Sociocultural context and autistics' quality of life: A comparison between Québec and France

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Abstract

Quality of life is important for the development and evaluation of interventions for autistic people. It is a multidimensional concept, anchored in a sociocultural context and based on a person's subjective assessment of their life. The aim of this study is to examine whether the determinants of perceived quality of life vary by country (or culture) by comparing two groups of French-speaking autistic adults (*n* = 430), one in France and the other in Québec (Canada). A cross-sectional survey was conducted to provide information on the quality of life (Autism Quality of Life Measure—ASQoL), diagnosis and health conditions, self-evaluation of autistic traits (Autism-Spectrum Quotient—AQ10), and sociodemographic characteristics of these two samples. The results of our comparison of French-speaking autistic adults in France and Québec suggest that sociocultural context has an impact on autistic people's quality of life ($r^2 = 0.280$). The Québec group reported a superior quality of life. The social experience of autism-related stigmatization emerges as a strong predictor of lower quality of life in both groups. However, the two groups differ with other predictors. This study demonstrates the importance of considering sociocultural context in measuring quality of life in autistic adults. It emphasizes the need for awareness programs and public campaigns aimed at identifying and countering stigmatization processes.

Lay abstract
What is already known about the topic?
Quality of life refers to how people perceive aspects of their life such as physical health, material security, and interpersonal relationships. Studies have reported lower quality of life among autistic individuals than in the general population.
What does this article contribute?
This article contributes to a better understanding of quality of life and its measures from the point of view of autistic adults. By comparing two groups of French-speaking autistic adults from two different places (France and Québec—Canada), this research shows that the perception of quality of life and its determining factors differ for autistic adults living in each country. The Québec group reported a superior quality of life, and some quality of life predictors were different in each group. The social experience of autism-related stigmatization, however, was a powerful predictor of quality of life for all.
Implications for practice, research, and policy
To promote a higher quality of life for autistic people, it is important to consider the sociocultural context and implement awareness programs and public campaigns aimed at identifying and countering stigmatization processes.

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Quality of life (QoL) is important for the development and evaluation of interventions and social policies for autistic people. Many studies have reported lower QoL in autistic individuals than in the general population (Ayres et al., 2018; Lawson et al., 2020; Van Heijst & Geurts, 2015). However, some studies have shown that autistic adults can also have a QoL similar to that of the general population (Hong et al., 2016; Moss et al., 2017). QoL is a multidimensional concept rooted in a person's subjective assessment of the positive and negative aspects of their life in several areas: health, education, employment, and housing. Its assessment can be based on objective facts, such as the living environment or socio-economic level, subjective notions such as feelings of well-being or self-perception, or on social and health-related factors (Kagawa-Singer et al., 2010; Schalock, 2011). The World Health Organization (The WHOQoL Group, 1998) defines subjective QoL as: "individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." QoL is always anchored in a socio-cultural context. Aspects of culture, values, and spirituality are key elements that influence the overall measure of QoL (The WHOQoL Group, 1998).

In different countries, determinants of QoL in autistic individuals have been studied, such as individual characteristics, social status, health, and occupation. The WHOQoL-BREF questionnaire (The WHOQoL Group, 1998) is a general QoL assessment tool composed of four specific measures concerning the psychological, physical, environment, and social domains. It has been validated in research with autistic adults and seems to be the most widely used scale for measuring QoL (Ayres et al., 2018; McConachie et al., 2018). Mason et al. (2018) found that younger autistic individuals in the United Kingdom scored higher than older autistic individuals in the psychological and environment QoL domains. Autistic men scored higher than autistic women in the physical QoL domain, while autistic women scored higher than autistic men in the social QoL domain. Being a woman, having a current mental health diagnosis and having more severe autistic symptoms were predictive of lower scores in virtually all domains of QoL (Mason et al., 2018). In a large group of autistic Australians aged 15–80 years, Lawson et al. (2020) found that being older and being a man were linked with lower social QoL and that a higher rate of depressive symptomatology was a predictor of a lower score in all QoL domains. In contrast to Mason et al. (2018), they found that a higher number of autistic traits (based on the Autism-Spectrum Quotient (AQ)) was linked negatively to physical QoL only, and that being a woman was not associated with lower QoL. Also, living independently (alone, in a couple or with others as opposed to dependent living in supported living arrangements or with parents/relatives) was associated with better psychological QoL (Lawson et al., 2020). However, Oakley et al. (2021) found that core

autism traits were associated with aspects of QoL in European children and adolescents but not in adults. Research conducted by Kamp-Becker et al. (2010) on young adult males in Germany revealed no link between QoL and age or severity of autistic symptoms. They did, however, find a significant association of QoL with the daily living skills domain (taking care of oneself, performing household tasks, use of time, money, telephone, computer, and job skills) of the Vineland Adaptive Behavior Scales (Kamp-Becker et al., 2010). In a sample of Japanese adults, Kamio et al. (2013) found that being a man and having maternal support were related to higher psychological and social QoL scores. Having received a diagnosis before the age of 4 was also associated with a higher psychological QoL score, whereas comorbid psychiatric conditions were a negative predictor of psychological and social QoL (Kamio et al., 2013). Finally, Lin's study of autistic adults in Taiwan (2014) reveals that comorbid psychiatric disorders, self-rated health status, and perceived happiness are associated with QoL. However, no associations with QoL were found for age, gender, level of education, and employment status, as opposed to Mason et al. (2018) who found a positive association between being employed and physical QoL.

Other scales have also been used to measure the QoL in autistic adults (see the review of Ayres et al., 2018). Using two proxy reports related to environment component of QoL (residential conditions), Billstedt et al. (2011) found no association between occupation activities (employment, school, and activity center), housing type (e.g. with parents, group home, and own apartment), and QoL. Recreation activities were positively associated with QoL in this group of autistic adults in Sweden (Billstedt et al., 2011). García-Villamisar et al. (2002) used the Quality of Life Survey (both self- and proxy-reported) and found a positive association between supported work and QoL in autistic adults with or without verbal communication skills in Spain. Renty and Roeyers (2006) found that greater perceived informal support is associated with better QoL (measured with the Quality of Life Questionnaire-self-report) in autistic adults in Belgium. However, Saldaña et al. (2009) found no relationship between different types of support, size of social networks, and QoL (measured with the Comprehensive Quality of Life Questionnaire—proxy report) in autistic adults in Spain.

Oakley et al. (2021) have shown significant variability in the reported QoL across studies. According to Hong et al. (2016), QoL predictors differ depending on whether it is assessed from self-reported or proxy measures. For instance, when measured with self-report, independence in daily activities is not a significant predictor, but when using a maternal proxy report, it is a predictor of three QoL domains—physical health, psychological health, and social relationships. Overall, it seems that observable factors such as independence and health status correlated with

the mothers' perception of their adult autistic child's QoL, whereas more interpersonal factors such as perceived stress or experience of bullying were more correlated with QoL when assessed via self-report (Hong et al., 2016). Another aspect to consider when interpreting these results is that few measures were specifically created to assess autistic people's QoL. McConachie et al. (2018) proposed that general QoL measures may not capture what matters for autistic people in their life, such as sensory overload, friendships, barriers to accessing services, and their identity as an autistic person. Furthermore, there might be an overlap between some measures of QoL and mental health symptoms, such as in the WHOQoL-BREF (Coghill et al., 2009). To overcome these limits in the assessment of QoL in autistic individuals, McConachie et al. (2018) have developed the Autism Quality of Life Measure (ASQoL) based on a systematic consultation between researchers and autistic individuals. ASQoL might be a particularly interesting alternative, as it documents QoL's predictors specific to autism and there might be less overlap with mental health symptoms, which are often identified as predictors of QoL.

This general overview points to several gaps and inconsistencies concerning QoL predictors for autistic adults. For example, little is known about people who do not identify as belonging to any gender category or identify as other than male or female. Increasingly, this is claimed to be the case of many autistic people (Salà et al., 2020). In addition, differing contextual and cultural contexts, such as access to support services and diagnostic practices, could affect QoL and therefore provide a partial explanation for differences between the studies (Chiang & Wineman, 2014). To our knowledge, no research has compared groups from different countries in the same study.

It has been reported that autistic people experience more violence than their non-autistic peers of the same age (Pfeffer, 2016; Weiss & Fardella, 2018). Indeed, in a sample of autistic French children, Paul et al. (2018) found that 72% had experienced at least one victimization event in the last year and 95% in their lifetime (e.g. victimization by peers and siblings, and maltreatment). Moreover, parents report that bullying may have contributed to the development of suicidal ideation in their autistic child (Carter, 2009). The impact of violence on QoL has been studied in various populations but less so among autistic adults. Research in autism has mostly focused on the experience of bullying in childhood or adolescence, and, as one might expect, bullying victimization appears to be negatively associated with QoL (Hong et al., 2016). However, and as Botha and Frost (2020) have stated, little is known about the consequences of experiencing social victimization among autistic adults.

According to the minority model of disability, belonging to a social group qualified as a minority increases the risk of experiencing violence and developing mental health problems (Botha & Frost, 2020). The Deaf community is an example of a community considered disabled by the medical model but who reject that status, considering themselves to be a cultural group, as defined by their use of sign language (Botha & Frost, 2020; Smart, 2006). Some argue that autistic people have their own culture (Altman, 2001; Jaarsma & Welin, 2012; Walker & Raymaker, 2020). The notion of an autistic culture is a key concept in the neurodiversity movement and is gaining popularity as an aspect of the autistic identity (Botha & Frost, 2020). However, neurodiversity discourse is possibly more widespread and has more adherents in some countries or cultures than others. Autistic people, like other minority groups, experience dehumanization (Cage et al., 2018; Haslam, 2006). They are seen as more child like, lacking self-restraint or underestimated in terms of their abilities and skills (Cage et al., 2018). The non-acceptance of autism by others (e.g. society, family, and friends) and oneself impacts mental health by predicting higher level of depression (Cage et al., 2017). On that note, a recent study showed that French parents of an autistic child were more likely than Québec (QC) parents to perceive their situation negatively (e.g. painful, depressing, pitiful, or unbearable) (Cappe et al., 2018). This difference could be explained in part by greater social acceptability of autism in QC than in France (FR) (Chamak, 2010), but more information is needed to validate this affirmation. In QC, the vast majority of autistic people, including many adults, have lived at home with their parents for several decades. Another important difference is the influence of the psychoanalytic approach to autism in FR, which has no equivalent in North America. However, studies on autistic adults' QoL have mostly been carried out in English-speaking populations (Chiang & Wineman, 2014). Little is known about QoL as reported by French-speaking autistic adults.

Objectives and hypotheses

This research aims to examine whether the determinants of perceived QoL vary by country (or culture) through the comparison of two French-speaking groups: one in FR (Europe) and the other in QC (Canada, North America). It is part of a broader study conducted to provide better data on QoL and other aspects of adulthood as reported by autistic individuals. In this article, we want to verify whether social context affects (1) the QoL of autistic adults and (2) the associations between QoL and sociodemographic and health characteristics.

Based on the above-mentioned studies, we expected younger people, men, and workers to have a superior QoL to other autistic adults. In addition, comorbid psychiatric and health conditions, experience of stigmatization, and higher levels of autistic traits are expected to be associated with a lower QoL. Finally, we expected, based on the assumption that the social context of QC is more accepting

of autism, that autistic adults in QC would have a better QoL than their peers in FR.

Method

Following guidelines proposed by the AASPIRE collective (Nicolaidis et al., 2019, 2020), we developed an online survey, together with three autistic expert collaborators, and implemented it using LimeSurvey software (LimeSurvey Project Team & Schmitz, 2012). The survey was cross-sectional and self-administered. It took approximatively 40 min to complete. It remained online for 6 weeks in early 2020, just before the beginning of the COVID-19 outbreak. The expert collaborators shared it in their networks (30 social media groups or pages were identified) and it also circulated among associations, federations, community organizations and educational institutions active in the field of autism in QC and elsewhere in the French-speaking world (websites and newsletters). We offered telephone assistance to read and complete the survey (five respondents took advantage of this option). The survey received ethical validation from the university ethics community (Comité d'éthique de la recherche avec des êtres humains, Université du Québec à Montréal).

Variables and measures

QoL

We used the ASQoL to better reflect the experience of autistic individuals. The ASQoL is a scale of eight items (support for important decisions, being oneself, financial security, support for dealing with problems, satisfaction about current friendships, barriers in accessing health services, sensory issues, and barriers in official situations) plus a global item concerning autistic identity. McConachie et al. (2018) reported excellent internal consistency (Cronbach's alpha=0.82) and their test–retest coefficient for the total score was intraclass correlation coefficient (ICC)=0.76 [0.67, 0.83], $p<0.001$. The scale was translated into French with the agreement of the authors and showed strong internal consistency (Cronbach's alpha=0.77, QC=0.77, FR=0.73). As the first tool whose components are specific items related to the experience of autism, we wanted to use it for the first time in French and see how it performs in two different country groups. We first checked the correspondence with the WHOQoL-BREF to ensure that these tools were consistent. As with the ASQoL, the QC group had a significantly higher WHOQoL-BREF score than the French group (Courcy et al., in progress).

Diagnosis and health conditions

Respondents were asked to select one of the following statements: "I have been diagnosed with autism by a professional," "I identify myself as autistic (self-diagnosis) but have not been diagnosed by a professional," and "I

have not been diagnosed with autism by a professional and I do not identify myself as autistic." Those who selected the third statement were immediately excluded as not meeting the inclusion criteria. Those with a formal diagnosis were then asked at what age they had received it. The following questions concerned other diagnoses. Attention deficit disorder with or without hyperactivity (AD(H)D), anxiety disorders, depressive disorders, learning disabilities, and epilepsy were proposed in a multiple-choice question concerning comorbidities common to autism (Hollocks et al., 2019; Lai et al., 2019). Respondents could also check "other" and specify other diagnoses. Another question concerned the presence of other physical or mental health conditions. Respondents were asked to describe this in their own words. Finally, there was a yes or no question concerning daily medication intake. If the respondent answered "yes," they were asked how they perceived their need of this medication based on the 5-point Likert-type scale ("not at all," "a little," "moderately," "a lot," and "extremely"). A new variable was created for analysis: "no medication," "medication with lower perceived need," and "medication with higher perceived need."

Self-evaluation of autistic traits

We used the short version (10 items) of the Autism-Spectrum Quotient (AQ10), designed to be a rapid screener or "red flag" for autism (Allison et al., 2012). Internal consistency, validated with a sample of 402 adults, was excellent (0.85); the cut-off point of 6 was determined to best balance sensitivity and specificity and had a predictive value of 85% (Allison et al., 2012). In our sample, internal consistency was poor (Cronbach's alpha=0.60, QC=0.62, FR=0.57).

Perceived specific violence

Perceived violence attributed to being autistic is a clear form of stigmatization and can be seen as a specific violence against a group of people. The following question was asked: "Would you say that you are currently experiencing abuse, whether verbal or physical, on the Internet or elsewhere, because you are autistic?" Respondents had to answer based on the 5-point Likert-type scale ("Never," "Rarely," "Quite often," "Very often," or "Always").

Sociodemographic characteristics

Single choice questions were asked about age, the highest completed level of schooling, work and student status, native language, relationship status, and place of residence. Questions about living arrangements and parenthood status were asked. Regarding gender, respondents could choose between female, male, non-binary, two-spirit, genderqueer or genderfluid or select "other" and

explain how they identify themselves. Respondents were asked "What is your ethnic or cultural identity?" followed by an explanation: "Your ethnic or cultural identity is the ethnic or cultural group(s) to which you think you belong." It was also specified that they could answer "I don't know" or "I prefer not to answer." Due to the very small number of respondents who identified with an ethnic or cultural minority group, we were unable to calculate a minority model score as Botha and Frost (2020) and had to go with a dichotomous variable: belonging to an ethnic or cultural minority group (e.g. Deaf, Latina, French-Chilean, and racialized) or not.

Analysis

We collected a total of 693 responses (online and by phone). After data cleaning with Microsoft Excel software, we retained 427 valid questionnaires. Other questionnaires were excluded because they were less than 50% complete ($n = 148$), completed several times by the same person ($n = 18$), respondents had a legal guardian ($n = 30$), did not live in FR or QC ($n = 27$), were younger than 18 ($n = 22$), did not have a diagnosis nor identified as being autistic (self-diagnosis) ($n = 16$), did not complete the AQ ($n = 3$), or did not consent to participate ($n = 2$).

Throughout the questionnaire, all "other" answers were coded into emergent qualitative categories by the research team (researchers, autistic expert collaborators, and research assistants). An equal number of autistic and non-autistic coders for each variable were respected. Points of dissent were discussed until consensus was reached.

SPSS 27 (IBM Corporation, 2020) was used for statistical analysis. All variables were normally distributed (Field, 2018). Descriptive analyses were performed for sociodemographic characteristics, diagnosis and health conditions, self-evaluation of autistic traits, perceived specific violence and ASQoL scores. These were broken down by place of residence (QC or FR). The chi-square test, Student's *t*-test, Pearson's correlation, classic analysis of variance (ANOVA) or Welch's ANOVA in the case of unequal group variances (the highest obtained degree for the QC group only), and Scheffe's post hoc test were performed in order to relate these variables to the ASQoL score and identify, for the two groups, the associated factors depending on the level of variable measurement. Certain bivariate associations could not be performed due to the low number of respondents concerned by certain health or psychological conditions (theoretical frequency too low). For chi-square tests, Cramer's V was used to estimate the strength of the associations: values between 0.1 and 0.3 indicate the low strengths of associations while they can be qualified as moderate between 0.3 and 0.5 (Cramér, 1946). For Student's *t*-tests, Cohen's (1988) *d* was used to estimate the effect size: values between 0.1 and 0.3 indicate the "small" effect size, when those between 0.3 and 0.5 represent the

"medium" effect size. All variables associated in bivariate associations with the ASQoL were then introduced ("forced entry method") (IBM Corporation, 2020) in a linear model with more than one predictor ("multiple regression") (Field, 2018) to identify the strongest ASQoL predictors by controlling for the effect of other variables.

Dummy variables were created for gender ("male," "female," and "other gender identities"), the highest completed degree ("high school or less," "collegial or vocational diploma," and "university diploma"), and autism diagnosis status ("diagnosed before 18," "diagnosed at 18 or later," or "no formal diagnosis") and introduced into models. A first model confirmed the significant effect of place of residence on the ASQoL in the sample. To validate the effect of country on QoL and ensure that this difference is not the result of the effect of confounding variables between unequally distributed groups, an analysis of covariance (ANCOVA) was performed by including as covariates the variables significantly associated with the ASQoL scores. After that, a second model was applied to each group to identify their specific predictors of ASQoL. Interaction variables were created between place of residence and common predictors to compare the strength of the associations within QC and FR.

Community involvement

This study is based on the effort to enable community participation in research development. The QoL of autistic people and the lack of data on this subject are major concerns in QC and in other countries. With the participation of three autistic expert collaborators (M.G., L.G., and M.O.), we developed, conceptualized, and implemented the online survey. Expert collaborators were involved in all decisions regarding the design of the research, choice of questionnaires and scales, recruitment, coding, and analysis of results. They were paid for their time and recognized as expert collaborators by the funding institution (Research Center of Centre intégré universitaire de santé et de services sociaux du Nord-de-l'Île-de-Montréal). They are also involved in the dissemination of results as for this article.

Results

Sociodemographic characteristics

A total of 427 adults took part in the study: 52.7% in QC and 47.3% in FR. Respondents were on average older in QC (mean (M) = 37.03, standard deviation (SD) = 11.08) than in FR (M = 33.51, SD = 11.74). Women were in the majority in both groups. The proportion of men was larger in QC compared to FR (QC = 30.2%; FR = 15.5%), where people with other gender identities (e.g. non-binary, two-spirit, genderqueer, and genderfluid) were more highly

Table 1. Sociodemographic characteristics in France and Québec groups.

Variables	Québec		France		Comparison
	N	M (SD)	N	M (SD)	
Age (years)—mean (SD)	225	37.03 (11.08)	202	33.51 (11.74)	$t(425) = 3.18$, $p = 0.002$, $d = 0.308$
	N	%	N	%	
Gender	225		200		$\chi^2(2) = 24.50$, $p < 0.001$, $V = 0.240$
Women		57.8		56.0	
Men		30.2		15.5	
Other		12.0		28.5	
Highest obtained degree	219		201		$\chi^2(2) = 25.21$, $p < 0.001$, $V = 0.245$
High school or less		15.5		6.5	
College or vocational		33.3		18.9	
University		51.1		74.6	
Employed	221	67.0	201	54.2	$\chi^2(1) = 7.17$, $p = 0.007$, $V = 0.123$
Studies	219	42.5	202	41.1	$\chi^2(1) = 0.08$, $p = 0.775$
Work and studies	217	26.3	201	20.9	$\chi^2(1) = 1.67$, $p = 0.197$
Not employed or at school	217	17.5	201	25.9	$\chi^2(1) = 4.32$, $p = 0.038$, $V = 0.102$
Native language	225		202		$\chi^2(1) = 1.2$, $p = 0.190$
French		95.1		97.5	
English or others		4.9		2.5	
Ethnic or cultural minority group	225	6.2	202	6.4	$\chi^2(1) = 0.01$, $p = 0.928$
Is a parent	223	40.8	202	33.2	$\chi^2(1) = 2.65$, $p = 0.104$
Relationship	225		202		$\chi^2(2) = 0.97$, $p = 0.617$
In a relationship		50.2		50.0	
Not in a relationship		46.7		45.0	
Not reported or other arrangements		3.1		5.0	
Lives with family member	225	61.3	202	64.4	$\chi^2(1) = 0.42$, $p = 0.519$
Lives alone	225	31.1	202	28.2	$\chi^2(1) = 0.43$, $p = 0.514$
Lives in other arrangements	225	12.4	202	9.8	$\chi^2(1) = 0.69$, $p = 0.406$
Perceived specific violence	217	34.6	192	55.7	$\chi^2(1) = 18.48$, $p < 0.001$, $V = 0.213$

SD: standard deviation.

represented (QC = 12.0%; FR = 28.5%). University graduates were in the majority in both groups (QC = 51.1%; FR = 74.6%), but more Quebecers possessed a collegial or vocational diploma as their highest degree obtained. More Quebecers than French respondents were employed (QC = 67.0%; FR = 54.2%). Less than half were taking academic courses or vocational training. About one-quarter of respondents were combining work and studies. Finally, 17.5% of the QC sample was not working nor studying, with this proportion being slightly higher in FR (25.9%). French was the native language of almost all the respondents. Around 6% in each group reported belonging to an ethnic or cultural minority group. No significant difference was noted between the QC and FR groups for parenthood and relationship status (half of the respondents had a partner). About 60% were living with a family member (including partners, children, and extended family), roughly 30% were living alone, and approximately 10% were living in other arrangements (with friends, roommates, nursing home, etc.). Perceived violence attributed to being autistic was more frequently reported in FR than in QC (QC = 34.6%; FR = 55.7%; see Table 1). All Cramer's Vs and Cohen's (1988) *d* indicated low to moderate relationships between the variables significantly associated.

Diagnosis, health conditions, and self-evaluation of autistic traits

As shown in Table 2, there were more people with a formal diagnosis of autism in the QC group (79.1%) than in the FR group (59.4%). The remainder identified as autistic (self-diagnosed). A few respondents were formally diagnosed before the age of 18 years in the two groups (QC = 11.1%; FR = 5.0%). More than 40% reported anxiety disorders. Mood disorders (e.g. bipolar or depressive) were more prevalent among respondents in FR (QC = 24.4%; FR = 35.1%), while learning disabilities (dyslexia, dysorthographia, dyscalculia, dyspraxia, and language difficulties) or AD(H)D were more prevalent in the QC group (QC = 28.0%; FR = 17.8%). Approximately 5% (QC = 4.4%; FR = 5.9%) of

Table 2. Diagnosis, health conditions, and self-evaluation of autistic traits in France and Québec.

Continuous variables	Québec		France		Comparison
	N	M (SD)	N	M (SD)	
Age at diagnosis	178	31.34 (13.50)	120	32.68 (12.69)	$t(296) = -0.86$, $p = 0.390$
AQ10	225	7.60 (1.87)	202	7.92 (1.60)	$t(424) = -1.91$, $p = 0.057$
Categorial variables	**N**	**%**	**N**	**%**	
Diagnosis	225		202		$\chi^2(1) = 19.60$, $p < 0.001$, $V = 0.214$
Official		79.1		59.4	
Self-diagnosed		20.9		40.6	
Age at diagnosis (years)	225		202		$\chi^2(2) = 21.78$, $p < 0.001$, $V = 0.226$
Before 18		11.1		5.0	
18 or later		68.0		54.5	
Self-diagnosed		20.9		40.6	
Mental health and neurodevelopmental diagnosis	225		202		
Anxiety disorders		41.8		42.6	$\chi^2(1) = 0.03$, $p = 0.868$
Mood disorders		24.4		35.1	$\chi^2(1) = 5.86$, $p = 0.015$, $V = 0.117$
Learning disabilities and AD(H)D		28.0		17.8	$\chi^2(1) = 6.19$, $p = 0.013$, $V = 0.120$
Personality disorders		3.6		1.5	$\chi^2(1) = 1.82$, $p = 0.178$
Sleep disorders		0.4		2.5	_[a]
Eating disorders		0.9		0.5	_[a]
Other		3.6		0.5	_[a]
Gifted or high potential		4.4		5.9	$\chi^2(1) = 0.49$, $p = 0.485$
Physical health conditions	225		202		
All		43.1		56.9	$\chi^2(1) = 8.13$, $p = 0.004$, $V = 0.138$
Sensory disorders		16.0		29.7	$\chi^2(1) = 11.47$, $p = 0.001$, $V = 0.164$
Chronic pain		19.1		19.8	$\chi^2(1) = 0.03$, $p = 0.857$
Migraines or headaches		10.2		16.8	$\chi^2(1) = 4.02$, $p = 0.045$, $V = 0.097$
Daily medication	211	58.3	196	38.3	$\chi^2(1) = 16.32$, $p < 0.001$, $V = 0.200$
Higher perceived need of medication	123	74.8	74	83.8	$\chi^2(1) = 2.19$, $p = 0.139$
AQ10 score $\geqslant 6$	225	85.8	202	89.6	$\chi^2(1) = 1.43$, $p = 0.231$

SD: standard deviation; AQ10: Autism-Spectrum Quotient; AD(H)D: attention deficit disorder with or without hyperactivity.
[a]Statistics could not be obtained because some cells had an expected count of less than 5.

the sample were gifted or considered high potential. Other diagnoses were also reported such as sleep disorders, eating disorders, and others (see detail in Supplementary Material Appendix 1). Half of the sample lived with a diagnosed or undiagnosed physical condition. The proportion was higher in FR (56.9%) than in QC (43.1%). Sensory disorders (hyper or hyposensitivity) (QC = 16.0%; FR = 29.7%) and migraines or headaches (QC = 10.2% FR = 16.8%) were more common in the FR group while chronic pain was equally present in both groups (QC = 19.1%; FR = 19.8%). A smaller incidence of other conditions was also reported (e.g. digestive problems, allergies or intolerances, fatigue, and problems with the female reproductive system). Daily intake of medication was more frequent in QC (58.3%) than in FR (38.3%). Finally, 85.8% of QC respondents and 89.6% of French respondents obtained a score equal to or higher than 6 on the AQ10 scale. The means were quite similar in the two groups (see Table 2). Supplementary Material Appendix 1 shows more detailed data on the diagnosis and health conditions.

Associated QoL factors

The global mean for the ASQoL score was 2.73 (SD = 0.72). It was higher in the QC group (M = 2.93, SD = 0.71) than in the FR group (M = 2.51, SD = 0.67) ($t = 6.22$, $p < 0.001$). As shown in Table 3, comparison analysis between ASQoL score (dependent) and sociodemographic, diagnosis, and health conditions (independent) in the two groups showed higher ASQoL global means for the QC group for almost all independent variables, with the exception of ethnic or cultural minority group. Men had the highest QoL scores in both groups. In QC, respondents of "other gender identities" reported a significantly lower mean than both men and women, while in FR, their mean was similar to the women's. Age appears to be significantly related to ASQoL only in the FR group. In both groups, not being employed, having a diagnosis of anxiety, mood disorders, having chronic pain, and perceiving specific violence were significantly associated with lower ASQoL scores. Having a formal diagnosis of autism or not was not significantly

Table 3. Factors associated with ASQoL scores for groups in Québec and France.

	Québec		France	
	M (SD)	Statistics	M (SD)	Statistics
Age		$r(223) = 0.02, p = 0.810$		$r(200) = -0.182, p = 0.010$
Ethnic or cultural minority				
Yes	2.63 (0.64)	$t(223) = -1.60, p = 0.111$	2.92 (0.97)	$t(13) = 1.63, p = 0.129$
No	2.95 (0.71)		2.48 (0.64)	
Gender				
Female	2.93 (0.70)	$F(2, 222) = 4.28, p = 0.015$	2.45 (0.64)	$F(2, 197) = 3.95, p = 0.021$
Male	3.05 (0.69)		2.82 (0.80)	
Other	2.59 (0.73)		2.46 (0.62)	
Highest obtained degree				
High school or less	2.74 (0.71)	$F(2, 87) = 1.57, p = 0.215$	2.21 (0.55)	$F(2, 198) = 1.45, p = 0.237$
Collegial or vocational	3.00 (0.78)		2.51 (0.69)	
University	2.95 (0.66)		2.54 (0.67)	
Occupation				
Work	3.00 (0.67)	$t(219) = 2.37, p = 0.019, d = 0.34$	2.62 (0.69)	$t(199) = 2.43, p = 0.016, d = 0.34$
Not employed	2.77 (0.75)		2.39 (0.63)	
Autism diagnosis				
Official	2.95 (0.70)	$t(223) = 0.98, p = 0.327$	2.53 (0.69)	$t(200) = 0.58, p = 0.560$
Self-diagnosed	2.84 (0.73)		2.48 (0.65)	
Age at diagnosis (years)				
Before 18	3.09 (0.70)	$F(2, 223) = 1.05, p = 0.352$	3.10 (0.84)	$F(2, 201) = 1.91, p = 0.014$
18 and later	2.92 (0.70)		2.48 (0.66)	
Self-diagnosed	2.84 (0.73)		2.45 (0.66)	
Diagnosis				
Anxiety disorders				
Yes	2.73 (0.70)	$t(223) = -3.64, p < 0.001, d = -0.49$	2.37 (0.59)	$t(200) = -2.59, p = 0.010, d = -0.37$
No	3.07 (0.68)		2.61 (0.71)	
Mood disorders				
Yes	2.63 (0.79)	$t(223) = -3.67, p < 0.001, d = -0.57$	2.28 (0.54)	$t(177) = -4.01, p < 0.001, d = -0.55$
No	3.02 (0.65)		2.63 (0.70)	
Learning disabilities or AD(H)D				
Yes	2.85 (0.72)	$t(223) = -1.07, p = 0.286$	2.46 (0.70)	$t(200) = -0.51, p = 0.614$
No	2.96 (0.70)		2.52 (0.66)	
Physical health diagnosis or conditions				
Sensory disorders				
Yes	2.85 (0.72)	$t(223) = -0.72, p = 0.470$	2.34 (0.60)	$t(200) = -2.34, p = 0.020, d = -0.36$
No	2.94 (0.71)		2.58 (0.69)	
Chronic pain				
Yes	2.60 (0.71)	$t(223) = -3.42, p = 0.001, d = -0.58$	2.24 (0.51)	$t(78) = -3.42, p = 0.001, d = -0.51$
No	3.00 (0.69)		2.57 (0.69)	
Headaches and migraines				
Yes	2.76 (0.64)	$t(223) = -1.18, p = 0.239$	2.27 (0.47)	$t(66) = -2.96, p = 0.004, d = -0.44$
No	2.94 (0.72)		2.56 (0.69)	
Daily medication				
Yes	2.90 (0.69)	$t(209) = -0.44, p = 0.657$	2.40 (0.61)	$t(194) = -1.94, p = 0.053$
No	2.95 (0.70)		2.59 (0.70)	
Medication perceived need				
No medication	2.95 (0.70)	$F(2, 222) = 0.89, p = 0.411$	2.59 (0.70)	$F(2, 198) = 2.47, p = 0.087$
Low	3.04 (0.71)		2.48 (0.62)	
Strong	2.87 (0.71)		2.37 (0.61)	
Perceived specific violence				
Yes	2.55 (0.72)	$t(215) = -6.10, p < 0.001, d = -0.87$	2.39 (0.58)	$t(155) = -3.13, p = 0.002, d = -0.47$
No	3.12 (0.63)		2.70 (0.74)	

(Continued)

Table 3. (Continued)

	Québec		France	
	M (SD)	Statistics	M (SD)	Statistics
AQ10 score		$r(223) = -0.102, p = 0.125$		$r(200) = -0.291, p < 0.001$
6 or more	2.91 (0.72)	$t(223) = -0.808, p = 0.420$	2.46 (0.64)	$t(200) = -3.37, p = 0.001, d = -0.78$
Less than 6	3.02 (0.63)		2.96 (0.78)	

ASQoL: Autism Quality of Life Measure; SD: standard deviation; AD(H)D: attention deficit disorder with or without hyperactivity; AQ10: Autism-Spectrum Quotient.

associated with QoL. However, having a formal diagnosis of autism before 18 years old (vs after 18 years old or being self-diagnosed) was significantly associated with higher ASQoL scores, but in the FR group only ($p < 0.01$). Having a diagnosis of learning disabilities or AD(H)D and taking daily medication were not significantly associated with ASQoL scores in both groups. The presence of sensory disorders, headaches or migraines, and having a score of 6 or higher on the self-evaluation of autistic traits (AQ10) were associated with lower ASQoL scores in the FR group.

ASQoL predictors

To test whether the fact of living in QC or in FR in itself affected the QoL of autistic adults, a statistical model including variables significantly associated with ASQoL score in at least one group was tested. This multiple regression confirmed that living in QC is a predictor of a superior ASQoL score ($\beta = 0.195, p < 0.001$). Being employed and being male compared to being female were also predictors of a better ASQoL score, while predictors of a lower ASQoL score were: perceived specific violence, age, having a high school diploma or less compared to having a university degree, mood disorders, chronic pain, and AQ10 score ≥ 6 (adjusted $R^2 = 0.280$). ANCOVA confirmed that living in QC had a significant effect on the ASQoL after controlling for the effect of age, gender, the highest school diploma, employment status, mood disorders, anxiety disorders, headaches or migraines, sensory disorders, perceived specific violence, and AQ10 score, $F(1, 384) = 21.47, p < 0.001, \eta_p^2 = 0.05$.

The same model (multiple regression with forced entry method) was then applied separately to each group (residence variable). As shown in Table 4, perceiving specific violence, high school diploma or less compared to having a university degree, and anxiety disorders significantly predicted a lower ASQoL score for QC respondents (adjusted $R^2 = 0.198$). In FR, significant predictors of a lower ASQoL score were perceived specific violence, age, collegial or vocational diploma compared to having a university degree, high school diploma or less compared to having a university degree, having mood disorders, and an AQ10 score of 6 or higher. In addition, the variables being a male compared to being female, and being employed significantly predicted a superior ASQoL score (adjusted $R^2 = 0.305$).

Finally, entry of interaction variables showed that the association of ASQoL scores with (1) perceived specific violence and (2) high school or less was not significantly different in FR and QC.

Discussion

To date, this research is the first to have compared the QoL of autistic adults between FR and QC. Based on the statistical analyses performed, the results show that QoL measured by ASQoL varies between FR and QC and contribute to supporting the hypothesis that QoL is anchored in the sociocultural context. There are three key findings: (1) QC respondents report a significantly higher QoL than French respondents; (2) some factors strongly associated with QoL are not the same in the two groups; and (3) the social experience of perceived stigma associated with autism emerges as a strong predictor, common to both groups, of poorer QoL.

QoL's predictors

Several results confirm those of other research. Working is predictor of a better QoL only in the French group, which confirms the association between working and QoL found by Mason et al. (2018) and García-Villamisar et al. (2002). In our sample, more QC respondents appeared to be employed. Unlike Mason et al. (2018), who found no association between QoL and level of education, we found that having a high school diploma or less is predictor of a lower QoL in both groups, and having a college or vocational diploma is predictor of a lower QoL in the French group. Aside from the fact that we must be cautious about the representative scope of the study sample, these results appear paradoxical since the level of education is higher in the French group and it is generally recognized that a higher level of education promotes access to employment (Ministère de la Santé et des Services Sociaux du Québec, 2016). Employability rates are quite similar in both countries (Institut nationale de la statisque et des études économiques, 2020; Statistics Canada, 2021). Therefore, it is possible that these results are indicative to the differentiated impact of the presence of structures and programs put in place in QC to promote the employment integration of autistic people. Other research will have to be conducted

Table 4. QoL predictor models measured with the ASQoL scale.

Variables	Model					
	All		Québec		France	
	β	VIF	β	VIF	β	VIF
Québec	0.195***	1.246				
Perceived specific violence	−0.249***	1.138	−0.321***	1.122	−0.188**	1.113
Age	−0.125**	1.242	−0.029	1.245	−0.230**	1.348
Male	0.139**	1.222	0.099	1.204	0.224**	1.252
Female						
Other	−0.006	1.192	−0.080	1.239	0.065	1.140
High school diploma or less	−0.189***	1.229	−0.158*	1.359	−0.207**	1.082
College or vocational diploma	−0.079	1.183	0.007	1.230	−0.151*	1.126
University degree						
Working	0.123**	1.099	0.078	1.108	0.196**	1.107
Anxiety disorders	−0.073	1.443	−0.169*	1.409	0.047	1.588
Mood disorders	−0.119*	1.441	−0.008	1.485	−0.227**	1.463
Chronic pain	−0.097*	1.107	−0.123	1.136	−0.081	1.149
Sensory disorders	−0.021	1.083	0.014	1.066	−0.055	1.101
Headaches or migraines	−0.042	1.132	0.043	1.136	−0.120	1.162
AQ10 score ⩾6	−0.118**	1.039	−0.059	1.078	−0.182**	1.060
Self-diagnosed	−0.063	1.163	−0.108	1.135	−0.021	1.275
Diagnosed before 18 years	0.058	1.203	0.036	1.269	0.117	1.191
Diagnosed at 18 years or later						
Adjusted R^2	0.280		0.198		0.305	

QoL: quality of life; ASQoL: Autism Quality of Life Measure; AQ10: Autism-Spectrum Quotient; VIF: Variance-Inflation Factor.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

in this regard, especially since population data enabling a comparison of the situation of autistic people in QC and FR are rare, if not almost non-existent.

Being older in the French group is predictor of a lower QoL, as also found by Mason et al. (2018), whereas no association is found between age and QoL in QC group, as found by Lin (2014) and Kamp-Becker et al. (2010). Self-identification as a man, compared to a woman or another gender identity, was associated with a better QoL in both groups, but only a significant predictor of QoL in the French group. Moreover, as raised by Williams and Gotham (2021), ASQoL may underestimate the QoL of autistic women. Therefore, the gap between men and women in this study could be greater than what we measured. Overall, these results highlight the relevance of considering gender diversity and the minority stress model in the measurement of QoL. In terms of mental health, mood disorders are predictors of poorer QoL in FR, whereas in the QC group, anxiety disorders are. The association between depressive disorders and lower QoL has also been demonstrated by Oakley et al. (2021), but they did not find a significant association between anxiety disorders and QoL after controlling for other factors.

Autistic traits

The association between autistic traits and QoL has been inconsistently reported: no relationship (Kamp-Becker et al., 2010; Oakley et al., 2021), association with the physical QoL domain only (Lawson et al., 2020), and association with all domains of QoL (Mason et al., 2018). Oakley et al. (2021) found that greater social communication difficulties in children and adolescents were associated with decreased overall life satisfaction and academic achievement. The authors interpret these results by pointing out that school settings can be particularly challenging and aversive to young autistic individuals (Oakley et al., 2021). Therefore, the association between autistic traits and QoL may be explained, at least in part, by an inadequate or even hostile social environment. In our sample, higher autistic traits (AQ10 score of over 6) are a predictor of a lower QoL in FR but not in QC. This raises the question of whether potential differences in the social environment between FR and QC may affect the QoL of autistic people. In our sample, significantly more FR participants than QC participants reported perceived violence attributed to being autistic. Furthermore, since external acceptance (from friends, family, and society) appears to be associated with depression and stress, one wonders whether the associations between autistic traits and QoL might be mediated in part by social acceptance of autism, which might differ between FR and QC (Chamak & Bonniau, 2013). This hypothesis is put forward by people in the autistic community, who note that autistic people are portrayed more positively in QC magazines and print

media than in French writings aimed at the general public (Reynaud, 2014). Furthermore, Harrison et al. (2021) found that French Canadians had significantly more knowledge about autism than in other countries such as FR. However, as reported by Jones et al. (2021), more knowledge does not necessarily lead to less stigma. Further studies are needed to explore the differences in social representations, acceptance and knowledge about autism, and to see to what extent they may affect the QoL perceived and reported by the people concerned.

Social experience of stigma

The experience of violence on the basis of being autistic, whether it is verbal or physical, on the Internet or elsewhere, is a clear form of perceived stigmatization. In this research, this variable emerged as the strongest predictor of QoL (FR and QC combined, and QC alone). This measure of the perception of stigmatization, however, should not be taken as an objective assessment of experienced stigmatization. These findings are consistent with those of Botha et al. (2020, 2021) and the minority stress model of autism, in which differences in health between minority and majority groups are explained by social disadvantage that leads to stigma. Indeed, Botha et al. (2020) found that minority stressors such as victimization, discrimination and internalized stigma, predicted poorer well-being, and increased psychological distress. Assuming that stigma is the antonym of acceptance, our results align with those of Cage et al. (2017): less acceptance of autism from external sources is associated with poorer mental health, which is known to be associated with lower QoL. These findings highlight the importance of countering stigmatization processes. Assuming that a sense of community has a moderating effect on the impact of discrimination and stigma on psychological distress and well-being (Botha et al., 2021; Kim, 2019), it seems relevant to develop and implement more programs that allow autistic people to develop their sense of community.

Strengths and limitations

The major strength of this research is its important contribution to the literature. Indeed, it is the first study to compare the QoL in two samples from French-speaking countries using the ASQoL. It also contributes to the literature on stigmatization and how it impacts on QoL, that was to this date sparse. Another strength is that the survey was designed in partnership with autistic collaborators. Some limitations must also be noted. The sample was non-probabilist, and the recruitment strategy emphasized social media and personal social networks. In addition, many questionnaires were opened but not completed (62% of the incomplete questionnaires were abandoned before the end of the first part of the questionnaire). We have no way of knowing for sure if systematic differences can possibly explain response rates, but the length of the questionnaire and the necessary reading proficiency may have been daunting. The findings therefore cannot be representative of the entire autistic population. We must create or adapt several assessment tools to properly assess QoL and related factors while taking into account that people on the spectrum vary in terms of communication ability and cognitive functioning. Belonging to a minority cultural group is also recognized as a factor that may be associated with poorer QoL (Utsey et al., 2002). We did not find this in this study, probably because we measured the people's subjective self-identification to a culture. We did not ask explicitly about their belonging to a racialized group. Also, it is important to specify that the ASQoL scale, which measures specific items related to the experience of autism, cannot measure overall QoL. For this, it must be complemented by other general tools such as the WHOQoL-BREF and its accompanying disability module.

Overall, the predictors found in both groups explained only a part of the variance. It is reasonable to believe that other variables, not analyzed in this research, would be more predictive of QoL. In addition, the difference between FR and QC in terms of QoL as measured by ASQoL may be partially amplified by the presence of differences between our groups. Nevertheless, this research confirms the importance of taking cultural context into account when measuring the QoL of autistic adults and provides documentation on the life situation and perceived QoL of autistic adults in QC and FR, realities that are unfortunately still unknown on a large scale or at the population level.

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Supplemental material

Supplemental material for this article is available online.

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