mitigate the challanges posed by barriers to satisfying relationships? We

lenges posed by barriers to satisfying relationships? We found partner responsiveness is highly influential in predicting relationship satisfaction, regardless of barriers facing the couple. This finding highlights the importance of considering the characteristics of both partners and how these contribute to a mutually satisfying relationship. The responsibility for relationship longevity is shared. From a clinical perspective, service providers working with autistic/non-autistic couples could assist their clients to identify each other's needs and how best to meet them. From a research perspective, it would be beneficial to continue investigating long-term relationships involving autistic and non-autistic partners to identify emergent factors and partner characteristics that contribute to the relationship satisfaction. These can then inform the development of future interventions supporting relationship satisfaction for autistic individuals and their partners.

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Note

 At present, identity-first language (e.g. 'autistic person') is more commonly preferred over person-first language (e.g. 'person with autism') by the autistic community (Bury et al., 2020; Kenny et al., 2016) so will be used throughout. We are aware that the non-autistic samples in many studies may include undiagnosed or sub-clinical autistic individuals, because these studies often rely on self-reported diagnosis without additional screening. Hence, the term 'non-autistic', when used in this article, refers to individuals who are not diagnosed as autistic, rather than indicating neurotypicality.

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