Review

Autistic well-being: A scoping review of scientific studies from a neurodiversity-affirmative perspective

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Abstract

Background

Historically, autism research has focused on the overrepresentation of physical and mental health problems and decreased psychological well-being in autistic people without intellectual impairment. There is a paucity of studies emphasizing what positively contributes to the well-being of autistic people. In line with a recent shift toward investigating autistic health more comprehensively, we conducted a scoping review to map emerging data on autistic well-being within a biopsychosocial context.

Methods

A Lived Experience Advisory Panel coproduced the review question. The research was collated using Preferred Items for Systematic Reviews and Meta-analyses guidelines for scoping reviews (PRISMA-ScR) with predefined selection criteria. Research based on the deficit-based view of autism and not within the core principles of the neurodiversity-affirmative movement was excluded.

Results

We collated 89 studies, with biological ($N = 8$), psychological ($N = 70$), and social ($N = 61$) factors. Alongside an increase in affirmation-focused outputs, we identified several themes: 'Impact of Diagnosis and Self-Identity', 'Self-empowering Characteristics', 'Cognition', 'Role of the Wider Community', 'Role of Relationships and Forms of Support', and 'Social Adaptations and Lessons from COVID-19'.

Conclusions

While neurodiversity-affirmative perspectives on autistic well-being are increasingly recognized as an important research area, there is a need for a more stringent exploration of interlinking biopsychosocial determinants. A focused approach within future research will enhance understanding of the promotion of autistic well-being.

Lay abstract

A lot of autism research focuses on the negative aspects of being autistic, for example, autistic people have a shorter life expectancy and are more likely to have physical and mental health conditions. There is not much research on what improves autistic well-being and quality of life. In this article, we summarize research that looks at positive factors which contribute to autistic well-being. We first asked four autistic adults which questions they think are most important to ask about autistic well-being. Together, we decided that we would look for research that is based on a neurodiversity-affirmative perspective and does not view autism as a deficit. We also decided we would look for biological, psychological, and social factors that positively contribute to autistic well-being for autistic people of all ages. We then used a specific method for searching different databases to see what other researchers had found that could answer our question. We found 89 studies that looked at biopsychosocial factors contributing to autistic well-being. Most of these were on psychological and social factors, with only a few on biological factors. We found that meaningful social connections, forms of support, and psychological factors

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like individual characteristics contributed to autistic well-being. Overall, we found that autistic well-being is a relatively new interest in autism research and that we need more research in the future to work out how we can improve the quality of life of autistic people of all ages.

Keywords

Quality of life, well-being, autism, neurodiversity paradigm

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Introduction

A medicalized understanding of autism (American Psychiatric Association, 2013) as a neurodevelopmental disorder has dominated autism research. Current clinical management typically retains this perspective. Arising from this deficit-based understanding of autism, is the drive to 'normalize', reduce symptomatology, or cure autistic characteristics. Unsurprisingly, this viewpoint further reinforces the alienation and loneliness often reported by autistic individuals (Micai et al., 2021; Portway & Johnson, 2005; Quadt et al., 2023). As a consequence of the medical model, autism research typically focuses on negative health outcomes. In contrast, this scoping review seeks to summarize neurodiversity-affirmative research on factors that increase and contribute to the well-being of autistic individuals across the lifespan.

The principles of the neurodiversity-affirmative movement (Kapp et al., 2013) are shifting the current understanding of, and support for, autistic people by healthcare providers and the wider community (Dekker, 2020). The autistic community is driving this change by challenging the deficit-based narrative with the autistic self-advocacy movement (Leadbitter et al., 2021). We re-address this prior focus on the prevention and management of 'symptoms', based on inherently ableist principles, with the aim to embrace autistic identities with their unique strengths and challenges. This also includes adopting positive perspectives in research and increasing evidence-based knowledge about factors that improve overall health and quality of life. Moreover, to develop more meaningful outcomes, autistic advocates also promote the use of preferred language, which especially benefits the dissemination of autism research in the public domain. Researchers found recently that the use of 'autism', or 'autism spectrum' is preferred to 'Autism Spectrum Disorder', alongside the use of identity-first language such as 'autistic individual' rather than 'individual with autism' (Keating et al., 2023). Interestingly, an earlier paper from 2016 indicates that opposite preferences may be held by professionals working in the field (Kenny et al., 2016), reflecting a potential gap in understanding the neurodiversity narrative even within this community. Language around autism and disabilities is arguably ever-evolving, and a shift towards identify-first language may reflect a wider acceptance of the neurodiversity-affirmative paradigm in recent years. Although it is important to note that identity-first language preference is more predominant in English-speaking countries, there may be global cultural differences, such as one study reporting person-first language preference in the Dutch population (Buijsman et al., 2023). However, a common misconception is that the neurodiversity movement underplays, or is erasing, the difficulties faced by individuals, including those who may also be intellectually disabled or have other co-occurring conditions, and by extension that this narrative may also fail to validate struggles faced by other autistic individuals (Happé & Frith, 2020). On the contrary, the movement fully acknowledges autistic challenges and advocates to seek the appropriate support and resources, whilst highlighting autistic strengths, which are often overlooked in the medical model (Chapman, 2021).

Despite this growing impact of the neurodiversity-affirmative movement, the emphasis across current healthcare approaches to autism is still to seek to 'treat' autistic 'symptoms'. One example of this is the widely used applied behavioural analysis (ABA). ABA was first established by Wolf et al. (1963), and its principles have informed various forms of well-established ABA-based behavioural interventions. These often utilize negative reinforcement and/or positive reinforcement derived from operant conditioning principles, to change perceived problematic/challenging behaviours (Yu et al., 2020). Increasingly, autistic advocates and individuals with lived experience of ABA interventions report significant negative long-term consequences, which highlight the controversial foundations of these interventions (Leaf et al., 2022). Many autistic individuals refer to their ABA experience as traumatic, with detrimental mental health impacts, especially due to the underlying intention of 'fixing' autistic individuals to behave in line with 'neurotypical' behaviours (Anderson, 2023). In accordance with this, autism

advocates are now campaigning actively to change current clinical practices to incorporate an emerging understanding of natural variations of the human brain, which underpin the principles of neurodiversity.

Within the autistic advocacy movements, we observe a shift towards positive aspects of neurodivergence, and a new focus on well-being and quality of life. On a larger scale, intellectual disability advocacy has shifted towards strength-based approaches and in so doing tied the concept of quality of life to subjective perceptions of individuals (Schalock & Verdugo Alonso, 2013; Waldock, 2019). Quality of life here encompasses social relationships, self-determination, material well-being, as well as subjective and mental well-being (Schalock et al., 2011). Our use of the terms well-being and quality of life in this review was informed by our Lived Experience Advisory Panel (LEAP), who advised us to abstain from a rigid definition of the terms to capture a wide range of factors contributing to autistic well-being and quality of life. We aligned our definition to that of the World Health Organization (WHO), which implies a definition of well-being within the context of health as a positive state of functioning and 'feeling good', rather than simply an absence of ill health (Organization WH, Commission I, 1948). In this view, well-being encompasses both eudaemonic and hedonic perspectives as a positive state and/or subjective state of living well, that may be highly variable based on individual perception. The terms well-being and quality of life are conceptually different, with the latter often implying an objective view on whether a person lives a good life, although a recent model suggests an integrated model of the two (Skevington & Böhnke, 2018). In this review, we focus on subjective well-being and quality of life, which is defined by the WHO as general life satisfaction and positive affect, and is relevant to include as a measure of psychological, social and physical well-being (Group, 1995). An influential model to characterize health, illness, and well-being is the 'biopsychosocial model (Engel, 1977), in which these factors are considered in a multidimensional framework (Borrell-Carrió et al., 2004).

Research evidence has established that well-being and quality of life are significantly lower in autistic individuals compared to neurotypical populations (Ayres et al., 2018; Chiang & Wineman, 2014; Kapp, 2018; Oakley et al., 2021). Accordingly, previous research has focused primarily on negative determinants, that is, factors that reduce the quality of life or may lead to poorer well-being in autistic individuals across the lifespan (Adams et al., 2019; Botha & Frost, 2020). For instance, autistic people have a high prevalence of psychiatric disorders, such as depression and anxiety, which have a negative impact on well-being (Leyfer et al., 2006; Simonoff et al., 2008; Strang et al., 2012). Interestingly, while much research has been undertaken to assess the well-being of carers, parents, or other family members of autistic individuals, this has taken place often without consideration of the well-being of the autistic person themselves (Cardon & Marshall, 2021; Green, 2013). Although autistic traits are reportedly a significant predictor of quality of life (Mason et al., 2018; Oredipe et al., 2023), there appear to be external (e.g., social) factors that also contribute to both objective and subjective aspects of individual well-being (Kapp, 2018). Nevertheless, far fewer studies have focused on the factors contributing to well-being within the autistic population, in contrast to the predominant focus on negative well-being outcomes and interest in the well-being of the family of autistic individuals.

As autism research acknowledges and shifts towards a neurodiversity-affirmative approach, there is a need to identify the effect of how the neurodiversity movement is shaping the current and future research agenda. The aim of this scoping review was therefore to systematically establish and summarize current literature on autistic well-being within a neurodiversity-affirmative framework.

Here, we consider well-being and quality of life as subjective states of feeling well and living a good life. We scope these factors within a biopsychosocial context. Therefore, we sought to collate current research to identify which biopsychosocial factors contribute to, or are 'protective' for, the well-being of autistic individuals. This was conducted using the structured methodology of a scoping review (Lockwood et al., 2019), to map relevant existing research that is in line with the neurodiversity-affirmative movement, and identify any areas where there is an absence or paucity of key research evidence.

Materials and methods

This review was conducted in accordance with the guidelines outlined by the JBI methodology for scoping reviews (Peters et al., 2020) and was preregistered (https://doi.org/10.17605/OSF.IO/P8UAH). Supplementary materials can be found on the same link.

Research question

The question of this scoping review was: which biological, psychological, and social factors contribute to well-being in autistic individuals under the neurodiversity-affirmative narrative across the lifespan? We consulted a Lived Experience Advisory Panel (LEAP) of four autistic adults prior to pre-registration to inform the review question and methods. Together with our LEAP, we decided to focus on contributions to well-being, rather than investigate negative well-being (i.e., factors that negatively impact well-being), and to keep the age range widely inclusive to better understand well-being across the lifespan. We pre-registered the finalized protocol (Najeeb & Quadt, 2023).

Search strategy

Data sources and search terms. We identified search terms for the key themes of the review question by scrutinizing other reviews on the subject, to collate and modify search terms utilized in similar areas. We conducted an initial preliminary search to understand the scope of the published studies on the databases PubMed and Scopus. Due to the low specificity of the initially selected search terms, we refined the search strategy to further focus the scope of the search. The search terms 'better outcome', 'better clinical outcome', and 'better health' were searched independently in conjunction with 'autism'. This resulted in the non-specificity of study results, which was refined to pairing the search terms. We subsequently updated the search strategy and preregistration to highlight this amendment (Supplementary Material A). The databases for the final search we selected were Scopus, PubMed, Web of Science and The Cochrane Library. We also utilized Medical Subject Headings.

Inclusion criteria and exclusion criteria. We included studies whose sample were autistic individuals with or without co-occurring conditions. Studies with a sample of other conditions who incidentally had autistic participants, but were not focused primarily on autism, were excluded. We included research written in the English language only. This is a result of the linguistic limitation with regard to the lack of appropriate empirical protocol to translate from other languages. We also included research with samples of autistic participants over the age of two years old, with a confirmed (clinician) or self-diagnosis. This age limit was discussed and agreed with the LEAP. The rationale behind the exclusion of studies with children younger than two years of age reflects the age requirement for official diagnosis. We did not exclude research based on its publication date, sample size, or based on any cultural, geographical, racial or gender factors. Our inclusion criteria were broad and inclusive of study types, such as randomized controlled trials, non-randomized control trials, longitudinal, cross-sectional, qualitative, and observational studies. We included text and opinion papers.

In line with our aim of identifying well-being within the neurodiversity-affirmative approach, we excluded any studies that were based on ABA principles, or ABA-based interventions which exercise any aligned principles. Moreover, we also excluded any studies or interventions that were not within the core principles of the neurodiversity-affirmative movement. This included research which assumes a deficit-based view of autism, has decreased or changes in autistic 'symptoms' as outcome measures, or regards autistic traits as inherently negative and in need of intervention. We further excluded any studies with a focus on negative well-being, that is, factors which negatively affect well-being, in line with the conceptual definition of well-being for this study. We excluded animal studies.

Study selection

Following the search commencement of all databases on 21st January 2023, we collated and uploaded identified citations into EndNote 20.4.1/2020, with the removal of any duplications. PN and LQ independently progressed (PN and LQ) screening the title and abstracts of collated studies against inclusion and exclusion criteria. PN and LQ then conducted a rigorous full-text analysis of retrieved citations against the inclusion and exclusion criteria and recorded reasons for exclusion. Furthermore, we resolved any disagreements through further discussions throughout this process. Figure 1 shows the selection process, which is presented in the flow diagram of Preferred Items for Systematic Reviews and Meta-analyses extension for scoping review.

Charting data

PN extracted data from included studies, utilizing the data extraction tool, as presented in Supplementary Material B. This tool was developed by PN with oversight from LQ and includes the following information: authors, study title, study type, outcome measures, participant details: age groups, population, and summary of results. Using the summary of results, the charting tool was expanded to include themes identified by principles of thematic analysis, and area of research, alongside subgrouping within biological, psychological and social categories. We also collected data for the years published in a separate table, to chart the frequency of studies published throughout the years. We used Microsoft Excel to discuss, finalize, and chart data. PN conducted extraction of data and themes, with oversight of LQ.

Data collation, summarize and report results

We use tabular form and flow diagrams to present the results, with the use of a narrative synthesis. We highlight aspects which correspond to well-being contributions in the summary of results and omit any information that is not of relevance to the topic.

Results

We obtained 7444 total publications from the databases, with 3977 remaining after the removal of duplicates (Figure 1). We screened titles and abstracts of these records and retrieved 253 reports. We identified 239

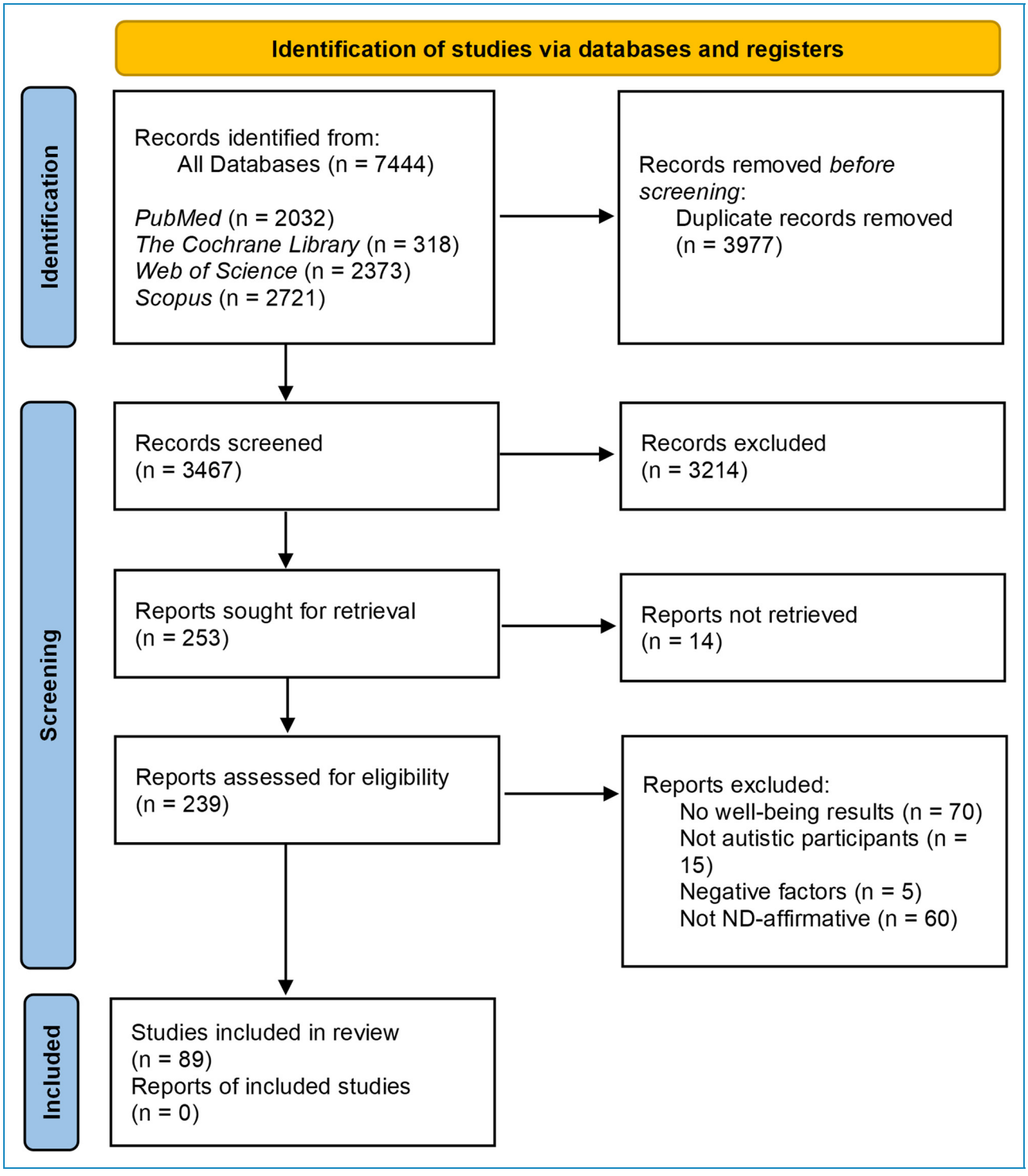

Figure 1. PRISMA flow diagram summarizing the data selection process for this review.
PRISMA: Preferred Items for Systematic Reviews and Meta-analyses.

reports for more stringent screening for exclusion criteria. In total, we included 89 studies within the final data sample for collation (Table 1, ordered by citation). We present all charted data in Supplemental Table 1.

Study characteristics

The final number of publications collated after the selection process was 89. These studies were published between the years 2006 and 2023. Figure 2 shows the general trend in

Table 1. Summary of study characteristics of $N = 89$ included reports.

Author	Year	Target population (age range, *N*)	Well-being category	Themes	Well-being factors
Kapp (2018)	2018	All ages	Psychological, social	Self-empowering characteristics, role of the wider community, social adaptations and lessons from COVID-19, miscellaneous	Autonomy, self-acceptance, social support, environmental adaptations, employment, neurodiversity movement
Waldron et al. (2022)	2022	Older adults (51–79) $N = 30$	Biological, psychological	Self-empowering Characteristics	Physical activity, nutrition, mindfulness
Kuo et al. (2022)	2022	All ages	Biological, social	Social adaptations and lessons from COVID-19, miscellaneous	Neurodiversity-oriented care, transition-focused interventions/ support, autism-friendly services
Moseley et al. (2021)	2021	Older adults (41–66) $N = 17$	Biological, psychological	Self-empowering characteristics	Menopause, self-awareness, self-compassion, self-acceptance
Pavlopoulou (2020)	2020	Adolescents (12–17) $N = 54$	Biological, psychological	Self-empowering characteristics	Agency of daytime activities, autonomy
Asbury and Toseeb (2023)	2023	Children and adolescents 478	Biological, social	Social adaptations and lessons from COVID-19	Remote studying
Henderson et al. (2023)	2021	Adults (45–75) ($N = 220$)	Biological	-	Sleep efficiency
Warner et al. (2019)	2019	All ages	Biological	Miscellaneous	Annual health checks, autism-friendly services
Brewin et al. (2008)	2008	Children (4–13) $N = 9$	Biological, social	Role of the wider community, social adaptations and lessons from COVID-19	Regular physical activity, awareness programs, predictability
Billstedt et al. (2011)	2011	Adults (17–40) $N = 120$	Social	Role of the wider community	Recreational activities
Harmens et al., (2022a)	2022	Female adults (18+) $N = 96$	Psychological	Impact of diagnosis and self-identity	Diagnosis, identity
Harmens et al. (2022b)	2022	Female adults (20–50) $N = 23$	Psychological	Impact of diagnosis and self-identity, self-empowering characteristics	Diagnosis, self-acceptance
Oredipe et al. (2023)	2023	Adults (18–50) $N = 78$	Psychological, social	Impact of diagnosis and self-identity,	Diagnosis, autonomy, social

(continued)

Table 1. Continued.

Author	Year	Target population (age range, *N*)	Well-being category	Themes	Well-being factors
				self-empowering characteristics, role of the wider community, miscellaneous	connectedness, neurodiversity movement
Seers and Hogg (2023)	2022	Adults (24–53) *N* = 8	Social	Role of the wider community	Social connectedness, societal acceptance, social support
Leedham et al. (2020)	2020	Older females (43–64) *N* = 11	Psychological	Impact of diagnosis and self-identity, self-empowering characteristics	Positive self-identity, self-compassion
Corden et al. (2021)	2021	Adults (18–65) *N* = 151	Psychological	Impact of diagnosis and self-identity	Diagnosis, self-identity
Cooper et al. (2021)	2021	Adults (16–70) *N* = 140 (Study 1) *N* = 15 (Study 2)	Psychological	Self-empowering characteristics	Self-acceptance, self-esteem
Cooper et al. (2023)	2022	Young adults (15–22) *N* = 121	Psychological	Impact of diagnosis and self-identity	Positive self-identity
Lamash and Meyer (2023)	2022	Adults (19–47) *N* = 17	Psychological	Impact of diagnosis and self-identity	Diagnosis, positive self-identity
Cribb et al. (2019)	2019	Adolescents, young adults (16–20) *N* = 26	Psychological, social	Self-empowering characteristics, role of relationships and forms of support, miscellaneous	Autonomy, social connections, employment
Cheak-Zamora et al. (2022)	2022	Young adults (18–25) *N* = 15	Psychological	Self-empowering characteristics	Autonomy
Tesfaye et al. (2023)	2022	Adolescents (11–18) *N* = 31	Psychological, social	Impact of diagnosis and self-identity, self-empowering characteristics, role of relationships and forms of support	Positive self-identity, autonomy, creative expression, special interests, social connections
Van Hees et al. (2015)	2015	Young adults (18–25) *N* = 23	Social	Role of the wider community, social adaptations, and lessons from COVID-19	Recreational activities, awareness programs, academic support, mentoring, environmental adaptations, flexible schedules, awareness programs
Lichtlé et al. (2022)	2022		Social	Role of relationships and	Social connections, predictability

(continued)

Table 1. Continued.

Author	Year	Target population (age range, *N*)	Well-being category	Themes	Well-being factors
		Adults (23–51) *N* = 10		forms of support, social adaptations and lessons from COVID-19	
Tomczak et al. (2022)	2022	Adults (*N* = 13) (Autistic *N* = 4)	Psychological	Cognition	Working from home, electronic communication methods, flexible working
Tomczak (2022)	2022	Adults (*N* = 21)	Psychological	Self-empowering characteristics	Autonomy
Kojima (2020)	2020	Young adults (survey *N* = 345) (interview *N* = 33)	Psychological, social, miscellaneous	Self-empowering characteristics, role of the wider community	Self-esteem, recreational activities, employment
Kandalaft and DeBrabander (2021)	2021	Male adults (19–32) *N* = 7	Psychological, social	Miscellaneous	Employment
Edelson et al. (2021)	2021	Older adults	Social	Role of the wider community, miscellaneous	Awareness programs, employment
Hedley et al. (2021)	2021	Adults (20–71) *N* = 103	Social	Social adaptations and lessons from COVID-19, miscellaneous	Reduced social obligations, employment
Ozsivadjian et al. (2022)	2022	Adolescents *N* = 30 (Autistic *N* = 18)	Social	Role of relationships and forms of support, social adaptations and lessons from COVID-19	Social connections, reduced social obligations, reduced sensory demands, flexibles schedules
Beck et al. (2020)	2020	Adults (22–63) *N* = 12	Psychological	Self-empowering characteristics	Mindfulness
Coleman-Smith et al. (2020)	2020	Adults (18–65) *N* = 10	Psychological, social	Impact of diagnosis and self-identity, role of the wider community	Diagnosis, social connectedness, social support
Hwang et al. (2017)	2017	Adults *N* = 24 (autistic *N* = 15)	Psychological, social	Impact of diagnosis and self-identity, self-empowering characteristics, role of relationships and forms of support miscellaneous	Autonomy, diagnosis, self-acceptance, social support, social network, employment, pets, accommodation
Ferenc et al. (2022)	2022	Adults (16–26) *N* = 109	Psychological	Impact of diagnosis and self-identity, miscellaneous	Positive self-identity, neurodiversity movement

(continued)

Table 1. Continued.

Author	Year	Target population (age range, *N*)	Well-being category	Themes	Well-being factors
Greenspan et al. (2023)	2022	Adolescents (13–17) *N* = 31	Psychological, social	Impact of diagnosis and self-identity, role of the wider community	Positive self-identity, social connectedness
Maitland et al. (2021)	2021	Adults (18–67) *N* = 184	Psychological	Impact of diagnosis and self-Identity	Positive self-identity
Pavlopoulou et al. (2022)	2022	Adolescents (13–15) *N* = 12	Psychological	Impact of diagnosis and self-identity, self-empowering characteristics, role of the wider community	Autonomy and self-identity through gaming, creative expression, recreational activities
Teti et al. (2016)	2016	Young adults (16–22) *N* = 11	Psychological	Impact of diagnosis and self-identity, self-empowering characteristics	Positive self-identity, special interests
Kim (2019)	2019	Adults (18+) *N* = 3231	Psychological, social	Impact of diagnosis and self-identity, self-empowering characteristics, role of relationships and forms of support miscellaneous	Positive self-identity, self-determination, formal support, social participation, employment
Webster and Garvis (2020)	2020	Adults (22–55) *N* = 10	Psychological	Self-empowering characteristics	Self-determination, self-acceptance, autonomy, self-awareness
Mantzalas et al. (2022)	2022	Adults	Psychological, social	Self-empowering characteristics, role of the wider community	Special interests, self-awareness, social support
Chapman and Evans (2020)	2020	Adolescents (15) *N* = 1	Psychological	Self-empowering characteristics	Mindfulness, creative expression
Korošec et al. (2024)	2022	Adults (24–69) *N* = 13	Psychological	Self-empowering characteristics, cognition	Creative expression, emotional regulation through music
Lam et al. (2020)	2020	Young adults (19–25) *N* = 14	Psychological, social	Self-empowering characteristics, role of the wider community	Creative expression, social support, social connectedness
Finch et al. (2022)	2022	Adults (autistic 20–71) *N* = 45 (Autistic *N* = 29)	Psychological, social	Self-empowering characteristics, role of relationships and forms of support, social adaptations and lessons from covid-19 miscellaneous	Self-esteem, social network, social connections, environmental adaptations, employment

(continued)

Table 1. Continued.

Author	Year	Target population (age range, *N*)	Well-being category	Themes	Well-being factors
Lee et al. (2020)	2020	Adolescents *N* = 105 (autistic *N* = 53)	Psychological, social	Self-empowering characteristics, role of the wider community, role of relationships and forms of support	Strengths use, self-esteem, social connectedness, social network
Cai and Brown (2021)	2021	Adults	Psychological	Self-empowering characteristics	Self-compassion, mindfulness
Nocon et al. (2022)	2022	Adults (19–75) *N* = 47	Psychological	Self-empowering characteristics	Hopefulness
Folta et al. (2022)	2022	Young adults (18–23) *N* = 18	Psychological, social	Self-empowering characteristics, role of the wider community	Recreational activities
Bishop-Fitzpatrick et al. (2017)	2017	Adults (24–45) *N* = 67	Psychological	Self-empowering characteristics	Recreational activities
Gaona et al. (2019)	2019	Adolescents (16–19) *N* = 12	Psychological, social	Self-empowering characteristics, social adaptations and lessons from COVID-19	Autonomy, easing transition
Cachia et al. (2016)	2016	All ages *N* = 161 (Autistic *N* = 126)	Psychological	Self-empowering characteristics	Mindfulness
Taylor et al. (2023)	2023	Adults (18–63) *N* = 276 (Autistic *N* = 138)	Psychological	Self-empowering characteristics	Strengths use
Goddard and Cook (2022)	2022	Young adults (19–26) *N* = 10	Psychological, social	Self-empowering characteristics, role of relationships and forms of support	Special interests, social mentoring to ease transition to university, social connections
Grove et al. (2018)	2018	Adults (*N* = 687)	Psychological	Self-empowering characteristics	Special interests
Hosozawa et al. (2021)	2021	Children (5–14) *N* = 9983 (Autistic *N* = 9713)	Psychological	Cognition	Deliberate decision-making
Cai et al. (2019)	2019	Adolescents and young adults (14–24) *N* = 56	Psychological	Cognition	Reappraisal

(continued)

Table 1. Continued.

Author	Year	Target population (age range, *N*)	Well-being category	Themes	Well-being factors
Bos and Stokes (2019)	2019	Adolescents *N* = 48 (Autistic *N* = 24)	Psychological	Cognition	Cognitive empathy, affective empathy
Muniandy et al. (2022)	2022	Adults (15–80) *N* = 255	Psychological	Cognition	Engagement coping strategies
Robeyns (2016)	2016	All ages	Psychological, social	Cognition, role of social relationships and forms of support	Absence of sensory overload, autistic community spaces, appropriate care provision
Danker et al. (2016)	2016	Adolescents (7–21) *N* = 16976	Social	Role of the wider community	Social connectedness, social support, supportive learning environment
Curtin et al. (2016)	2016	Adolescents (13–18) *N* = 9	Social	Role of the wider community, role of relationships and forms of support	Social connectedness, mentoring
Martin et al. (2017)	2017	Adults (18+) *N* = 12	Social	Role of relationships and forms of support	Mentoring
Ashburner et al. (2018)	2018	Young adults (17–21) *N* = 11	Social	Role of relationships and forms of support	Support network, mentoring
Kim and Bottema-Beutel (2019)	2019	All ages (*N* = 8) (9 blogs)	Social	Role of the wider community	Social connectedness, social support
Ward et al. (2018)	2018	Adults *N* = 106	Social	Role of relationships and forms of support	Social connections, social media use
Bailey et al. (2020)	2020	Young adults (survey = 42) (interview = 23)	Social	Role of the wider community, role of relationships and forms of support	Social connectedness, social support, social network
Bishop-Fitzpatrick et al. (2018)	2018	Adults (18–44) *N* = 65 (Autistic *N* = 40)	Social	Role of the wider community	Social support
Brandsma et al. (2022)	2022	Adolescents and young adults (12–23) *N* = 33	Social	Role of the wider community	Social support
Charlton et al. (2023)	2023	Older adults	Social	Role of the wider community	Social support

(continued)

Table 1. Continued.

Author	Year	Target population (age range, *N*)	Well-being category	Themes	Well-being factors
		(40–83) *N* = 388			
Crompton et al. (2023)	2023	Young adults (18–30 *N* = 13	Social	Role of the wider community	Social support, autistic community
Huang et al. (2024)	2022	Adults (20–72) *N* = 137	Social	Role of relationships and forms of support	Informal support, formal support
Park and Mortell (2020)	2020	Young adults (18–23) *N* = 4	Social	Role of the wider community	Social support, tailored support
Renty and Roeyers (2006)	2006	Adults (18–53) *N* = 58	Social	Role of the wider community	Social support
Southby and Robinson (2018)	2018	Adults *N* = 30 (autistic *N* = 14)	Social	Role of the wider community	Social support, community connectedness
Tsermentseli (2022)	2022	Adults (18–45) *N* = 67 (autistic *N* = 57)	Social	Role of the wider community	Social support
Atherton et al. (2022)	2022	Adults (18–63) *N* = 735 Autistic *N* = 326, interview = 12	Social	Role of the wider community, miscellaneous	Social connectedness, pet ownership
Botha et al. (2022)	2022	Adults (21–62) *N* = 20	Social	Role of the wider community	Social connectedness
Milton and Sims (2016)	2016	Adults	Social	Role of the wider community	Social connectedness, autistic community
Müller and Cannon (2016)	2016	Adults (18–28) *N* = 23	Social	Role of the wider community, miscellaneous	Social connectedness, employment, education
Pearlman-Avnion et al. (2017)	2017	Adults (17–62) *N* = 31	Social	Role of relationships and forms of support	Social connections
Cage et al. (2022)	2022	Adults (18–67) *N* = 196	Social	Role of the wide community	Autistic community connectedness
Petty et al. (2023)	2022	Adults (45–54) *N* = 98	Social	Role of relationships and forms of support	Awareness programs,

(continued)

Table 1. Continued.

Author	Year	Target population (age range, *N*)	Well-being category	Themes	Well-being factors
		(Autistic *N* = 14)			environmental adaptations, flexible schedules
Deserno et al. (2017)	2017	Adults (16–91) *N* = 2341	Social	Role of the wider community	Social engagement
Cameron et al. (2022)	2022	Adults (16–90) *N* = 22,998	Social	Role of the wider community	Recreational activities
Stiller et al. (2019)	2019	Children (4–17) interview = 13 survey = 327 (parents only)	Social	Role of the wider community	Recreational activities
Smith et al. (2019)	2019	Adults (18–55) *N* = 20	Social	Role of social relationships and forms of support	Perception of social interactions
Mason et al. (2018)	2018	Adults (17–80) *N* = 370	Social	Role of relationships and forms of support, miscellaneous	Employment, formal support, information support, social connections

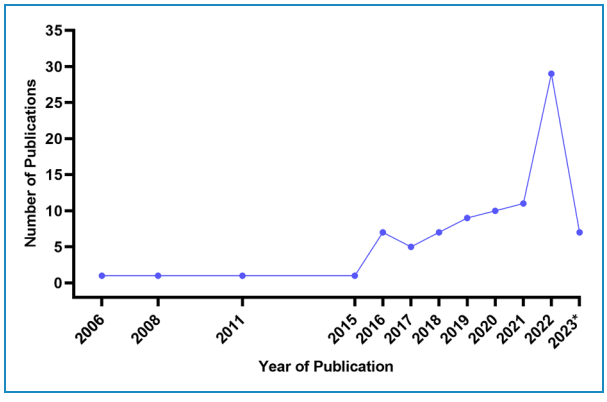

Figure 2. Number of studies published. This graph summarizes the quantity of studies published each year from the final studies included in this review. The years of search had no retrospective limit. (*N* = 89) *Only representative of publications until 21 January 2023.

these publications, with a distinct increase in neurodiversity-affirmative research on well-being over the years, particularly since 2020. The most popular years for publications were 2022 (*N* = 29), 2021 (*N* = 11) and 2020 (*N* = 10). There is a lower reported number of publications for 2023, indicative of the early data collection in the year. It is not reflective of the total publications in that year, rather it is suggestive of a larger future output, as seven publications have already been published within the first month.

In terms of the publication of origin, the countries included in this review are largely representative of Anglophone countries, as seen in Figure 3A. We report target populations in categories as shown in Figure 3B. The target population sub-groups were defined by each study's individual definitions of their age categories. Details on the age range in each study can be found in Supplemental Table 1. A vast majority of the studies focused on the adult population, followed by young adults, and adolescents. The adult group also accounted for studies targeting male (*N* = 1) and female (*N* = 2) adults only. Children were the most under-researched group (*N* = 3), whilst one study focused on children and adolescents.

There were also very few studies looking at older adults, with some studies investigating older female adults. Qualitative studies predominantly make up these studies, followed by quantitative and mixed methods studies (Figure 3C).

Figure 4 summarizes well-being factors (Figure 4A) and themes (Figure 4B) in age groups. Social and psychological factors dominate all age groups, with no biological factors reported in adolescents and young adults. However, biological factors make up a third of well-being factors in children and combined children and adolescents' studies. In

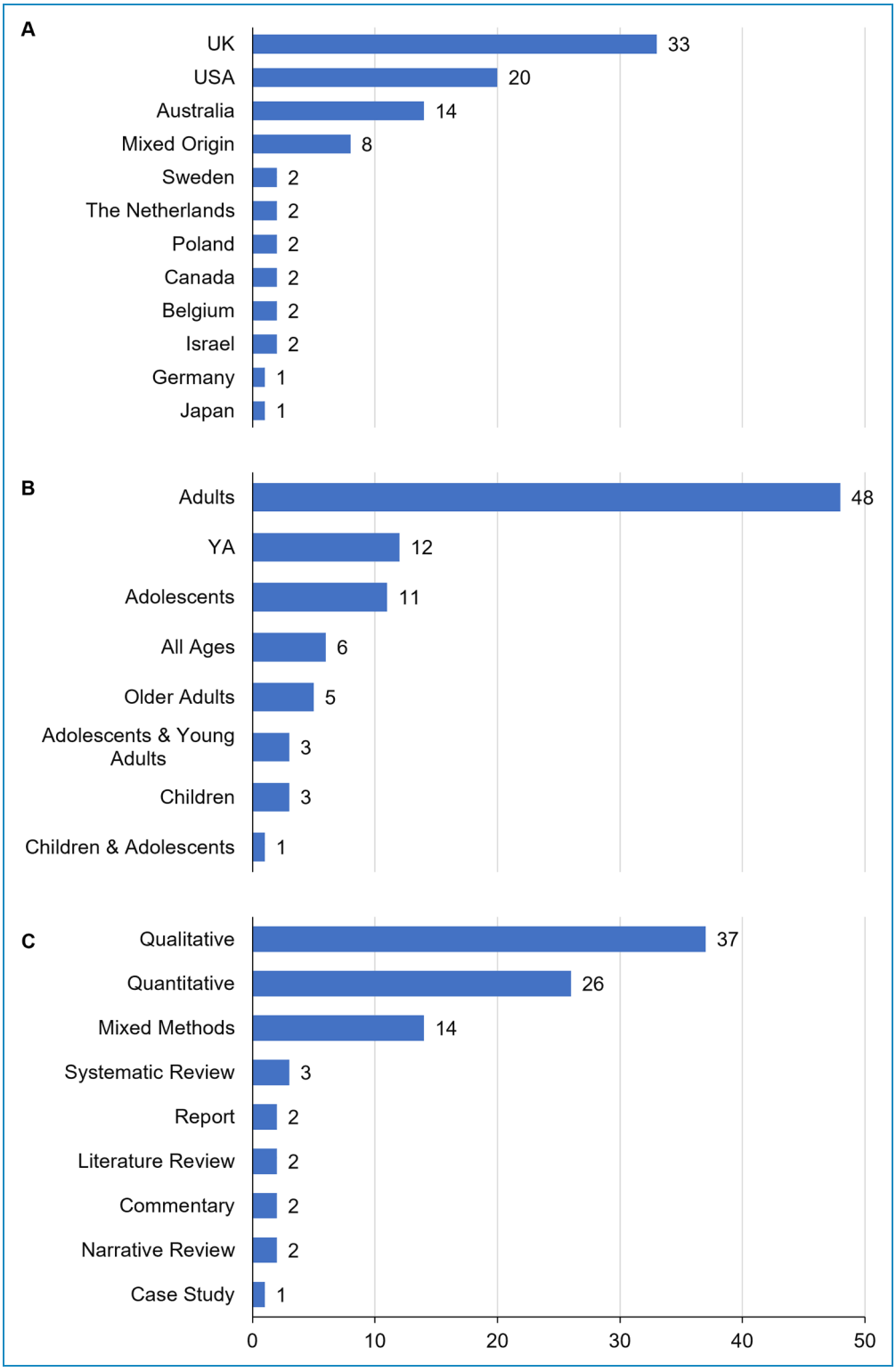

Figure 3. Study characteristics. This figure shows the publication origins, target populations, and study types ($N = 89$). (A) summarizes the country of origin for publications included in this review. UK = United Kingdom, USA = United States of America. (B) shows the target populations for all the publications included in this review. Studies which were including a wider range of participants spanning across different age groups are shown within their own designated categories: children and adolescents, adolescents, and young adults. YA = young adults, OA = older adults. (C) displays study types.

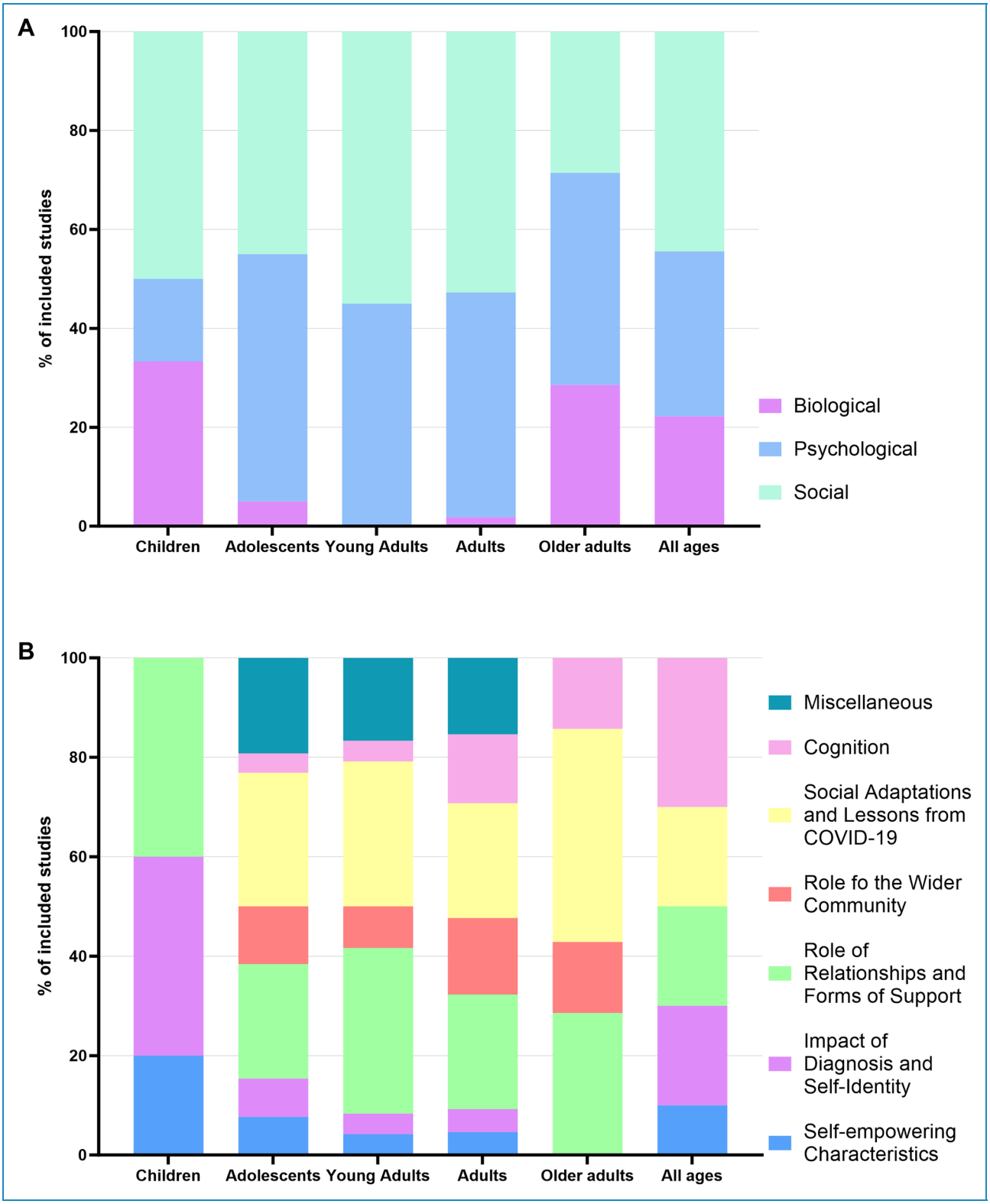

Figure 4. Well-being factors (A) and themes (B) by age group. This figure represents factors and themes that were included in the study.

this group, no studies fall within the themes of 'Impact of Diagnosis and Self-Identity' or 'Role of Relationships and Forms of Support', while 'Social adaptations and Lessons from COVID-19' and 'Role of the Wider Community are most prominent. Cognition is not represented widely across age groups, while 'Role of Relationships and

Forms of Support' is widely reported to be an important factor for well-being. Importantly, the number of studies included in this review for each factor and theme represents the quantity of research within the neurodiversity-affirmative paradigm. They do not necessarily correspond to the importance of each factor and theme for well-being in autistic people in the respective age groups.

In the next sections, we will further detail the findings of biological, psychological and social factors, a summary of which is provided in Table 1

Biological factors

The publications pertaining to biological factors contributing to well-being were not as prevalent as psychological and social factors, with eight studies (Asbury & Toseeb, 2023; Brewin et al., 2008; Henderson et al., 2023; Kuo et al., 2022; Moseley et al., 2021; Pavlopoulou, 2020; Waldron et al., 2022; Warner et al., 2019) identifying the biological aspects of well-being. Five studies (Henderson et al., 2023; Moseley et al., 2021; Pavlopoulou, 2020; Waldron et al., 2022; Warner et al., 2019) covered a combination of biological and psychological aspects, and three studies (Asbury & Toseeb, 2023; Brewin et al., 2008; Kuo et al., 2022) reported on a combination of biological, psychological, and social aspects of well-being, rather than seeking a biological perspective exclusively. One study, within the context of self-care contributing to well-being, identified the role of nutritional practices (Waldron et al., 2022), with some older autistic adults preferring routine and consistency in eating habits. The authors also suggest that older autistic adults with an awareness of healthy eating may manage good eating habits through a preference for sameness and routine. The same study also found that a wide range of physical activities had psychological and physical benefits.

Another area of biological well-being identified was the experience of menopause for autistic people with female reproductive organs (Moseley et al., 2021). Menopause can be a contributing factor to well-being through the empowerment of understanding and awareness of differences in this experience compared to a neurotypical experience. Moreover, participants reported that associated biological changes, such as cessation of periods and 'reduced female pressures' can be beneficial, whilst some also reported the process of menopause increasing self-care habits in order to actively combat psychological challenges (Moseley et al., 2021).

Studies focusing on sleep (Henderson et al., 2023; Pavlopoulou, 2020) ($N = 2$), found that health and general happiness correlated positively with sleep efficiency (Henderson et al., 2023). Additionally, a sense of agency in daytime activities (Pavlopoulou, 2020) can also encourage better sleep management (Henderson et al., 2023; Pavlopoulou, 2020). This suggests that better sleep efficiency and/or management can improve well-being. Another study (Asbury & Toseeb, 2023) reported improvements in the physical well-being of autistic children during the COVID-19 pandemic when requirements of in-person attendance to schools were stopped temporarily, with one parent reporting the elimination of their child's chronic headaches.

A final area of interest to improve physical well-being for autistic populations was identified through a workshop and a research agenda (Kuo et al., 2022; Warner et al., 2019) aiming to identify high-priority areas. These studies suggested autism-friendly services (Kuo et al., 2022; Warner et al., 2019) ($N = 2$) and annual health checks (Warner et al., 2019) to improve well-being.

Psychological factors

Psychological factors were the aspects of well-being that were most prevalently researched, accounting for 70 publications from the final review sample. Twenty-four studies reported only psychological aspects of well-being, with no cross-consideration of biological and social factors. The topics researched were vast, including but not exclusive to the impact of autism diagnosis ($N = 7$; Billstedt et al., 2011; Corden et al., 2021; Harmens et al., 2022a; 2022b; Leedham et al., 2020; Oredipe et al., 2023; Seers & Hogg, 2023), autistic identity ($N = 3$; Cooper et al., 2021; 2022; Lamash & Meyer, 2023), transition to adulthood ($N = 3$; Cheak-Zamora et al., 2022; Cribb et al., 2019; Tesfaye et al., 2023), academic/educational experience ($N = 3$; Brewin et al., 2008; Lichtlé et al., 2022; Van Hees et al., 2015), employment ($N = 4$; Kandalaft & DeBrabander, 2021; Kojima, 2020; Tomczak, 2022; Tomczak et al., 2022) and identification of research areas to improve well-being and physical health ($N = 3$) (Edelson et al., 2021; Kuo et al., 2022; Warner et al., 2019). Some studies also analyzed the impact of the COVID-19 pandemic ($N = 3$; Asbury & Toseeb, 2023; Hedley et al., 2021; Ozsivadjian et al., 2022) and mindfulness interventions ($N = 3$) (Beck et al., 2020).

Impact of diagnosis and self-identity. Seven studies identified receiving an autism diagnosis (Coleman-Smith et al., 2020; Corden et al., 2021; Harmens et al., 2022a; 2022b; Hwang et al., 2017; Lamash & Meyer, 2023; Oredipe et al., 2023) itself as a factor that positively contributed to well-being, particularly in terms of propelling further progress with self-identity. In relation to self-identity ($N = 11$; Cooper et al., 2023; Corden et al., 2021; Ferenc et al., 2022; Greenspan et al., 2023; Lamash & Meyer, 2023; Leedham et al., 2020; Maitland et al., 2021; Pavlopoulou et al., 2022; Seers & Hogg, 2023; Tesfaye et al., 2023; Teti et al., 2016) which we identified as the most prevalent factor, positive self-identity ($N = 7$) (Cooper et al., 2023; Ferenc et al., 2022; Kim, 2019; Lamash & Meyer, 2023;

Leedham et al., 2020; Tesfaye et al., 2023; Teti et al., 2016) was reported as beneficial for psychological well-being. Within this same context, some studies reported the association of identifying with the neurodiversity-affirmative paradigm as propelling positive self-identity (Ferenc et al., 2022; Kapp, 2018). One study (Coleman-Smith et al., 2020) reported receiving an autism diagnosis as important for understanding other aspects of identity, such as gender identity in autistic individuals with gender dysphoria. Some studies also considered time until diagnosis (Ferenc et al., 2022; Oredipe et al., 2023), with the consensus that an earlier diagnosis was associated with better well-being through greater time to form a positive self-identity. Another study (Oredipe et al., 2023) reported that receiving a diagnosis in later life may be associated with more positive emotions due to more autonomy and connection to the neurodiversity movement.

Self-empowering characteristics. In terms of self-empowering characteristics which may be potentially protective against poor well-being were self-acceptance ($N = 6$; Cooper et al., 2021; Harmens et al., 2022b; Hwang et al., 2017; Kapp, 2018; Moseley et al., 2021; Webster & Garvis, 2020), self-awareness ($N = 3$; Mantzalas et al., 2022; Moseley et al., 2021; Webster & Garvis, 2020), creative expression ($N = 5$; Chapman & Evans, 2020; Korošec et al., 2024; Lam et al., 2020; Pavlopoulou et al., 2022; Tesfaye et al., 2023), self-esteem ($N = 4$; Cooper et al., 2021; Finch et al., 2022; Kojima, 2020; Lee et al., 2020), self-determination ($N = 2$; Kim, 2019; Webster & Garvis, 2020), self-compassion ($N = 3$; Cai & Brown, 2021; Leedham et al., 2020; Moseley et al., 2021) as well as hope ($N = 1$) (Nocon et al., 2022). Particularly self-awareness, self-identity and self-acceptance were common themes, both for well-being at higher age and for protection within periods of challenges and change, such as menopause (Cooper et al., 2021; Hwang et al., 2017; Moseley et al., 2021). These factors were also associated with the process of an autistic individual's experience of receiving a diagnosis and its impact (Harmens et al., 2022b). Creative expression includes music, creative outlets like YouTube, drawing, and online gaming (Pavlopoulou et al., 2022).

Another key factor identified was a sense of autonomy ($N = 11$; Cheak-Zamora et al., 2022; Cribb et al., 2019; Folta et al., 2022; Hwang et al., 2017; Kapp, 2018; Oredipe et al., 2023; Pavlopoulou, 2020; Pavlopoulou et al., 2022; Tesfaye et al., 2023; Tomczak, 2022; Webster & Garvis, 2020) which contributed to psychological well-being within multiple contexts. These include transitional periods such as late adolescence, recreational activities, workplace environments, everyday decision-making, and associated independence (Bishop-Fitzpatrick et al., 2017; Cribb et al., 2019; Folta et al., 2022; Gaona et al., 2019; Kapp, 2018; Waldron et al., 2022). Moreover, the use of mindfulness ($N = 5$; Beck et al., 2020; Cai & Brown, 2021; Cachia et al., 2016; Chapman & Evans, 2020; Waldron et al., 2022) and strengths-based programs ($N = 2$) (Lee et al., 2020; Taylor et al., 2023) were associated with better well-being. These factors were also utilized in targeted interventions, with some studies finding efficacy in mindfulness interventions ($N = 3$; Beck et al., 2020; Cachia et al., 2016; Chapman & Evans, 2020) and one study reporting positive results with strengths-based programs ($N = 1$) (Lee et al., 2020). As strengths use, five studies (Goddard & Cook, 2022; Grove et al., 2018; Mantzalas et al., 2022; Tesfaye et al., 2023; Teti et al., 2016) also reported positive effects on well-being from the presence or nurturing of special interests in autistic individuals.

Cognition. One theme within this area was aspects of cognitive processing which may improve well-being, such as deliberative decision-making ($N = 1$; Hosozawa et al., 2021), high reappraisal ($N = 1$; Cai et al., 2019), and cognitive empathy ($N = 1$) (Bos & Stokes, 2019). One study also explored emotional regulation with the support of music, with music improving well-being through modulating high and low state arousal (Korošec et al., 2024). One study suggested that the use of engagement coping strategies (e.g., problem-solving) was also identified with positive well-being, although its use was less frequent within autistic populations (Muniandy et al., 2022). Moreover, environmental adaptations to improve cognitive processing were reported as beneficial such as flexible work-from-home models and the absence of sensory overload (Robeyns, 2016; Tomczak et al., 2022).

Social factors

In total, we identified 61 studies with social factors which may contribute to well-being. The most common areas of research overlap with psychological factors, with 42 studies covering psychosocial aspects cumulatively. Only 17 studies reported social well-being alone. The areas of interest were impact of autism diagnosis ($N = 5$; Billstedt et al., 2011; Harmens et al., 2022b; Leedham et al., 2020; Oredipe et al., 2023; Seers & Hogg, 2023), employment ($N = 3$; Gaona et al., 2019; Kandalaft & DeBrabander, 2021; Kojima, 2020) and academic/educational experience ($N = 4$) (Brewin et al., 2008; Danker et al., 2016; Lichtlé et al., 2022; Van Hees et al., 2015). Areas exclusive to social factors were mentoring programs ($N = 3$; Ashburner et al., 2018; Curtin et al., 2016; Martin et al., 2017) and the use of online spaces ($N = 2$) (Kim & Bottema-Beutel, 2019; Ward et al., 2018). We discuss the role of social factors within the wider community, social relationships and support within and social adaptations better suited for autistic individuals.

Role of the wider community. The most prevalent social factors for well-being were within the context of community, including the role of an autistic individual's engagement with the community. The most prevalent factors were social support (Bailey et al., 2020; Bishop-Fitzpatrick et al., 2018; Brandsma et al., 2022; Charlton et al., 2023; Coleman-Smith et al., 2020; Crompton et al., 2023; Danker et al., 2016; Huang et al., 2024; Kapp, 2018; Kim & Bottema-Beutel, 2019; Lam et al., 2020; Mantzalas et al., 2022; Park & Mortell, 2020; Renty & Roeyers, 2006; Southby & Robinson, 2018; Seers & Hogg, 2023; Tsermentseli, 2022) ($N = 17$) and social connectedness (Atherton et al., 2022; Botha et al., 2022; Coleman-Smith et al., 2020; Curtin et al., 2016; Danker et al., 2016; Greenspan et al., 2023; Kim & Bottema-Beutel, 2019; Lam et al., 2020; Lee et al., 2020; Milton & Sims, 2016; Müller & Cannon, 2016; Oredipe et al., 2023; Pavlopoulou et al., 2022; Pearlman-Avnion et al., 2017; Seers & Hogg, 2023) ($N = 15$). Social support can be accessed in the form of peer and online support (Huang et al., 2024; Robeyns, 2016). Social connectedness was reported beneficial within various contexts, including social or work communities. Autistic community connectedness and spaces were also identified as beneficial to well-being. (Cage et al., 2022; Robeyns, 2016) These could be accessed through autistic spaces, gaming, as well as through access to online spaces. The feeling of belonging and connectedness was also linked to societal acceptance ($N = 1$) (Hwang et al., 2017). This is often facilitated by better community awareness, and some studies recommended the development of awareness programs ($N = 3$) (Brewin et al., 2008; Edelson et al., 2021; Petty et al., 2023; Van Hees et al., 2015) within community, educational and workplace settings (Van Hees et al., 2015). Social engagement (Deserno et al., 2017) was also reported as a contributor to well-being ($N = 1$).

Another common area of interest was engagement with recreational activities ($N = 7$) (Billstedt et al., 2011; Cameron et al., 2022; Folta et al., 2022; Kojima, 2020; Pavlopoulou et al., 2022; Stiller et al., 2019; Van Hees et al., 2015) for autistic individuals. Some studies specified differences in engagement with solitary versus social recreational activities, such as screen media use which can encompass both types (Stiller et al., 2019). Both provide a source of well-being, for instance, in autistic youth, solitary activities can provide psychological well-being, and social activities, especially when combined with shared interests, can provide social connection (Folta et al., 2022).

Role of social relationships and forms of support. A key factor supporting social well-being was the presence of social connections ($N = 8$; Cribb et al., 2019; Finch et al., 2022; Goddard & Cook, 2022; Lichtlé et al., 2022; Mason et al., 2018; Ozsivadjian et al., 2022; Pearlman-Avnion et al., 2017; Tesfaye et al., 2023; Ward et al., 2018) and social networks ($N = 4$) (Ashburner et al., 2018; Bailey et al., 2020; Hwang et al., 2017; Lee 2et al., 2020). Social networks refer to the presence of family, partners, friends, employees, and peers, whilst social connections indicate an emphasis on the quality of the connections within the network which were important. For instance, one study found that adolescents who speak few or no words reported the importance of certain relationships within their social circle, as well as the social connections made within the school setting (Tesfaye et al., 2023). Another study reported that individuals involved in intimate relationships had better social engagement and productive capacity (Pearlman-Avnion et al., 2017). One study suggested the moderate use of social media such as Facebook was linked to increased social connections (Ward et al., 2018). Moreover, one study reported the potential for the perception of social interactions playing a role in positive well-being (Smith et al., 2019).

Another aspect of social well-being is the supportive element for autistic individuals through the use of mentoring, informal, and formal support (Huang et al., 2024). Support can be accessed through various means including engaging with pre-existing healthcare services, appropriate care provision, online support, and peer support (Huang et al., 2024; Kim, 2019; Robeyns, 2016). Furthermore, positive well-being outcomes were reported in studies utilizing mentoring-based interventions tailored for various aspects such as being goal-oriented, providing a source of social connectedness, or easing transitional stages such as the post-school period (Ashburner et al., 2018; Curtin et al., 2016; Martin et al., 2017).

Social adaptations and lessons from COVID-19. An important area for social well-being was environmental adaptations ($N = 4$) (Finch et al., 2022; Kapp, 2018; Petty et al., 2023; Van Hees et al., 2015) within personal, educational and workplace environments for autistic individuals. These adaptations can be guided by aspects such as predictability ($N = 2$; Brewin et al., 2008; Lichtlé et al., 2022) and easing transitions ($N = 3$) (Gaona et al., 2019; Goddard & Cook, 2022; Kuo et al., 2022). Furthermore, some studies ($N = 3$) (Asbury & Toseeb, 2023; Hedley et al., 2021; Ozsivadjian et al., 2022) focused on the impact of the COVID-19 pandemic and found that some pandemic-associated adaptations increased autistic individuals' well-being. These included reduced social obligations ($N = 2$) (Hedley et al., 2021; Ozsivadjian et al., 2022) through remote working, flexible schedules ($N = 3$; Ozsivadjian et al., 2022; Petty et al., 2023; Van Hees et al., 2015) and reduced sensory demands ($N = 1$) (Ozsivadjian et al., 2022). One study found that although there were negative impacts on the mental health of autistic children, not having to attend school led to parent-reported

improvements in the psychological well-being of autistic children during the pandemic (Asbury & Toseeb, 2023).

Miscellaneous factors

We identified a positive role of pets ($N = 1$; Hwang et al., 2017) and pet ownership ($N = 1$) (Atherton et al., 2022) in autistic well-being, with the latter study identifying its benefit through its effect on mental health. Engagement with the neurodiversity movement (N=3; Ferenc et al., 2022; Kapp, 2018; Oredipe et al., 2023), having access to autism-friendly services ($N = 2$) (Kuo et al., 2022; Warner et al., 2019) and employment (Cribb et al., 2019; Edelson et al., 2021; Finch et al., 2022; Hedley et al., 2021; Hwang et al., 2017; Kandalaft & DeBrabander, 2021; Kapp, 2018; Kim, 2019; Kojima, 2020; Mason et al., 2018; Müller & Cannon, 2016) ($N = 11$) were also factors that contributed to well-being.

Discussion

The purpose of this scoping review was to map research findings on factors contributing to well-being in autistic individuals within biological, psychological, and social perspectives that were aligned with neurodiversity-affirmative principles. The review also aimed to identify any underrepresented areas of research within the subject area. The greatest number of publications was found for psychological factors followed by social, and biological factors. Biological factors were significantly under-researched with only eight studies in total. This may reflect a reluctance of the neurodiversity-affirmative movement to research biomedical factors, which are often more aligned with the medical model. Most studies were published from 2020 onwards, with a steady progression of research output each year. The most prevalently studied aspects of well-being were psychological, and particularly the role of autonomy, autistic identity, and autism diagnosis. Social support and connectedness were crucial factors in well-being, defying the persistent myth that autistic people do not seek meaningful social interactions (Chevallier et al., 2012; Quadt et al., 2023). Most publications focused on populations of autistic adults, whilst there was a significant lack of research conducted on autistic children.

Our results suggest that biopsychosocial contributors to well-being are complex and that they significantly interact with each other. The identified factors therefore most likely do not act as linear modulators for well-being. For instance, the impact of receiving an autism diagnosis could facilitate other factors like self-acceptance, self-awareness, and self-identity (Harmens et al., 2022a; Moseley et al., 2021). An autism diagnosis can also allow access to appropriate support and social connectedness (Seers & Hogg, 2023). Post-diagnosis, autistic adults may undergo an enrichment of their self-concept under a new lens and framework to understand personal strengths and challenges (Tan, 2018).

Furthermore, the conduciveness of higher levels of social connectedness and support to well-being is in line with current research in this area, where researchers find that experiences of autistic community and belonging alleviate minority stress (Botha et al., 2022). Social support contributes to all aspects of quality of life in middle-aged and older autistic individuals as well (Charlton et al., 2023). Particularly online spaces and/or autistic spaces can be beneficial, and they can provide social connectedness stemming from shared values such as advocacy of rights, which empower individuals through understanding of collective autistic identities (Botha et al., 2022; Kim & Bottema-Beutel, 2019). The neurodiversity movement itself was propelled further into the limelight by autistic advocates utilizing online spaces, sending and involving a more global audience of the autistic community to join the collective dialogue (Kras, 2010).

The COVID-19 pandemic inadvertently enlightened various adaptations better suited to neurodivergent individuals. These adaptations, which commonly resulted in increased flexibility of schedules, remote learning/working, and greater use of electronic modes of communication, have been beneficial for autistic individuals of all ages (Ozsivadjian et al., 2022; Tomczak, 2022). However, other contributing factors which promote wellbeing, such as opportunities for social contact, were reduced due to contact restrictions (Oomen et al., 2021). Furthermore, one study, although included in this review due to its reporting of certain positive aspects of well-being during the pandemic, overall concluded a reduction in well-being and higher depressive symptoms for autistic individuals in relation to the pandemic (Hedley et al., 2021).

One aspect which may contribute to the low number of identified publications for biological factors of well-being may be the lack of neurodiversity-affirmative approaches in biomedical autism research. Much biomedical autism research is firmly rooted in the medical model and often aims to find biological causes for autism with the aim of reducing or curing autism 'symptomatology'. For instance, studies measuring the effects of physical activity or exercise regimes on autistic well-being will often compare pre- and post-intervention scores of autism 'symptomatology' (Toscano et al., 2022). This implies that these studies assume that showing less autistic characteristics is a desirable outcome and further critical analysis of study methodologies may be required to understand whether this aligns with the values of the neurodiversity-affirmative movement (Toscano et al., 2022). Other studies focusing on biomedical contributors to well-being report on associated negative outcomes such as medical disorders instead (Loyacono et al., 2020). There is a need for more studies to identify biological factors contributing to well-being without an overly medicalized and deficit-based lens.

However, it is important to acknowledge that our stringent exclusion of studies that view autism from a deficit-based perspective may have led to the omission of genuine contributors to well-being. In our full-text analysis, we made a conscious effort to balance this exclusion criterion against the usefulness of the results of studies, but we appreciate that we may have overlooked some relevant research in committing to a neurodiversity-affirmative approach.

There is evidence to suggest that well-being in children can predict outcomes of well-being in adults (Richards & Huppert, 2011). However, we identified a gap in the literature on well-being research conducted in autistic children. In contrast to this paucity, there are a multitude of studies excluded in this review focused on the well-being of caretakers or parents of autistic children, but not the autistic child (McAuliffe et al., 2019; Reed & Osborne, 2019). Therefore, it is paramount to understand further which well-being factors exist for children to help elucidate understanding and to build better frameworks to support the young population. The three studies included in this review investigated factors in home and educational settings (Asbury & Toseeb, 2023; Brewin et al., 2008; Stiller et al., 2019). The use of moderate screen media use (Stiller et al., 2019) in a home setting was reported as beneficial, as were adaptations in schools to suit autistic children through the role of teaching staff (Brewin et al., 2008). The neurodiversity-affirmative framework has been controversially received by parents of autistic individuals, with some parents opposing the movement (Happé & Frith, 2020; Leadbitter et al., 2021). This may also have implications for the level of impact this framework has on research on autistic children.

This review has several limitations. First, data was extracted by PN only, as this was a requirement of their student project, although LQ had oversight and both authors discussed findings extensively. We were also limited to studies published in the English language only. This is likely reflected in the study origins being predominantly Eurocentric, such as the United Kingdom, the United States and Australia, providing a rather ethnocentric perspective of autistic well-being. Moreover, this study would also benefit from further analysis of the measures of well-being used in quantitative studies, and an assessment of their reliability would be valuable. We did not analyze data according to gender or sex ratios within studies. This was because most included studies did not provide explicit definitions of sex and gender and did not make explicit if they asked for information on sex assigned at birth, current gender identification, or if they allowed for answer options that would include trans, non-binary, or otherwise gender non-conforming individuals. Supplemental Table 1 lists the sex/gender of participants as described by each individual study.

We excluded studies using ABA or aligned principles on the basis that the autistic community deems these practices harmful. However, similar arguments may be made against any type of intervention that is not tailored for neurodivergent groups. Cognitive behavioural therapy (CBT), for example, is the standard treatment for anxiety and depression in many countries but has limited efficacy in the autistic population (Storch et al., 2015; Wang et al., 2021). However, in contrast to ABA, standard therapeutic interventions like CBT have not been developed with the goal to minimize or treat autism 'symptoms', and are often used to treat co-occurring mental health conditions, rather than autism itself. We, therefore, did not exclude studies with these standard interventions on principle but instead relied on full-text analysis to establish whether they were aligned with the neurodiversity-affirmative movement.

An important part of the neurodiversity paradigm is a shift towards co-produced research, where autistic individuals are included in the research process through Patient and Public Involvement or LEAPs. Although not included in this review, future reviews could include whether co-production was part of publications as another indicator of neurodiversity-affirmative processes.

In line with these limitations, future research understanding well-being within subgroups of autistic populations will be beneficial, such as groups with varying co-occurring conditions, individual differences within the spectrum, as well as marginalized groups such as ethnic minorities and gender-diverse individuals.

This review has also highlighted multiple approaches to exploring well-being in autistic individuals. One example of an alternative approach which was more conducive to understanding the neurodivergent experience was the use of photovoice in young autistic adults (Lam et al., 2020; Teti et al., 2016). Creative approaches like this could potentially be utilized to bridge gaps within the sub-groups that may be alienated from research due to differing communication styles to gather their perspectives, such as with children or those with alternative communication styles.

Conclusion

This scoping review highlights that there is a rapidly growing field of well-being research within autistic individuals, and whilst various biological, psychological, and social factors have been identified, they also function to improve well-being through a complex meshwork of modulation. What well-being looks like for an individual is subjective, particularly within the autistic population with varying strengths and challenges. Therefore, further research is needed to decipher the different facets of well-being within the autism spectrum.

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