126 (2025) 202650

Contents lists available at ScienceDirect

Research in Autism

journal homepage: www.elsevier.com/locate/rasd

Evaluating online chat counselling as a synchronous, digital and text-based mental health support service for autistic individuals and their parents

Chloè Bontinck [a,b,*], Dieter Baeyens [c], Maarten De Schryver [a], Jo Renty [b], Herbert Roeyers [a]

[a] Ghent University, Department of Experimental Clinical and Health Psychology, Faculty of Psychology and Educational Sciences, Henri Dunantlaan 2, B-9000 Ghent, Belgium
[b] Autism Association Flanders, Brusselsesteenweg 375 A, B-9090 Merelbeke-Melle, Belgium
[c] University of Leuven, Faculty of Psychology and Educational Sciences, Parenting and Special Education Research Unit, Leopold Vanderkelenstraat 32, B-3000 Leuven, Belgium

ARTICLE INFO

Keywords:
Autism spectrum disorder
Intervention
Telehealth
Online chat counselling

ABSTRACT

The value of telehealth for autistic individuals has been well established, yet specific research regarding the implementation of online chat counselling for this population is limited. Addressing this gap, users of an existing chat platform (175 autistic individuals and 66 parents of an autistic individual), the *Autism Chat*, were asked to participate in a follow-up questionnaire immediately after chatting. The support needs of autistic individuals that led them to consult the Autism Chat were predominantly of an emotionally supportive nature, whereas those of parents were more frequently informative or problem-solving. The majority of autistic individuals and parents were highly satisfied with the support received and chatting was associated with an improvement in well-being right after the chat conversation. Chatting had both communicative (e.g., better self-expression) and practical (e.g., flexibility) advantages, with the benefits of chatting greatly outweighing the drawbacks. The findings offer valuable insights into the implementation as well as advantages and disadvantages of chat counselling as a mental health support service for autistic individuals and their network.

Introduction

Autistic individuals[1] (diagnosed with Autism Spectrum Disorder (ASD)) experience, in varying degrees of severity or intensity, difficulties in communication and social interaction, both verbal and non-verbal (American Psychiatric Association, 2022; Lord et al., 2018). The global prevalence of autism is currently estimated around 1 % (Zeidan et al., 2022). As modern society is often not attuned to the needs of autistic or other neurodivergent individuals (O'Connor et al., 2023), these individuals are more likely to experience

* Corresponding author at: Ghent University, Department of Experimental Clinical and Health Psychology, Faculty of Psychology and Educational Sciences, Henri Dunantlaan 2, B-9000 Ghent, Belgium.
E-mail addresses: Chloe.Bontinck@ugent.be, Chloe@ligaautismevlaanderen.be (C. Bontinck), Dieter.Baeyens@kuleuven.be (D. Baeyens), Maarten.Deschryver@ugent.be (M. De Schryver), Jo@ligaautismevlaanderen.be (J. Renty), Herbert.Roeyers@ugent.be (H. Roeyers).

[1] For the purpose of the current paper, the authors used identity first language and avoided terms describing autism as a disease, deficit or disorder. It is not our intention to hereby disrespect or offend those who prefer other terminology (e.g., person first language or ASD).

https://doi.org/10.1016/j.reia.2025.202650
Received 5 September 2024; Received in revised form 5 June 2025; Accepted 13 June 2025
Available online 21 June 2025

challenges or difficulties in different areas of daily life (personal relationships, academic/professional functioning, independent living; e.g., Bal et al., 2015; Howlin, 2021) and more often go through adverse life events (Venturini & Parsons, 2018). In addition, autistic individuals more frequently report (characteristics of) co-occurring mental health conditions (e.g., stress, depression, anxiety; Micai et al., 2023), resulting in a lower quality of life.

Both autistic individuals and their families and friends are in need of additional professional support to help them cope with autism-related challenges and to promote their mental health and well-being (Hartley & Schultz, 2014; Howlin, 2021). Unfortunately, the mental health care needs of autistic individuals and their network (e.g., parents) are often unmet due to the limited availability of autism-friendly services. Common barriers to mental health care reported by autistic individuals include sensory overstimulation, communication difficulties, stigma, a lack of knowledge and expertise on autism, and practical issues (e.g., long wait times, high costs, problems with transportation, lack of flexibility; Crane et al., 2023; Evans et al., 2022; Hermaszewska & Sin, 2021; Howlin, 2021; Walsh et al., 2020).

Internet-based mental health services, or telehealth, could provide a valuable alternative to in-person methods and could help address several barriers to access mental health care (Dowling & Rickwood, 2013; Ellison et al., 2021; Wagg et al., 2018). Telehealth can be either synchronous (real-time communication such as chat) or asynchronous (e.g., email; Derks et al., 2007; Wagg et al., 2018). Recent studies support the benefits of using telehealth in the autistic community (Ellison et al., 2021), resulting in a vast growth of online programs for autistic individuals in the past decade (e.g., Inoue et al., 2023; Lo et al., 2023; Yoshikawa et al., 2023). Telehealth offers advantages for autistic individuals such as a reduction of sensory stressors, facilitating communication, higher accessibility, and the ability to participate from a comfortable environment without needing to travel or without unwanted social stressors (Crane et al., 2023; Tibbs et al., 2022). Motivators for using telehealth in a non-autistic population that could apply to autistic individuals as well include lower associated costs, increased autonomy and control, emotional distance from a therapist and heightened anonymity (Tibbs et al., 2022).

Synchronous online chat counselling is a frequently used method of telehealth. Typewritten messages are increasingly part of everyday life, serving various purposes including enhancing work efficiency and fostering social relationships. It has the ability to increase flexibility in mental health care as it enables patients to seek support from a health care provider via online resources in addition to in-person health care (Wagg et al., 2018). Online chat counselling is also valuable in itself, not just in combination with in-person counselling. Studies show that during online chat counselling, mental health care professionals are able to use similar, successful counselling interventions compared to in-person counselling (Dowling & Rickwood, 2013). In addition, it has a beneficial impact on the client's well-being as well as on specific mental health outcomes such as anxiety or depression (Brody et al., 2020; Dowling & Rickwood, 2013). Online chat users show positive attitudes and high satisfaction scores towards online chat counselling, reporting benefits such as anonymity, convenience, emotional safety, the ability to chat wherever and whenever, and the ability to determine the pace of the conversation (Brody et al., 2020; Dowling & Rickwood, 2013; Pretorius et al., 2019). Concerning the emotional safety, Derks et al. (2007) propose that the reduced social presence and increased anonymity during online chat counselling facilitates the expression of difficult emotions because the social effect on the interaction partner is less visible. Individuals feel less embarrassed or anxious to communicate their feelings. For people who find it more difficult to express their emotions in real life, online chat counselling might make it easier to express emotions.

Research into the use of telehealth for autistic individuals has generally focused on paediatric diagnostic assessments, early intervention programs or virtual visits (Boisvert et al., 2010; Ferguson et al., 2019; Harris et al., 2022; Knutsen et al., 2016; Sutherland et al., 2018). Much less is known about online chat counselling in specific. Several of the previously mentioned benefits of telehealth apply to online chat counselling as well (e.g., fewer sensory or social stressors, flexibility). In addition, due to its text-based nature and the invisibility of the interaction partner, more specific benefits might arise as well: reduced stress from nonverbal cues like managing eye contact, the pace of the conversation, the visual and structured nature of written text, and less social chit-chat (e.g., Burke et al., 2010; van der Aa et al., 2016).

This study aimed to enhance our understanding of the value of online chat counselling (chatting) as a mental health support service for autistic individuals and their network. To achieve this, users of a Flemish, synchronous online chat platform for autistic individuals and their network, the Autism Chat, were questioned. The Autism Chat is an initiative from the Autism Association Flanders and operated by trained mental health care professionals with autism expertise. The chat platform is accessible through the website of the Autism Association Flanders (https://www.ligaautismevlaanderen.be/autismechat/), where users can find a detailed description of the chat platform, including a step-by-step instruction manual on how to use the platform, complete with visualisations of each step and the Autism Chat interface. Additionally, a 4-minute video further illustrates how the Autism Chat operates.

There were two main study objectives:

1. Provide a description of who consulted the Autism Chat and why. A description of the users of the Autism Chat, including the nature of their support needs, is a first step in understanding who might turn to chatting for support.
2. Evaluate the compatibility between chatting as an online mental health support service and the support needs of autistic individuals and their network as well as the efficacy of chatting. To this end, user satisfaction, user well-being, and advantages and disadvantages of chatting were examined. The potential relationship with participant or chat characteristics was taken into consideration to explore whether or not chatting is more suitable or effective for specific subgroups of individuals or support needs.

Methods

Participants

Participants were recruited from the users of the Autism Chat between February 7th and December 31st 2022. We aimed to evaluate participants' first experience with the Autism Chat by only including their first contact, identified through their encoded IP address. We further excluded users who did not consent to the study (either by actively declining or by closing the web browser without responding to the informed consent), and when there was no autism diagnosis or indication of possible autism (e.g., students asking information about autism, people seeking general support for conditions such as ADHD or anxiety). For an overview of participant selection, see Fig. 1.

To maximize user anonymity and accessibility of the Autism Chat, dates of birth and other types of detailed personal information are never collected. Therefore, the available sample characteristics are limited to the user's age group (self-report before entering the chat: child (−12 y), adolescent (18 y or younger), or adult (+18 y), the user's sex (self-report and operator-report via the follow-up questionnaire) and user category (operator-report via the follow-up questionnaire; e.g., autistic individual or a member of their network). Based on these demographics, we classified chat users into a category and determined the users' sex. The majority of the users (64 %) were individuals with a (suspected) autism diagnosis who sought support for themselves. More specifically, 29 % were children and adolescents (18 y or younger; n = 81) and 35 % were adults (older than 18 y; n = 94). The remaining 36 % comprised the network of autistic individuals who consulted the Autism Chat with questions about a child, family member, friend,… with autism. The majority of this group were parents (24 %, n = 66), followed by siblings (6 %, n = 15), partners/friends (5 %, n = 14), and an undefined group of 'others' (1 %, n = 3). The three largest groups of participants in terms of sample size were selected for further analysis, resulting in a total of 241 chat logs or participants: 1) autistic children/adolescents, 2) autistic adults, and 3) parents of individuals with autism.

Participants were predominantly women, with male to female ratios differing significantly between groups ($\chi^2(2)= 6.01$, $p = 0.049$). Parents were mainly mothers of children with autism (83 %). The higher representation of women was also present in autistic adults (64 % female) and (to a lesser extent) in autistic children/adolescents (55 % female).

The Autism Chat

The Autism Chat, developed by the Autism Association Flanders, was launched in 2018 following funding from the Flemish government, with the first chat conversation taking place in January 2019. Its development was informed by earlier pilot projects that offered online support to autistic children, adolescents, adults, and their networks, as well as by collaboration with other key online healthcare providers in Flanders. Notably, the Autism Chat was the first chat platform specifically designed for autistic individuals and their support networks. Following the initial chat conversations in 2019, the platform was further adapted based on user feedback to better meet the needs of autistic individuals and those around them.

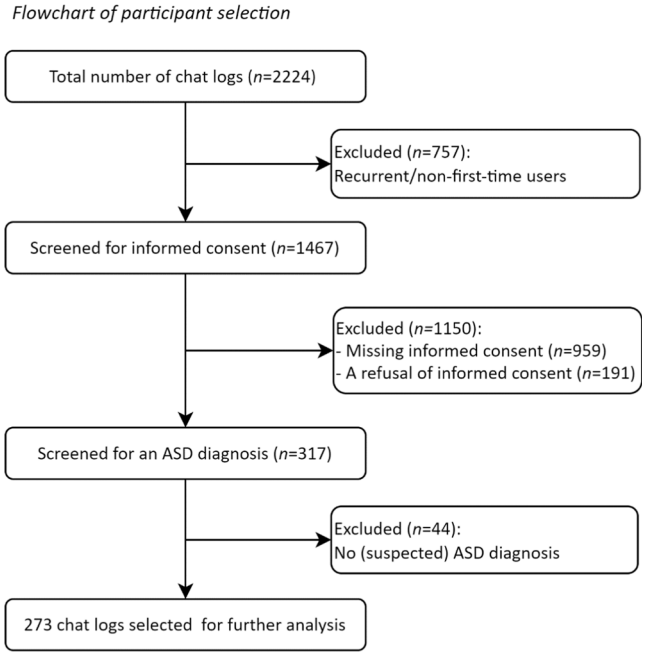

Fig. 1. Flowchart of participant selection.

The Autism Chat aims to be a highly accessible and high quality online chat platform specialised in providing support for autistic individuals and their network.

To maximize *accessibility*, the Autism Chat is anonymous and free and common barriers such as waiting lists or a lack of autism expertise are limited. The Autism Chat can be easily accessed via the website of the Autism Association Flanders and to match the Autism Chat's availability to the users' needs, the platform's availability is regularly adjusted based on usage patterns. To limit barriers *right before* using the Autism Chat, elaborate (demographic) questionnaires upon entering the online platform are avoided, facilitating immediate access to the Autism Chat when an operator is available. Aside from one question on users' well-being, which is repeated in the follow-up questionnaire to evaluate changes in well-being before and after chatting, the number of questions asked beforehand is limited to minimize the risk of users leaving the platform before accessing the Autism Chat. Extensive outreach efforts, including newsletters, social media, and collaboration with various entities, ensure awareness and dissemination of practical information about the Autism Chat across Flanders.

To maintain a *high quality* of online support, all operators of the Autism Chat have a Bachelor's or Master's degree in Psychology or Educational Sciences, are trained in the provision of online support and have extensive autism expertise as they are all mental health professionals who work specifically with autistic individuals and their network. Training includes an initial training day focussing on technical aspects, specific chat topics and communication skills (e.g., role play), regular group meetings to discuss updates and specific cases, continuous support via the Autism Chat coordinator(s), an annual training day on a central theme (e.g., suicide), and theoretical support through shared documents and protocols. In addition, the Autism Chat coordinator(s) participate in meetings with other important online health care providers in Flanders to exchange knowledge and expertise (https://onlinehulp-vlaanderen.be/startwijzer/ohup). The authors of the current paper are not involved in operating the Autism Chat, eliminating any potential influence on research data.

Measures

Users were asked to consent to and participate in a follow-up questionnaire after chatting and the chat operators completed several follow-up questions. This study received ethical approval from Social and Societal Ethics Committee of KU Leuven (G-2022–4662) on January 19th, 2022. All participants provided written informed consent prior to participating.

Follow-up questionnaire

The follow-up questionnaire was developed by the authors of this paper and the Autism Chat coordinator to 1) collect descriptive information about the (users of the) Autism Chat, 2) collect data on user satisfaction and experienced (dis)advantages of chatting, and 3) collect data on user well-being before and after chatting. The questionnaire is both practice-based and evidence-based. Questions on the chat category, chat topic, and the (dis)advantages of chatting were *practice-based*, i.e., developed based on day-to-day experiences with autistic individuals, the Autism Chat and chat conversations from the previous years. The four questions of the Session Rating Scale (SRS; Duncan et al., 2003) were used as an *evidence-based* measure of the users' experienced therapeutic relationship. Questions that were analysed for this paper are presented in Table 1.

Table 1
User and operator follow-up questionnaire.

Category	Question
USER	
User descriptives	'What is your sex?'
	'Are you or is the person for whom you are consulting the Autism Chat diagnosed with ASD?'
User satisfaction	Four questions of the Session Rating Scale (SRS;Duncan et al., 2003)
	'How satisfied are you with the Autism Chat?'
Chatting as an intervention method	'Was the Autism Chat the best mean of communication to help you today?'
	'If offered a choice, which mean of communication would you have preferred'? (chatting, email, in-person, phone call, video call)
(Dis)advantages	'Does chatting have **communicative** (dis)advantages for you?' (5-point Likert)
	• 'Which communicative advantages of chatting apply to you?' (multiple choice question, 10 answer options)
	• 'Which communicative disadvantages of chatting apply to you?' (multiple choice question, 10 answer options)
	'Does chatting have **practical/technical** (dis)advantages for you?' (5-point Likert)
	• 'Which practical/technical advantages of chatting apply to you?' (multiple choice question, 7 answer options)
	• 'Which practical/technical disadvantages of chatting apply to you?' (multiple choice question, 7 answer options)
User well-being[a]	'How are you feeling at the moment?'
OPERATOR	
User descriptives	'What is the user's sex?'
	'Whom did you chat with'? (multiple choice question, 14 answer options)
	'Is there a (suspected) ASD diagnosis?'
Chat descriptives	'What was the *nature* of the chat conversation?' (multiple choice question, 5 answer options)
	'What was the *topic* of the chat conversation?' (multiple choice question, 14 answer options)

[a] User well-being was rated both before and after the chat conversation to evaluate changes in well-being.

Chat descriptives

Chat category. A chat conversation could be either informative (asking for information), emotionally supportive (needing someone to listen, needing support in times of stress or sadness), problem-solving (asking help with a specific situation/problem), support in terms of crisis, or a casual conversation/conversation to get acquainted with the Autism Chat.

Chat topic. The topic of the chat conversation ('What was the conversation about?') could be selected based on a list of 14 possible topics: 1) identity and ASD, 2) family functioning, parenting and (child) development, 3) living (together), (co-)housing, 4) addiction and compulsive behaviour, 5) friendship, relationships and sexuality, 6) school, work and other daytime activities, 7) leisure, 8) suicidal thoughts/ideation and euthanasia, 9) emotional well-being (e.g., depression or anxiety), 10) physical well-being (e.g., illness, medical questions), 11) transgressive behaviour (e.g., violence or abuse), 12) communication with (other) health care professional(s), 13) practical questions (e.g., referrals or financial information), and 14) other (all topics that couldn't be classified in the previous categories).

User satisfaction – Session Rating Scale

The Session Rating Scale (Duncan et al., 2003) is a four-item questionnaire designed to assess the therapeutic alliance or relationship and has solid reliability, adequate validity, and high feasibility. Cronbach's coefficient alpha was calculated as the estimate of internal consistency. For the total sample ($n = 273$), the coefficient alpha was.90. Internal consistency was also good to excellent across subgroups: (1) autistic children and adolescents ($n = 81$, $\alpha = .93$), (2) autistic adults ($n = 94$, $\alpha = .86$), and (3) parents of individuals with autism ($n = 66$, $\alpha = .91$).

Although the SRS was not validated for research purposes, it was decided to include the four questions of the SRS to include a measure of therapeutic alliance. The robust finding that the therapeutic alliance is one of the most important predictors of treatment outcome warrants the inclusion of a measure of therapeutic alliance when evaluating the efficacy of an intervention such as chatting via the Autism Chat. Originally, the four questions are rated via 10-cm visual analogue scales (participants need to place a hash mark on the line nearest to the description that best fits their experience). To facilitate the online use of the questionnaire and data analysis, items were transformed into a 5-point Likert scale.

(Dis)advantages of chatting

Communicative. Users were able to choose from 10 answer options to select which communicative (dis)advantages they experienced while chatting: 1) I understand the other person better/worse due to a lack of non-verbal communication; 2) it's easier/more difficult to express myself due to a lack of non-verbal communication; 3) using emoticons facilitates/hinders communication; 4) I'm less/more frequently misunderstood; 5) I'm able to determine the pace of the conversation (and think longer about my response)/the pace of the conversation was too fast or slow; 6) it's easier/harder to talk about difficult topics; 7) the ability to reread sentences is helpful/leads to overthinking or worrying; 8) conversations are more direct, without unnecessary chit-chat/conversations are more superficial and lack depth; 9) I like/dislike that the conversation is anonymous; 10) other.

Technical/practical. Technical or practical advantages could be selected out of 7 options: 1) I'm able to control when the conversation ends; 2) it's possible to get support quickly; 3) I'm able to decide last minute whether a conversation is needed/I don't need to make an appointment in advance (flexible timing); 4) I'm able to chat with other people nearby; 5) I can choose *where* I chat, I don't have to go to another location; 6) I'm not distracted by the appearance or characteristics of the other person (e.g., outfit, perfume); 7) other. In addition, 7 disadvantages could be selected: 1) technical difficulties; 2) limited access to a computer, tablet, smartphone; 3) limited skills to work with a computer, tablet, smartphone; 4) limited typing skills; 5) chatting is more tiring; 6) concerns about privacy or anonymity, 7) other.

User well-being

Users were asked to rate their well-being before and after the chat conversation (10-point Likert scale), ranging from 'I'm feeling very bad' to 'I'm feeling very good'. To limit barriers to accessing the Autism Chat, the measure of well-being was limited to one general question.

Community involvement statement

Given the anonymous nature of the Autism Chat, users were not involved in setting the research question(s) or the outcome measures of this exploratory study. However, users' feedback and data from previous questionnaires are continuously used to improve the quality of the Autism Chat and to ensure that the Autism Chat matches the need(s) of autistic individuals and their network. For example, users' feedback was used to further adapt and improve the chat platform and to finalize the step-by-step instruction manual.

Data analysis

Data were analysed using R, version 4.3.1 (R Core Team, 2023). Chi-square (χ^2) tests were used to evaluate chat descriptives as well as the experienced (dis)advantages reported by different participant groups (autistic children/adolescents, autistic adults, parents of autistic individuals).

To investigate the relationship between user satisfaction, as measured by the Session Rating Scale (SRS; Duncan et al., 2003), and group status, a multivariate analysis of variance (MANOVA) was employed.

Further, the association between users' well-being (dependent variable) and several predictors (fixed factors)—time (scores before

and after chatting), group status (autistic child/adolescent, autistic adult, parent), chat category (informative, emotionally supportive, problem-solving, other), sex (female, male, other, unknown), and the two-way interaction effects between time and the other predictors—was assessed using a linear mixed-effects model. Random factors included in the model were the individual user and the chat operator, which accounted for the within-subject variability and the variability introduced by different operators, respectively. The fixed effects were tested using F-statistics with Type III Analysis of Variance employing Satterthwaite's method for estimating degrees of freedom. This approach allowed for the accommodation of both fixed and random effects, providing a robust analysis of the data across repeated measures.

Results

Chat descriptives

The majority of the chat conversations were either informative, emotionally supportive or problem-solving, although the proportion of chat category differed significantly between groups (autistic child/adolescent, autistic adult, parents; $\chi^2(6)= 18.67$, $p = .005$). For *autistic children/adolescents*, conversations were somewhat evenly spread between informative (32 %), emotionally supportive (30 %) and problem-solving conversations (32 %). The majority of chat conversations of *autistic adults* were emotionally supportive (47 %), followed by informative and problem-solving conversations (24 %). *Parents'* chat category was mainly problem-solving (48 %). In addition, their conversations were informative (30 %) and emotionally supportive (20 %). The chat category 'other', including crisis conversations, was infrequent (<10 %) in all groups.

The frequency of chat topics differed between groups as well. Whereas 36 % of autistic children/adolescents and 37 % of autistic adults discussed *identity and ASD,* this was only the case for 11 % of the parents ($\chi^2(2)= 15.59$, $p < .001$). In contrast, parents frequently chatted about *family functioning, parenting and (child) development* (48 %), while this was less the case for autistic children/adolescents (10 %) or adults (18 %; $\chi^2(2)= 32.67$, $p < .001$). In addition, parents and autistic adults had more *practical questions* (parents: 23 %; autistic adults: 14 %) compared to autistic children/adolescents (5 %; $\chi^2(2)= 10.04$, $p = .007$). The topics *school, work and other daytime activities* and *emotional well-being* occurred frequently (>25 %) in all groups. There were no other significant group differences chat topic.

User satisfaction

First, user satisfaction was analysed based on the four items of the SRS (Duncan et al., 2003; see Fig. 2). The majority of the users of the Autism Chat strongly agreed that they felt heard, understood and respected (M=4.58, sd=0.71), that they worked on or talked about what they wanted to work on or talk about (M=4.53, sd=0.78), that the operator's approach was a good fit for them (M=4.31, sd=0.90), and that the session overall was right for them (M=4.57, sd=0.82). There was no evidence of group differences in user satisfaction ($F(8450)= 0.71$, $p = .682$). Further inspection of the data and follow-up ANOVA's confirmed that user satisfaction was high across all groups with no significant variation between groups. Follow-up ANOVA's were nonsignificant for the item 'I felt heard, understood, and respected' ($F(2227)= 0.46$, $p = 0.630$), the item 'We worked on or talked about what I wanted to work on and talk about' ($F(2227)= 1.33$, $p = 0.267$), the item 'The operator's approach was a good fit for me' ($F(2227)= 0.54$, $p = 0.582$), and the item 'Today's session was right for me' ($F(2227)= 1.56$, $p = 0.213$).

Second, the overall feeling of satisfaction with the Autism Chat was evaluated using a general question: 'How satisfied are you with the Autism Chat?' (5-point Likert scale). Users scored on average 4.46 (sd=0.74).

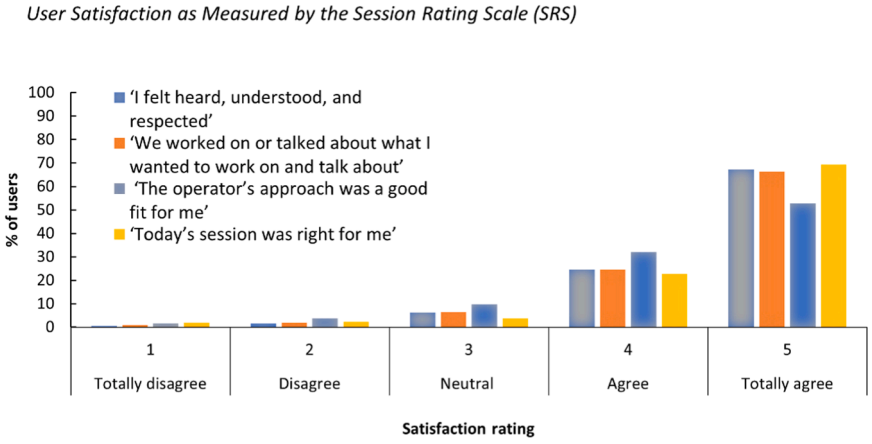

Fig. 2. User satisfaction as measured by the Session Rating Scale (SRS).

Chatting as an intervention method

Most users of the Autism Chat agreed (29 %) or strongly agreed (56 %) that chatting was the best intervention method to help them with their support need (5-point Likert scale: M=4.31, sd=1.00), with no significant group differences ($\chi^2(8)$= 7.14, p = .522). If offered a choice between chatting, a real-life conversation or other digital methods (videocall, phone call, email), 67 % of all users would again choose chatting as an intervention method. Group differences were non-significant ($\chi^2(8)$= 14.89, p = .061). Cramer's V was calculated to assess the effect size of the association between group and intervention method. The results (V=.18) indicate a small to medium association between the variables. Visual inspection of the data shows that autistic children/adolescents and adults (79 % and 67 %, respectively) more frequently preferred chatting compared to parents (52 %) and that more parents would chose a phone call (19 % of the parents vs. 4 % and 9 % of the autistic children/adolescents and adults).

(Dis)advantages of chatting as a mental health support service

Both autistic individuals and parents reported several advantages to chatting. However, the proportion of communicative and technical/practical advantages differed significantly between groups (Communicative: $\chi^2(16)$= 30.22, p = .017; Technical/practical: $\chi^2(10)$= 31.35, p < .001). Except for chatting being more direct, all other *communicative* advantages were more frequently reported by autistic individuals than by parents of autistic individuals (e.g., a better understanding of the other person, better self-expression; see Table 2). *Technical/practical* advantages were more often reported by parents of autistic individuals as well, although group differences remained. For example, the ability to control the end of the chat conversation and minimizing distractions by the other person's appearance benefits autistic individuals more than parents. Advantages referring to flexible timing were more frequently reported by adults (autistic adults and parents) and less by autistic children/adolescents.

In contrast to the experienced advantages, there were no significant group differences in the experienced communicative ($\chi^2(16)$= 17.66, p = .343) or technical/practical ($\chi^2(10)$= 14.06, p = .170) disadvantages (see Table 3).

User well-being

User well-being was rated on a 10-point Likert scale and increased after chatting (before chatting: M=4.92, sd=2.17; after chatting: M=6.1, sd=2.07). Results are presented in Fig. 3.

There was a significant main effect of time ($F(1, 226.58)$= 21.304, p < .001, η^2= .09) and chat category ($F(3, 227.28)$= 7.801, p < .001, η^2= .09), both indicating a moderate to large effect size, and a significant main effect of group status ($F(2, 229.43)$= 4.770, p = .009, η^2= .04), reflecting a small to moderate effect size. In contrast, there was no significant main effect of sex ($F(3, 227.37)$= 0.330, p = .804).

Regarding interactions, there was a significant interaction effect between time and chat category ($F(3, 226.45)$= 5.083, p = .002, η^2= .06), representing a moderate effect size. The interactions between time and group ($F(2226.66)$= 2.34, p = .099) and between time and gender ($F(3, 227.37)$< 1) were non-significant, with negligible effect sizes close to zero.

In sum, the well-being of users of the Autism Chat significantly improved after chatting. This improvement was not significantly different depending on sex, but did differ significantly depending on chat category or group status. Based on the observed mean scores (see Table 4), we may conclude that improvements were largest when the conversation was either problem-solving or emotionally supportive.

Table 2
Proportion of users who experienced communicative and technical/practical advantages.

	Autistic child/adolescent	Autistic adult	Parent
Communicative advantages			
Better understanding of the other person	.31	.28	.03
Better self-expression	.30	.34	.09
Emoticons as facilitator	.19	.33	.08
Fewer misunderstandings	.21	.21	.06
Controlled pace	.44	.67	.30
Easier to talk about difficult topics	.52	.57	.38
Ability to reread sentences	.44	.59	.38
More direct	.26	.38	.35
Anonymous	.53	.47	.29
Technical/practical advantages			
Controlled end time	.63	.53	.24
Short-term availability	.49	.71	.74
Flexible timing	.58	.79	.70
Ability to chat near others	.30	.44	.44
Flexible location	.52	.61	.53
Less distraction by characteristics of others	.38	.40	.09

Table 3
Proportion of users who experienced communicative and technical/practical disadvantages.

	Autistic child/adolescent	Autistic adult	Parent
Communicative disadvantages			
Worse understanding of the other person	.25	.21	.09
Worse self-expression	.19	.16	.18
Emoticons as obstacle/barrier	.02	.03	.03
More misunderstandings	.14	.11	.03
Pace too fast/slow	.15	.24	.17
Harder to talk about difficult topics	.01	.06	.03
More overthinking	.27	.20	.14
More superficial	.12	.27	.17
Anonymous	.04	.07	.03
Technical/practical disadvantages			
Technical difficulties	.17	.10	.08
Limited access to devices	.02	.00	.02
Limited digital skills	.01	.03	.02
Limited typing skills	.14	.05	.12
More tiring	.12	.09	.03
Privacy or anonymity concerns	.23	.11	.02

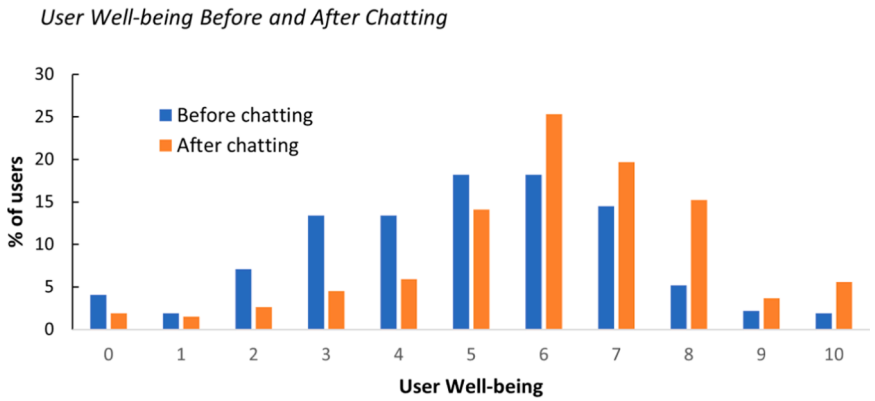

Fig. 3. User well-being before and after chatting.

Table 4
Users' well-being score before and after chatting within each chat category.

	Informative	Emotionally supportive	Problem-solving	Other (crisis, …)
Pre	5.72	4.11	4.83	5.03
Post	6.58	5.43	6.52	4.95
Difference pre-post	*0.86*	*1.32*	*1.69*	*−0.08*

Discussion

This study presents the first evaluation of online chat counselling as a one-time, anonymous mental health support service for autistic individuals and their network. It adds to the current knowledge about possible ways to support autistic individuals and their network in a more flexible way with fewer barriers to mental health care. The current results apply to autistic individuals interested in using online chat counselling as a resource, indicating the need for caution when generalizing the findings to the broader autistic population. Of those who consulted The Autism Chat, the majority were autistic individuals themselves (64 %), followed by parents, indicating that chatting appeals to both autistic individuals and their network. In contrast to the sex ratio found in other studies (Rutherford et al., 2016), study participants were mostly female, as were the users of the Autism Chat in general, including those who did not participate in this study. A predominance of women was also found in other studies on chatting (see Brody et al., 2020), suggesting women might be more inclined to use chatting as a support method compared to men. As research indicates that women have more positive attitudes toward help-seeking behaviour than men and that men are less likely to seek professional help (Wendt & Shafer, 2016), these findings may suggest that autistic women are generally more inclined to seek support, both through chat services and other resources.

In agreement with studies showing that mothers more frequently assume the role of primary caregiver and experience higher

support needs themselves (e.g., stress, anxiety; Kuhlthau et al., 2022), parents in this study were mainly mothers.

Next, the different support needs for which autistic individuals and their network consulted the Autism Chat were identified. *Autistic individuals* (mostly adults) were in higher need of emotional support (someone they could talk to and who listened to them), discussing their identity or autism diagnosis or reaching out because of a lower emotional well-being. As loneliness is common among autistic individuals and is associated with lower quality of life and well-being, receiving support via the Autism Chat during difficult times could contribute to more positive life outcomes (Gomez-Campos et al., 2023; Schiltz et al., 2023). Our findings further indicate that *parents'* support needs revolved more around a specific question or problem (informative or problem-solving conversations), for example concerning family functioning, parenting or the development of their child. This aligns with parents' support needs identified in other studies such as resources for information, education, knowledge or materials. Inaccessible mental health care services, restricting access to resources needed by parents, can be very stressful for parents as it limits their ability to understand, help and support their child (Avery et al., 2022; Hermaszewska & Sin, 2021). An easily accessible chat platform that quickly provides information or practical resources can alleviate these stressors and improve the well-being of parents who are willing and able to seek support via chat. All groups consulted the Autism Chat for practical questions (e.g., referrals, financial advice, social or healthcare benefits), highlighting the need for more transparency and advice on practical issues regarding mental health care and support for autistic individuals and their network in Flanders.

Only a small number of the chat conversations were described as a 'crisis'. As the Autism Chat is not profiled as a crisis helpline, it is less likely that autistic individuals or their network consult the Autism Chat for help in times of crisis. Instead, they might consult other, crisis-specific support services in Flanders. Individuals who did consult the Autism Chat during a crisis received comprehensive, autism-friendly support with particular attention to support beyond the chat itself. When appropriate, they were referred to other crisis resources after chatting and encouraged to seek immediate support from a friend (or another trusted contact), or to explore alternative strategies to manage distressing thoughts and negative emotions.

The majority of autistic individuals and parents of autistic individuals reported high satisfaction rates after chatting and preferred chatting over other support methods (e.g., phone calls or in-person counselling), emphasizing the efficacy of online chat counselling in meeting various support needs. Most users agreed that chatting was the best communication method to help with their support need at the time they entered the chat platform. Notably, satisfaction rates were high in all groups, indicating a good fit between online chat counselling and both the emotional needs of autistic individuals and more problem-focused/informative needs of parents. This is in line with other studies reporting a clear preference of chatting over for example phone calls (e.g., Fukkink & Hermanns, 2009; Haner & Pepler, 2016). Unfortunately, to our knowledge, there are no studies comparing chatting to in-person counselling. Additionally, it remains to be determined whether high user satisfaction is specific to individuals inclined to seek support via chat or extends more broadly to the autistic population as a whole.

Lastly, results showed an improvement in users' well-being after chatting via the Autism Chat. As well-being was measured right before and after chatting, an *immediate* effect on well-being was observed. Positive effects were largest when the nature of conversation was emotionally supportive or problem-solving. The effect for informative conversations was smaller, suggesting that the provision of information or the sole use of psycho-education, without the emotionally supportive component or without directly addressing experienced issues or problems, had less immediate effects on user well-being.

Previous studies highlight strengths of telehealth in both a non-autistic (e.g., Brody et al., 2020; Burke et al., 2010; Derks et al., 2007) and autistic population (e.g., Crane et al., 2023; Tibbs et al., 2022). As studies on online chat counselling in autistic individuals and their network are scarce, the current study not only confirms, but also builds on previously found strengths, describing specific benefits and drawbacks of *online chat counselling* for autistic individuals and their network. First, several *communicative* benefits appeared to be autism-specific, as they were more frequently reported by autistic individuals than parents. An improved understanding of others and better self-expression through chatting as well as the ability to reread sentences and determine the pace of the conversation facilitated communication. Almost half of the autistic individuals valued the anonymity of chatting and found talking about difficult topics easer. While communicative benefits were experienced by many users, indicating a good fit between their support needs and chatting as a resource, some users also faced challenges such as worsened understanding of others, a sense of superficiality, and dissatisfaction with the conversation pace (too fast/slow or too much time to overthink). For some autistic individuals and their context, chatting may thus not align with their communicative or support needs, making other resources a better choice when seeking mental health support. Similar results were found in terms of technical/practical (dis)advantages, with the advantages being more prominent than the disadvantages, although this was less autism-specific and applied to parents as well. Reported advantages were mainly related to *autonomy* (e.g., ability to choose when the conversation ends, when a session is needed) and *flexibility* in location or timing of the conversation. Technical/practical disadvantages were more frequently reported by autistic children or adolescents and referred to technical aspects (e.g., technical problems, typing skills) or anonymity concerns.

Limitations and future directions

This study provided insight into the value of chatting as a mental health support service. Nevertheless, several limitations are worth noting. First, only participants who chose and were (technically) able to seek help via the Autism Chat were included. Individuals who did not consult the Autism Chat, who judged chatting not to be suitable for their support needs, or who had limited access to online resources were not included. In future research, it is important to include these groups as well, adding to this study with an increased understanding of why chatting might *not* be an adequate mental health support service for some autistic individuals and their network. Second, since all satisfaction scores were on the high end, selection bias may have occurred, with predominantly satisfied users willing to participate in the follow-up questionnaire.

It was outside the scope of the current study to identify which specific operator behaviours or interventions used during chatting (e.g., empathizing, providing solutions, enhancing insight) were helpful for autistic individuals and their network. Future studies including more in-depth research are needed to understand the mechanisms contributing to successful online chat interventions (Tibbs et al., 2022). In addition, further analysis of the Autism Chat and operator interventions could strengthen the chat platform by identifying the interventions that contribute to higher satisfaction rates and changes in well-being, enabling us to enhance those strategies and ensure consistency across different chat operators.

As the need for more flexible and accessible health care methods might depend on demographic variables as well as the availability of mental health care services in one's proximity, more research is needed to determine whether chatting is valuable for the autistic community as a whole, or depends on for example the characteristics of the available mental health care services.

Due to the anonymous nature of the Autism Chat and the focus on first-time users, long-term data was unavailable. Follow-up research, including users who consulted the Autism Chat more than once, could provide insights into sustained well-being changes and evaluate whether online chat counselling is more effective as a one-time or low-frequency (e.g., monthly) support, or as a more consistent (e.g., weekly) form of assistance. Additionally, it could offer further insights into the value of operator interventions (e.g., the ability to implement solutions and follow advice).

Conclusion

This study affirms the benefits of telehealth within the autistic community and expands on prior research by specifically evaluating online chat counselling. The results emphasize the presence of emotional support needs among autistic individuals and informative or problem-focused support needs among parents. The majority of both groups were very satisfied after chatting and reported an improved well-being, underscoring the clinical relevance of online chat counselling in the autistic community for various support needs. Furthermore, autism-specific communicative benefits, such as improved understanding and self-expression, along with the autonomy and flexibility afforded by the platform, contribute to the positive experiences reported by autistic individuals and their network. With technology enhancing mental health care accessibility, online chat counselling is a promising avenue for promoting well-being among autistic individuals and their families.

CRediT authorship contribution statement

Maarten De Schryver: Writing – review & editing, Formal analysis, Data curation. **Dieter Baeyens:** Writing – review & editing, Supervision, Resources, Project administration, Methodology, Formal analysis, Conceptualization. **Herbert Roeyers:** Writing – review & editing, Supervision, Resources, Project administration, Methodology, Formal analysis, Conceptualization. **Jo Renty:** Writing – review & editing, Resources, Project administration, Investigation, Funding acquisition, Conceptualization. **Chloè Bontinck:** Writing – original draft, Visualization, Project administration, Methodology, Formal analysis, Data curation, Conceptualization.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The authors thank all the users of the Autism Chat who gave their time to take part in this study. In addition, we wish to thank the master's students Fien Smeets, Kato Pierre, Gwen Verlinden and Nena Demets for their assistance in data analysis.

Data availability

Data will be made available on request.

References

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th Ed., text rev.). American Psychiatric Association Publishing,. https://doi.org/10.1176/appi.books.9780890425787

Avery, K., Van Rhijn, T., & Maich, K. (2022). Understanding the role of formal and informal support resources for parents of children with autism spectrum disorder. *Canadian Journal of Family and Youth, 14*(3), 32–51. https://doi.org/10.29173/cjfy29791

Bal, V. H., Kim, S.-H., Cheong, D., & Lord, C. (2015). Daily living skills in individuals with autism spectrum disorder from 2 to 21 years of age. *Autism, 19*(7), 774–784. https://doi.org/10.1177/1362361315575840

Boisvert, M., Lang, R., Andrianopoulos, M., & Boscardin, M. L. (2010). Telepractice in the assessment and treatment of individuals with autism spectrum disorders: A systematic review. *Developmental Neurorehabilitation, 13*(6), 423–432. https://doi.org/10.3109/17518423.2010.499889

Brody, C., Star, A., & Tran, J. (2020). Chat-based hotlines for health promotion: A systematic review. –36 *MHealth, 6*, 36. https://doi.org/10.21037/mhealth-2019-di-13.

Burke, M., Kraut, R., & Williams, D. (2010). Social use of computer-mediated communication by adults on the autism spectrum. In *Proceedings of the ACM conference on computer supported cooperative work, CSCW*. (pp. 425–434). Retrieved from https://doi.org/10.1145/1718918.1718991.

Crane, L., Hearst, C., Ashworth, M., & Davies, J. (2023). Evaluating the online delivery of an autistic-led programme to support newly diagnosed or identified autistic adults. *Autism and Developmental Language Impairments, 8*. https://doi.org/10.1177/23969415231189608/SUPPL_FILE/SJ-DOCX-1-DLI-10.1177_23969415231189608.DOCX

Derks, D., Fischer, A.H., & Bos, A.E. R. (2007). *The role of emotion in computer-mediated communication: A review*. Retrieved from https://doi.org/10.1016/j.chb.2007.04.004.

Dowling, M., & Rickwood, D. (2013). Online counseling and therapy for mental health problems: A systematic review of individual synchronous interventions using chat. *Journal of Technology in Human Services, 31*(1), 1–21. https://doi.org/10.1080/15228835.2012.728508

Duncan, B. L., Miller, S. D., Sparks, J. A., Claud, D. A., Reynolds, L. R., Brown, J., & Johnson, L. D. (2003). The Session Rating Scale: Preliminary Psychometric properties of a "working" alliance measure. *In Journal of Briefing Therapy, 3*.

Ellison, K. S., Guidry, J., Picou, P., Adenuga, P., & Davis, T. E. (2021). Telehealth and autism prior to and in the age of COVID-19: A systematic and critical review of the last decade. *Clinical Child and Family Psychology Review, 24*(3), 599–630. https://doi.org/10.1007/s10567-021-00358-0

Evans, K., Whitehouse, A. J. O., D'Arcy, E., Hayden-Evans, M., Wallace, K., Kuzminski, R., Thorpe, R., Girdler, S., Milbourn, B., Bölte, S., & Chamberlain, A. (2022). Perceived support needs of school-aged young people on the autism spectrum and their caregivers. *International Journal of Environmental Research and Public Health, 19*(23), 15605. https://doi.org/10.3390/ijerph192315605

Ferguson, J., Craig, E. A., & Dounavi, K. (2019). Telehealth as a model for providing behaviour analytic interventions to individuals with autism spectrum disorder: A systematic review. *Journal of Autism and Developmental Disorders, 49*(2), 582–616. https://doi.org/10.1007/s10803-018-3724-5

Fukkink, R. G., & Hermanns, J. M. A. (2009). Children's experiences with chat support and telephone support. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 50*(6), 759–766. https://doi.org/10.1111/J.1469-7610.2008.02024.X

Gomez-Campos, R., Vidal Espinoza, R., Castro-Fuentes, C., Flores-Vergara, S., Galvez-Zurita, J., Urra-Albornoz, C., Torre Choque, C. la, & Bolaños, M. (2023). Comparison of social isolation in autistic children and adolescents according to age, marital status and number of siblings. *Journal of Education and Health Promotion, 12*(1), 316. https://doi.org/10.4103/jehp.jehp_1837_22

Haner, D., & Pepler, D. (2016). "Live chat" clients at kids help phone: Individual characteristics and problem topics. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 25*(3), 138. /pmc/articles/PMC5130086/.

Harris, L., Gilmore, D., Hanks, C., Coury, D., Moffatt-Bruce, S., Garvin, J. H., & Hand, B. N. (2022). It was surprisingly equivalent to the appointment I had in person": Advantages and disadvantages of synchronous telehealth for delivering primary care for autistic adults. *Autism, 26*(6), 1573–1580. https://doi.org/10.1177/13623613211060589

Hartley, S. L., & Schultz, H. M. (2014). Support needs of fathers and mothers of children and adolescents with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 45*, 1636–1648. https://doi.org/10.1007/s10803-014-2318-0

Hermaszewska, S., & Sin, J. (2021). End-user perspectives on the development of an online intervention for parents of children on the autism spectrum. *Autism, 25*(5), 1234–1245. https://doi.org/10.1177/1362361320984895

Howlin, P. (2021). Adults with autism: Changes in understanding since DSM-111. *Journal of Autism and Developmental Disorders 2021, 51*(12), 4291–4308. https://doi.org/10.1007/S10803-020-04847-Z

Inoue, M., Inoue, N., Nakatani, K., & Shikibu, Y. (2023). Online parent training for parents of children with autism spectrum disorders: Prototype development of the on-demand type. *Yonago Acta Medica, 66*(1), 95–103. https://doi.org/10.33160/YAM.2023.02.012

Knutsen, J., Wolfe, A., Burke, B. L., Hepburn, S., Lindgren, S., & Coury, D. (2016). A systematic review of telemedicine in autism spectrum disorders. *Review Journal of Autism and Developmental Disorders, 3*(4), 330–344. https://doi.org/10.1007/s40489-016-0086-9

Kuhlthau, K. A., Ames, S. G., Ware, A., Hoover, C. G., Wells, N., & Shelton, C. (2022). Research on family health and children and youth with special health care needs. *Academic Pediatrics, 22*(2), S22–S27. https://doi.org/10.1016/j.acap.2021.07.019

Lo, J. W. K., Ma, J. L. C., & Wong, J. C. Y. (2023). The feasibility and the therapeutic process factors of online vs. face-to-face multifamily therapy for adults with high-functioning autism spectrum disorder in Hong Kong: A multi-method study. *Contemporary Family Therapy*, 1–13. https://doi.org/10.1007/S10591-023-09674-9/TABLES/4

Lord, C., Elsabbagh, M., Baird, G., & Veenstra-Vanderweele, J. (2018). Autism spectrum disorder. *The Lancet, 392*(10146), 508–520. https://doi.org/10.1016/S0140-6736(18)31129-2

Micai, M., Fatta, L. M., Gila, L., Caruso, A., Salvitti, T., Fulceri, F., Ciaramella, A., D'Amico, R., Del Giovane, C., Bertelli, M., Romano, G., Schünemann, H. J., & Scattoni, M. L. (2023). Prevalence of co-occurring conditions in children and adults with autism spectrum disorder: A systematic review and meta-analysis. *Neuroscience & Biobehavioral Reviews, 155*, Article 105436. https://doi.org/10.1016/J.NEUBIOREV.2023.105436

O'Connor, R. A., Doherty, M., Ryan-Enright, T., & Gaynor, K. (2023). Perspectives of autistic adolescent girls and women on the determinants of their mental health and social and emotional well-being: A systematic review and thematic synthesis of lived experience. *Autism*, 1–15. https://doi.org/10.1177/13623613231215026

Pretorius, C., Chambers, D., & Coyle, D. (2019). Young people's online help-seeking and mental health difficulties: Systematic narrative review. *Journal of Medical Internet Research, 21*(11), Article e13873. https://doi.org/10.2196/13873

R Core Team. (2023). *A language and environment for statistical computing.* R Foundation for Statistical Computing, Vienna, Austria. Retrieved from ⟨https://www.R-project.org/⟩.

Rutherford, M., McKenzie, K., Johnson, T., Catchpole, C., O'Hare, A., McClure, I., Forsyth, K., McCartney, D., & Murray, A. (2016). Gender ratio in a clinical population sample, age of diagnosis and duration of assessment in children and adults with autism spectrum disorder. *Autism, 20*(5), 628–634. https://doi.org/10.1177/1362361315617879

Schiltz, H., Gohari, D., Park, J., & Lord, C. (2023). A longitudinal study of loneliness in autism and other neurodevelopmental disabilities: Coping with loneliness from childhood through adulthood. *Autism*. https://doi.org/10.1177/13623613231217337/SUPPL_FILE/SJ-DOCX-1-AUT-10.1177_13623613231217337.DOCX

Sutherland, R., Trembath, D., & Roberts, J. (2018). Telehealth and autism: A systematic search and review of the literature. *International Journal of Speech-Language Pathology, 20*(3), 324–336. https://doi.org/10.1080/17549507.2018.1465123

Tibbs, M., O'Reilly, A., Dwan O'Reilly, M., & Fitzgerald, A. (2022). Online synchronous chat counselling for young people aged 12–25: A mixed methods systematic review protocol. *BMJ Open, 12*(4), Article e061084. https://doi.org/10.1136/bmjopen-2022-061084

van der Aa, C., Pollmann, M. M. H., Plaat, A., & van der Gaag, R. J. (2016). Computer-mediated communication in adults with high-functioning autism spectrum disorders and controls. *Research in Autism Spectrum Disorders, 23*, 15–27. https://doi.org/10.1016/j.rasd.2015.11.007

Venturini, E., & Parsons, T. D. (2018). Virtual environments for assessment of social exclusion in autism: a systematic review. *Review Journal of Autism and Developmental Disorders, 5*(4), 408–421. https://doi.org/10.1007/S40489-018-0149-1/TABLES/2

Wagg, A. J., Callanan, M. M., Hassett, A., & Wagg, A. J. (2018). The use of computer mediated communication in providing patient support: A review of the research literature. *International Journal of Nursing Studies, 82*, 68–78. https://doi.org/10.1016/j.ijnurstu.2018.03.010

Walsh, C., Lydon, S., O'Dowd, E., & O'Connor, P. (2020). Barriers to healthcare for persons with autism: A systematic review of the literature and development of a taxonomy. *Developmental Neurorehabilitation, 23*(7), 413–430. https://doi.org/10.1080/17518423.2020.1716868

Wendt, D., & Shafer, K. (2016). Gender and attitudes about mental health help seeking: Results from national data. *Health & Social Work, 41*(1), e20–e28. https://doi.org/10.1093/hsw/hlv089

Yoshikawa, Y., Muramatsu, T., Sakai, K., Haraguchi, H., Kudo, A., Ishiguro, H., Mimura, M., & Kumazaki, H. (2023). A new group-based online job interview training program using computer graphics robots for individuals with autism spectrum disorders. *Frontiers in Psychiatry, 14*, 1198433. https://doi.org/10.3389/FPSYT.2023.1198433/BIBTEX

Zeidan, J., Fombonne, E., Scorah, J., Ibrahim, A., Durkin, M. S., Saxena, S., Yusuf, A., Shih, A., & Elsabbagh, M. (2022). Global prevalence of autism: A systematic review update. *Autism Research, 15*(5), 778–790. https://doi.org/10.1002/AUR.2696