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A scoping review of supports on college and university campuses for autistic post-secondary students

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Given the demand to better address the principles of equity, diversity, inclusion, and accessibility in higher education, research into both barriers and promising practices to support autistic students on post-secondary campuses has advanced significantly in the last decade. The objective of this scoping review is to identify, map, and characterize literature that enumerates and describes supports for autistic post-secondary students. This scoping review was limited to peer-reviewed research published between January 2012 and May 2022, in these databases: Web of Science, PsycINFO, Medline, EMBASE, ERIC, Social Work Abstracts, Social Services Abstracts, and EMCARE. The review aligns to Joanna Briggs Institute methodology for scoping reviews and includes consultation with an expert panel made up of the Autistic Community Partners—four autistic individuals with postsecondary experience who acted as co-researchers. Literature on creating accessible campuses were mapped in three ways: (1) through the four domains of the PASS Taxonomy; (2) ten support categories characterizing types of supports, and (3) nine emergent themes, based on autistic experiences on support and campus navigation, were inductively and iteratively coded throughout process. This review summarizes both areas that have been researched and under-studied areas in the literature that act as contributors or challenges for autistic students on postsecondary campuses. It was also the first scoping review, to our knowledge, to integrate lived experience within the methods and results analysis to describe the current state of the evidence on post-secondary campuses. Mapping the literature in known and emerging categories indicated that broad categories of support are experienced variably by autistic students. Findings provide multiple avenues for future research.

KEYWORDS

autism, post-secondary, scoping review, support, experience, equity, inclusion

Introduction

There is growing recognition of the need for equitable access to post-secondary (PS) education and inclusive campuses for autistic students. Increasing enrollment rates of autistic students have been noted by PS institutions (Shattuck et al., 2012; Barnhill, 2016) and are anticipated to grow (Kuder and Accardo, 2018). While exact enrollment rates are unknown and dependent on disclosure, it is estimated that up to 2 % of PS populations may be autistic based on known prevalence rates (Ward and Webster, 2018; White et al., 2019). On campuses, there are many areas where autistic students may benefit from supports to create equitable access and benefit from PS education. Despite growing admittance of autistic students to PS institutions and a sense of academic preparedness (Flegenheimer and Scherf, 2022), Newman et al. (2011) indicated lower completion rates for autistic students (38.8%) in comparison to general PS population (52%) in the United States. A more recent study in the Netherlands, examining predictors of academic success, found that while completion and dropout rates of autistic and control students did not significantly differ, autistic students are slower to accumulate degree credits (Bakker et al., 2022). Particularly in the last decade, there has been increased literature identifying challenges and strategies to supporting autistic students on PS campuses, as well as noting the limited implementation of autism-specific supports in PS institutions.

Most existing scoping and systematic literature reviews have focused on studies examining supports for or experiences of autistic PS students within a specific context or scope (Gelbar et al., 2014; Dallas et al., 2015; Anderson et al., 2017; Kuder and Accardo, 2018; Anderson A. H. et al., 2019; Widman and Lopez-Reyna, 2020; Cox et al., 2021; Davis et al., 2021). Gelbar et al. (2014) focused on the firsthand experiences of autistic students in the United States. Widman and Lopez-Reyna (2020) reviewed 21 studies focusing on supports for autistic students on PS campuses in the United States, through which they developed a classification for autism supports. Ames et al. (2022) mapped the availability of autism-specific supports on Canadian PS campuses. Kuder and Accardo (2018) [8 included studies] and Anderson A. H. et al. (2019) [24 included studies] conducted international systematic reviews examining studies addressing outcomes of programs and interventions that support autistic PS students. In a systematic review of 24 studies, Davis et al. (2021) examined academic and non-academic supports for autistic PS students through first-hand descriptions by autistic students, prioritizing autistic lived experiences on an international scale. Where international literature was considered, the vast majority of articles come from the United States, with limited studies originating from Australia, United Kingdom, Canada, Ireland, Belgium, the Netherlands, Israel and Japan where noted (Anderson et al., 2017; Anderson A. H. et al., 2019; Cox et al., 2021; Davis et al., 2021). These reviews reported in the literature provide a significant foundation from which to begin to understand the experiences of autistic students on PS campuses. However, their foci and aims are inconsistent; to our knowledge, only Cox et al. (2021) endeavored to review a wide range of autism postsecondary literature, and they only examined studies published before 2015. Given the rapid growth of subsequent research on autistic people's postsecondary experiences, a broader sense of the international literature on autism supports in post-secondary education is currently missing.

Due to the expansive scope of considerations impacting autistic lived experience and structuring meaningful change on campus, as

well as the need to examine the international literature, a scoping review was conducted to capture the literature holistically. This approach is ideal for mapping the existing peer-reviewed international literature to integrate autistic perspectives on supports to help frame future efforts to build capacity on PS campuses. Although there are differences in PS institutions across countries, examining innovative approaches to equity and access on campuses internationally can offer guidance by identifying best practices globally to improve the success of autistic PS students.

This scoping review aimed to map the current international peer-reviewed literature exploring post-secondary supports for autistic PS students and identify existing contributors and challenges of these supports on PS campuses. A secondary objective was to integrate the perspectives of autistic students into mapping post-secondary supports. This review of the literature sought to holistically explore factors impacting autistic students' experiences on PS campuses. To support these objectives, two research questions were proposed.

1. Within the international peer-reviewed literature, what are the existing aims and approaches to supporting autistic post-secondary students, as well as the contributors and challenges to their implementation?
2. From the perspective of autistic post-secondary students, what are the emerging areas of support on post-secondary campuses to map and explore novel areas of need for current and future research?

Methods

This review was conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews (Peters et al., 2022). This review incorporates the optional involvement of an expert panel in scoping review methodologies (Arksey and O'Malley, 2005; Levac et al., 2010; Scott et al., 2019; Pollock et al., 2022) and was completed in consultation with the 'Autistic Community Partners' (ACP), an expert panel of self-advocates. The ACP comprised 4 autistic adults with lived experience in PS education (AC, CD, CB, and TK), in addition to autistic members of the research team (HB, JR, MS, EC, and PD). These partners reviewed and approved the methodology and research directions. The purpose of this consultation was to integrate lived autistic experiences in PS into the development of the research aims and methodology. The role of the ACP and incorporation of ACP feedback have been noted throughout the paper; in particular, in methodology design and process sections.

The scoping review process has been recorded based on the suggested methods from the PRISMA extension for scoping reviews (PRISMA-ScR) (Tricco et al., 2018). For clarity, the methodology design and process are detailed below to overview the search strategy, eligibility criteria for articles, the process of study selection, and steps of mapping and extracting data from the selected studies.

Search strategy

Initial development of the search strategy was an iterative process completed in consultation with a Health Sciences librarian. A preliminary search on the topic was conducted to identify articles of

relevance, which were subsequently used to inform the development of keywords and index terms to create a search strategy. The complete search strategy was adapted for each information source and a search was completed on May 27, 2022, in the following databases: Web of Science (Clarivate), APA PsycINFO (Ovid), Medline (Ovid), Embase (Ovid), ERIC (EBSCO), Social Work Abstracts (EBSCO), Social Services Abstracts (ProQuest) and Emcare (Ovid). All studies published internationally in English between January 1, 2012, and May 26, 2022, were included to generate an understanding of current literature and emerging trends within the autism and PS fields. Due to continually increasing knowledge on neurodiversity, literature published before this 10-year period was determined to likely not reflect current best practices or adequately inform the direction of future research and was excluded from this review. The full search strategy is included in [Appendix 1](#).

Eligibility criteria

All literature addressing supports for autistic students at PS institutions was considered in this review. Due to the variability of terms used, defining key terminology was prudent for structuring eligibility criteria for inclusion. The following inclusion and exclusion criteria were used.

Literature denotes peer-reviewed publications of all types of original research using a qualitative, quantitative, or mixed-method design. Accordingly, reviews, abstracts, editorials, letters, commentaries, theses, conference proceedings and gray literature were excluded. Single subject designs were included. PS institutions were broadly defined to account for language variations used for PS education internationally, such as universities, colleges, tertiary institutions, and higher education. Vocational or trade colleges, polytechnic institutes and non-matriculating programs were excluded from this review. The term autistic individual encompasses persons who identify on the autism spectrum, which includes many potential identifiers such as autistic, ASD, Asperger's, or identified through use of umbrella search terms, such as neurodivergent. A PS student is identified as an individual who has completed secondary school and is enrolled in higher-level education or, if reported retrospectively, had been enrolled.

Study selection

Following the search, all identified citations were collated and uploaded into Covidence systematic review software ([Veritas Health Innovation, 2022](#)), and duplicates were removed. Title and abstract screening and full-text reviews were undertaken by two independent reviewers (HN and DS). A 5% ($n=22$) sample of titles and abstracts were double-screened by both reviewers using the agreed upon inclusion and exclusion criteria.

Discrepancies were resolved through consensus, and in cases of conflict, additional discussion with a third independent reviewer yielded resolution (BDR). Once consensus between reviewers was reached, the remainder ($n=5,487$) of the titles and abstracts were screened independently by two reviewers (HN, DS). Full-text reviews ($n=550$) were conducted independently by two reviewers (HN, DS),

with discrepancies resolved through discussion with a third reviewer (BDR).

Mapping and extracting data

Data demographics

Basic demographic data were collected on each article to capture potentially relevant contextual details or trends. Noted information included the year of publication, disclosed funding information and country of origin. Data collected about the study included design and sample size, as well as whether participants had a formal diagnosis for autistic participants, the autistic voice was present within the research team (or participants only), and inclusion of demographic details on participants (e.g., race/ethnicity, gender distribution and age range).

Data coding

Building from developed classifications for categorizing literature and consultation with the ACP, a data coding framework was developed. Each study in the review were classified in three different ways: the four PASS domains; 10 support categories characterizing types of supports; and nine emergent themes. Further detail on the process of development, and final coding framework is described below.

Four PASS domains

The PASS taxonomy developed by [Dukes et al. \(2017\)](#), was designed to organize literature addressing PS education for students with disabilities to identify the focus of the research being conducted. The four PASS domains are (1) program and institutional-focused support (e.g., the development or change of policies or infrastructural design), (2) faculty and staff-focused support, (3) student-focused support, and (4) concept and systems development (e.g., work informing or trialing supports) ([Dukes et al., 2017](#)).

Ten support categories

[Widman and Lopez-Reyna \(2020\)](#) classified eight main types of supports typically offered to autistic PS students in PS institutions, namely: (1) social learning (e.g., relationship building), (2) functional life skills/residential skills (e.g., day-to-day management), (3) academic, (4) emotional learning (e.g., coping and mental health), (5) vocational training, (6) communication development (e.g., general communication strategies), (7) transition needs, and parent/family involvement. After review and consultation with the ACP, the category of parent and family involvement was expanded to capture any mention of (8) support external to the PS campus. Based on the ACP's identification of (9) financial supports, and (10) sexual health and education supports as support types that were indicated to be important, these two categories were added for coding for a total of 10 Support Categories. Further feedback provided by the ACP on the Support Categories emphasized the importance of capturing the experiential and potentially consistent or possibly opposing insights of individual autistic students. As a result, the categories were further coded in a binary way, describing supports from the studies as having characteristics as a contributor of support (or beneficial support) and/or challenges (or barriers) to support to capture the range of experiences and outcomes as described in the literature.

Nine emergent themes

Based on initial feedback by the ACP identifying elements informing autistic experiences on post-secondary campuses that were not captured by the Support Categories, an 'other' category was introduced to capture emergent themes underlying campus experiences and navigation of supports during our initial classification of the studies according to the PASS domains and the Support Categories. Examples of elements suggested by the ACP included challenges relating to obtaining diagnosis, the impact that negative or uninformed attitudes had on student experiences, and the impact of having multiple identities (intersectionality).

After initial coding, we reviewed the notes from the 'other' category to identify emerging themes, or similar concepts, reoccurring as contributors or challenges for Autistic post-secondary students across types of support categories. Building from the themes identified in the initial review, we then manually cross-referenced the emergent themes against all coding undertaken in Support Categories to identify any similar or distinguishing concepts for consistency. All emergent themes were cross-referenced against the original text before inclusion. Finally, the themes were organized and characterized into a final list of nine additional themes which we described as: (1) interpersonal; (2) individualized, (3) sensory environments, (4) attitudinal, (5) service navigation, (6) diagnosis, (7) disclosure, (8) identity management, and (9) intersectionality. These will be addressed in greater detail in the results.

The data mapping and extraction of each phase of our classification framework was trialed by two graduate-level research assistants (HN and DS) on 10 studies to optimize consistency and identification of relevant data. Subsequently, all included studies were screened independently and coded by three reviewers (HN, DS, and JC), all completing their Master's degrees.

Results

Study inclusion

The search yielded a total of 8,518 articles which were uploaded to Covidence for screening. Duplicates were removed ($n=2,659$), and 5,498 studies underwent title and abstract screening. Of those, 4,898 were excluded for not meeting inclusion criteria. The remaining 556 articles were assessed for eligibility through full-text review, and a further 400 studies were excluded (see [Figure 1](#)). Reasons for exclusion included: featuring the wrong setting (i.e., vocational or community college) or population (i.e., neurodiversity other than autism or high school students), and ineligible sources such as dissertations and conference proceedings. In total, 156 studies met the inclusion criteria and were included in the final review. A summary of the inclusion process can be seen in [Figure 1](#): PRISMA-SCR Chart.

Study characteristics

Publication trends

Basic demographic data were collected on each article to represent the country of published data and the year of publication. The characteristics of included studies were summarized. Over half (58%) of included studies were from the United States ($n=90$). Articles from the United Kingdom ($n=19$), Australia ($n=12$), Canada ($n=8$) and

including multiple countries ($n=13$), made up another significant portion of the sample. Several other countries were represented in 3 or fewer studies, such as the Netherlands and Israel ($n=3$), Sweden and Belgium ($n=2$), and Ireland, Norway, Nigeria, and Slovenia (each with $n=1$); see [Figure 2](#). A frequency count of the publication date of selected studies (2012–2022) indicates an upwards trend in articles focusing on autistic students on PS campuses, see [Figure 3](#). Notably, the count for articles published in 2022 is inclusive up to May 26, 2022.

PASS domains

To explore research trends in the literature, we used the four PASS domains ([Dukes et al., 2017](#)) to classify every study in our review according to the categories of institutional assistance that each study explored in relation to supporting autistic PS students. First, the majority of articles ($n=114$; 73.0%) explored institutional supports offered to autistic students themselves (PASS Domain 3). In comparison, one-quarter of the studies ($n=40$, 25.6%) examined institutional supports aimed at faculty, family, and/or peers to improve the experiences of Autistic PS students (PASS Domain 2). Of these, 50% of the studies explored institutional supports directed at faculty and staff members ($n=20$), 30% directed at peers ($n=12$), and 12.5% toward families ($n=5$). Only 20 studies (13.8%) included any focus on the development or change of policies to better support Autistic PS students from the institution-level structural perspective (PASS Domain 1), while 44 studies (28.2%) included a focus on the development of concepts and/or included a type of intervention related to supports provided (PASS Domain 4). It is also important to note that many of the studies ($n=55$, 35.2%) fell under more than one PASS domain. [Table 1](#) summarizes the types of institutional supports given to autistic PS students for each of the PASS domains.

Research design: did the studies tend to include autistic perspectives and/or leadership?

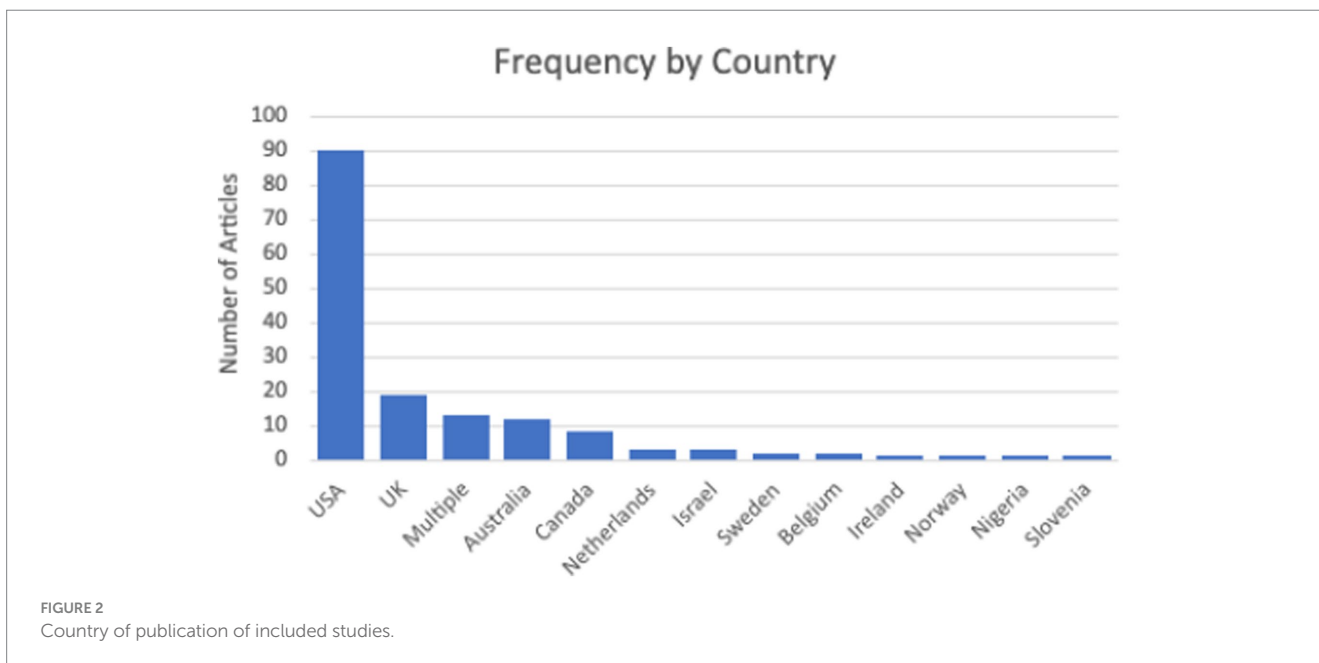
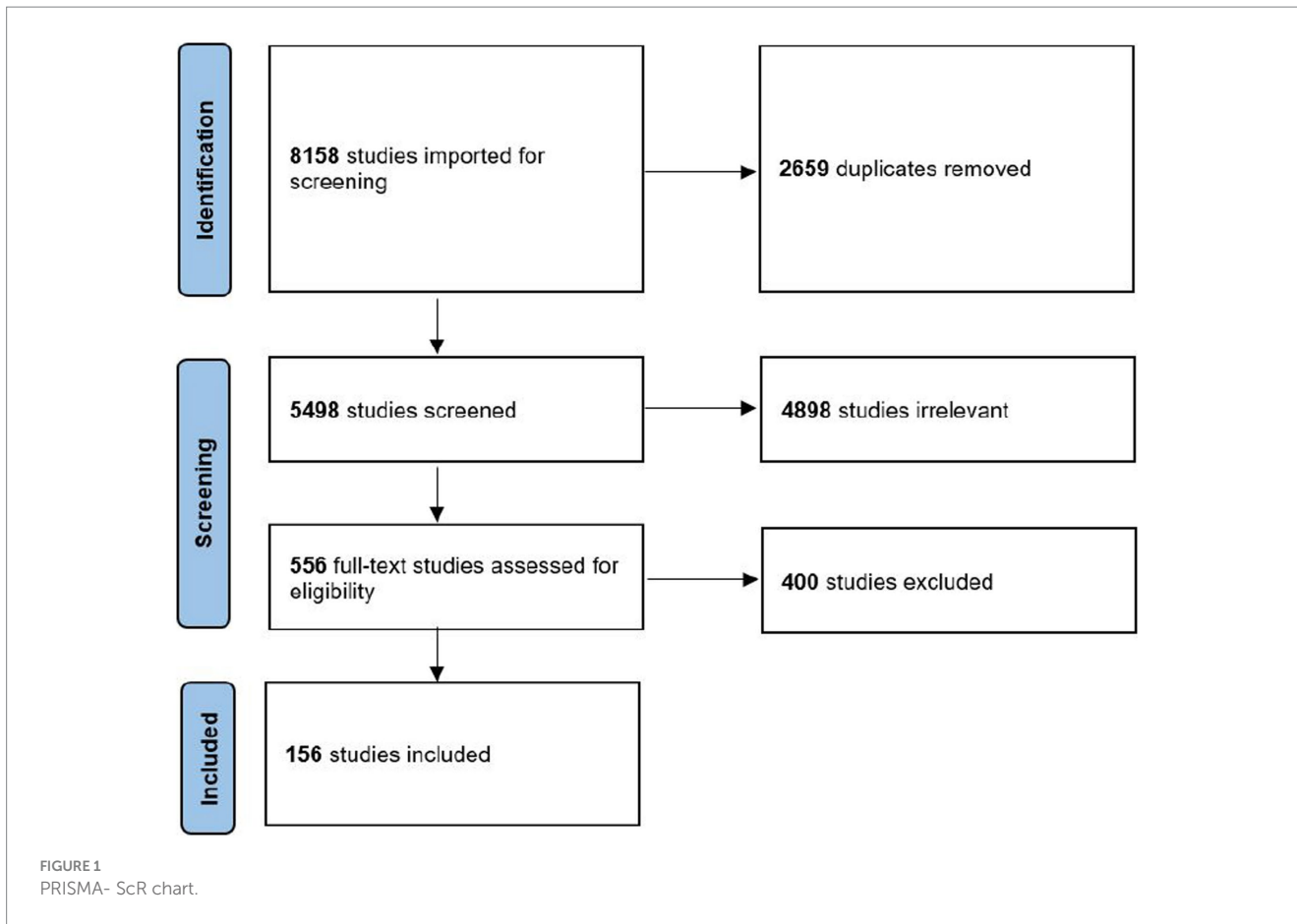
While inclusion of autistic perspectives is present in literature ($n=114$), the most prevalent representation is limited to study participation only ($n=96$, 84.2%) rather than involvement in research leadership or consultation roles. However, 11 studies used co-design and consultation with autistic individuals, including five articles that use participatory research processes. Additionally, seven articles included self-identified autistic authors or members of the research team.

Research design: to what extent did the studies include diverse samples of participants?

In articles using autistic participants as their study population ($n=114$), only 97 articles (85%) reported the gender breakdown of their sample. Out of the 97 articles, 48 studies had populations that were more than 50% male and only 23 studies (24%) were inclusive of gender diversity by reporting that the sample included gender identities other than men or women. Of articles identifying autistic participants, only 51 articles reported the racial or ethnic breakdown of their sample. [Table 2](#) summarizes the findings regarding inclusion of autistic population in the research design of studies included in our review.

Categories for types of support

Consultation with the ACP confirmed the eight categories suggested by [Widman and Lopez-Reyna \(2020\)](#) and suggested an



additional two for a total of 10 categories for types of support. For each category, frequency counts were reported for studies identifying contributors versus challenges with PS supports (see Table 3). Studies may have identified both contributors and challenges for a single category or may not have addressed that particular category explicitly.

Due to an ecological understanding of supports, studies were counted by the primary focus of the article (e.g., social, coping or self-advocacy discussed for the purpose of providing academic support would be counted as academic). Articles may be counted in multiple categories of support if there was more than one stated purpose.

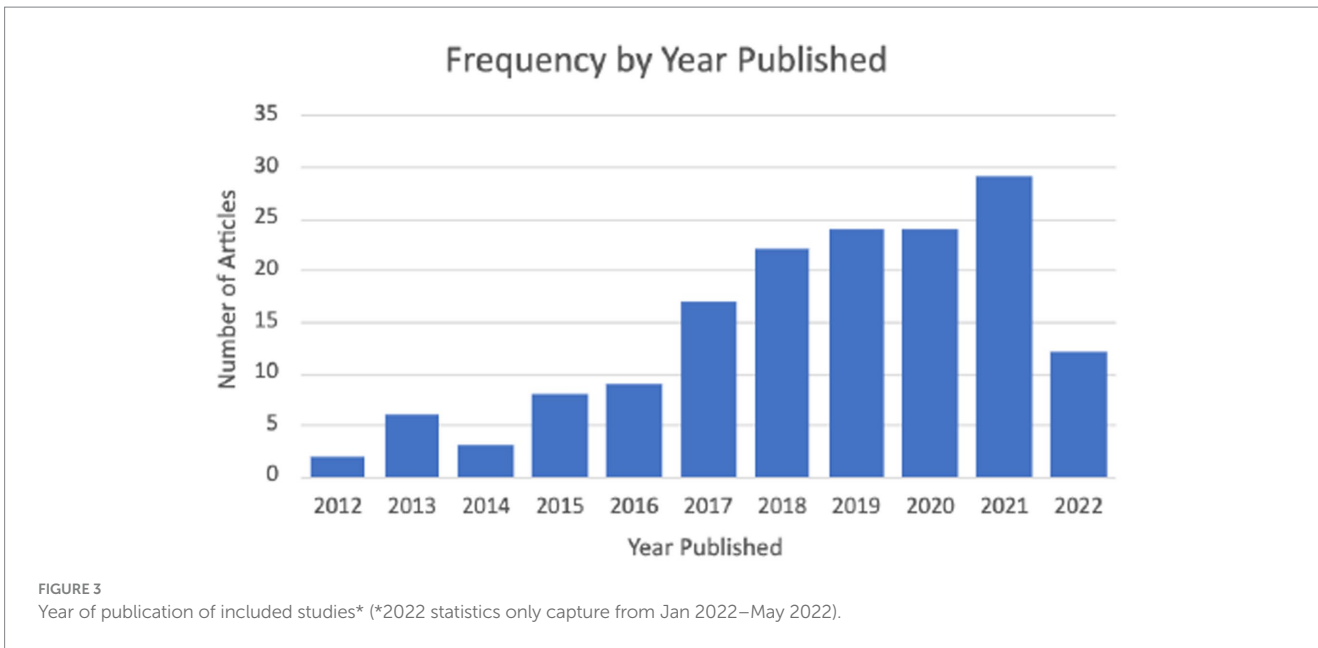


TABLE 1 Institutional supports offered according to PASS domains.

PASS Domain		Frequency count
1. Institutional		20
2. Faculty and peers		40
	Faculty	20
	Peers	12
	Family	5
	Non-specific	3
3. Autistic PS students (individual)		114
4. Concept development and/or intervention		44
Multiple domains		55

TABLE 3 Frequency of types of support categories in included studies as contributors or challenges for support on PS campus.

Categories	Evidence of contributors in supports	Evidence of challenges in supports
Social	54	62
Academic	63	55
Communication	17	15
Emotional	29	47
Independent living skills	22	24
Vocational	16	21
Transitions	21	27
Reliance on other sources	27	9
Financial	3	12
Sexual health and education	1	2

TABLE 2 Inclusion in studies within scoping review.

Characteristics		Frequency count
Autistic perspectives and/or leadership	Author disclosed/research team	7
	Co-design/consultation	11
	Participatory research processes	5
	Participant only	96
Participants: Gender	Not Reported	17
	Reported	97
	>50% Male	48
	Inclusive of gender diversity	23
Participants: Race/Ethnicity	Reported	51
	Not reported	62

Categorization was designed to highlight the primary purposes or objective underlying provided supports.

Details provided on supports were classified as contributors or challenges based on the presence of supports available on PS campuses and by the outcomes of the supports as identified in the literature by autistic individuals. The frequency count indicates the number of articles addressing the type of support, and does not indicate if an article identified multiple contributors or challenges pertaining to that support category. The most common characteristics and findings for the contributors and challenges of each support category, with example articles included for reference, are summarized in Table 4.

Due to the ecological nature of autism supports, it is recognized that there a lack of clear division between all categories of support. This necessitated a secondary analysis of contributors and challenges in implementing supports (see Emergent Themes). The frequency counts for support categories are included to provide a broad overview of investigation foci and characterization in the literature.

TABLE 4 Categories of support types for included studies based on focus of support as a contributor and/or challenge for autistics on PS campus.

Categories	Contributors	Challenges
Social	<ul style="list-style-type: none"> Engagement in campus activities and social events (Koegel et al., 2013; Bolourian et al., 2018; Accardo et al., 2019a; Baczewski et al., 2022) Interactions with peers, social network, friends (Cullen, 2015; Adams et al., 2019; Baczewski et al., 2022) Peer mentor programs (Barnhill, 2016; Ashbaugh et al., 2017; Fairchild et al., 2020; Anderson et al., 2020b) Social skills groups and supports (Ashbaugh et al., 2017; Accardo et al., 2019b; Ballantine and Artemeva, 2020) Autism support groups, other identity-based groups, student clubs (Anderson A. M. et al., 2019; McMorris et al., 2019; Scott and Sedgewick, 2021; Manett, 2022) 	<ul style="list-style-type: none"> Not accessing available supports (unaware of availability, lack of recognition of need, lack of time) (Cullen, 2015; Accardo et al., 2019b; Fairchild et al., 2020) Lack of social groups and supports, university minimizing non-academic issues (Barnhill, 2016; Anderson and Butt, 2017; Brown, 2017) Some social skills supports ineffective/unpopular (Barnhill, 2016; Jackson et al., 2018; Vincent et al., 2022) Social demands of university a concern or challenge (Anderson et al., 2020a,b; Lei and Russell, 2021) Difficulties with social interaction, lack of social confidence, unsupportive peers (Vincent et al., 2017; Bailey et al., 2020; Anderson et al., 2020b) Feelings of social isolation and loneliness (Ashby and Causton-Theoharis, 2012; Gelbar et al., 2015; Fabri et al., 2020) Greater risk of unwanted sexual contact and interpersonal violence (Brown, 2017; Rothman et al., 2021)
Academic	<ul style="list-style-type: none"> Academic supports are commonly offered (Barnhill, 2016; Cai and Richdale, 2016; Accardo et al., 2019a) Some experienced positive relationships with professors, professors with understanding of autism (Ponometryova et al., 2018; Accardo et al., 2019a; Bailey et al., 2020), and supportive atmosphere (Ponometryova et al., 2018; Davidovitch et al., 2019) Presence of peer mentor singular programs focused on academics (Ness, 2013; Ashbaugh et al., 2017; Rowe et al., 2020) Many reported benefits from accessing university-offered supports for developing study skills (including time management, group work, organization, academic coaching, tutoring, writing center, etc.) (Quinn et al., 2014; Retherford and Schreiber, 2015; Siew et al., 2017) The following kinds of accommodations tended to be reported as helpful: extra time for tests, copy of notes or a note taker, technology supports, alternate testing sites, extensions, etc. (Barnhill, 2016; Anderson and Butt, 2017; Casement et al., 2017; Davidson et al., 2021) 	<ul style="list-style-type: none"> Others noted lack of academic supports or of the availability/efficacy of existing supports (Zeedyk et al., 2019; Vadnjai and Radoja, 2020) Some experienced lack of flexibility and understanding from professors and failure to implement accommodations (Accardo et al., 2019a; Bailey et al., 2020) or an unsupportive environment (Gurbuz et al., 2019; Fabri et al., 2020; Anderson et al., 2020b) Need for flexibility in classroom and in structure of degree programs (Cai and Richdale, 2016; Sarrett, 2018; Cage and Howes, 2020) Challenges with group work and/or oral presentations (Knott and Taylor, 2014; Thompson et al., 2018; Sefotho and Onyishi, 2021) Some noted difficulties with lack of structure and unplanned changes in schedule (Fabri et al., 2020) Some reported difficulties with study skills (e.g., organization and time management skills) (Gelbar et al., 2015; Dijkhuis et al., 2020; Anderson et al., 2020b) or difficulties managing course requirements (McLeod et al., 2019; Bakker et al., 2020; Anderson et al., 2020b)
Communication	<ul style="list-style-type: none"> Successful use of self-advocacy skills (Roberts and Birmingham, 2017; Accardo et al., 2019a; Rowe et al., 2020) Presence of supports to foster self-advocacy skills (Gillespie-Lynch et al., 2017; Scheef et al., 2019; Rowe et al., 2020) and communication skills (Trammell and College, 2013; Thompson et al., 2020) Librarians teaching research, writing, and interpretation skills (Cho, 2018) Communication improved through online learning in some ways (Adams et al., 2019) 	<ul style="list-style-type: none"> Struggles with self-advocacy and self-determination (White et al., 2016; Dymond et al., 2017; Ward and Webster, 2018) Lack of self-advocacy supports or lack of awareness of those available (McMorris et al., 2019; Anderson et al., 2020a; Vincent et al., 2022) and of communication supports (Barnhill, 2016; Cox et al., 2021) Challenges in bi-directional communication with faculty and peers (Ashbaugh et al., 2017; Adams et al., 2019; Bailey et al., 2020)

(Continued)

TABLE 4 (Continued)

Categories	Contributors	Challenges
Emotional	<ul style="list-style-type: none"> Autistic students seeking out supports at similar levels of distress as peers (Anderberg et al., 2017) Counseling, mental health supports, peer mentors (Siew et al., 2017; Accardo et al., 2019b; Anderson et al., 2020a; Davidson et al., 2021) Coping strategies such as part-time enrolment and extended breaks (Brazier, 2013; Anderson et al., 2020b) Friends and family as emotional support (LeGary, 2017; Bailey et al., 2020) Skills development regarding self-esteem, stress management, and confidence building (Fabri et al., 2020) 	<ul style="list-style-type: none"> High rates of co-occurring mental health conditions (anxiety, depression, etc.) and impact on outcomes noted (Bolourian et al., 2018; Zukerman et al., 2019; Accardo et al., 2019a; Anderson et al., 2020b) Feelings of being stressed, overwhelmed, isolated, etc. (Van Hees et al., 2015; Fabri et al., 2020; Anderson et al., 2020a) Barriers to mental health support: cost, lack of availability, and thinking it will not help (Anderson et al., 2020a) Institutions often minimize non-academic issues (Anderson and Butt, 2017) Lack of counseling and mental health services (McMorris et al., 2019; Hu and Chandrasekhar, 2021; McLeod et al., 2021) Need for ongoing counseling (rather than short-term) (Dwyer et al., 2022) Need for regular check-ins with staff (Elias and White, 2018) Masking a risk factor for poor mental health (Scott and Sedgewick, 2021; Sullivan, 2021)
Independent living skills	<ul style="list-style-type: none"> Presence of supports with developing daily living skills, executive functioning skills, and organizational skills (often through peer mentor programs) (Retherford and Schreiber, 2015; Ames et al., 2016; Anderson A. M. et al., 2019; Gustin et al., 2020) Presence of housing accommodations (Barnhill, 2016; Anderson et al., 2018; Accardo et al., 2019b) and independent living supports (Scheef et al., 2019; Viezel et al., 2020; Ames et al., 2022) Assistance navigating campus or transportation to and from campus (Retherford and Schreiber, 2015; Scheef et al., 2019; Kim and Crowley, 2021) Financial coaching/management (Retherford and Schreiber, 2015; Siew et al., 2017) Assistance navigating other supports (Anderson A. M. et al., 2019; Scheef et al., 2019) Increased self-confidence, independence, and self-determinism (Retherford and Schreiber, 2015; Thompson et al., 2018; Trevisan et al., 2021) 	<ul style="list-style-type: none"> Lack of support with executive functioning skills, time management, organizational skills, and daily living skills (navigating transportation, food, chores, hygiene, etc.) (Accardo et al., 2019a; Lei and Russell, 2021; Sefotho and Onyishi, 2021) Lack of housing accommodations and independent living supports (Simmeborn Fleischer et al., 2013; Cullen, 2015; Kim et al., 2021) Struggles with lack of routine and lack of structure (Lei and Russell, 2021) Stressors from living situation (Cullen, 2015; Bolourian et al., 2018)
Vocational	<ul style="list-style-type: none"> Employment and career support from peer mentors, tutors, coaches, faculty, DSO, and mental health staff (Gunn et al., 2017; Cheriyan et al., 2021; Pesonen H. V. et al., 2021; Ames et al., 2022) Career services and career centers (Briel and Getzel, 2014; Barnhill, 2016; Cheriyan et al., 2021) Career counseling and academic advising (Weiss and Rohland, 2015; Pesonen H. V. et al., 2021; Lucas et al., 2022) Support with job-seeking skills (applying for jobs, resume writing, interview skills, etc.) (Retherford and Schreiber, 2015; Vincent and Fabri, 2020; Cheriyan et al., 2021; Munandar et al., 2021) Internships or practicums (Pesonen H. V. et al., 2021) Lists of autism-friendly employers or referral to autism related organization (Vincent et al., 2022) 	<ul style="list-style-type: none"> Lack of employment supports, lack of awareness of existing supports, or existing supports were not helpful (Briel and Getzel, 2014; Pesonen H. V. et al., 2021) Need for individualized, flexible, and targeted career assistance (Pesonen H. V. et al., 2021; Pesonen H. et al., 2021) Lack of career guidance/training (Anderson A. M. et al., 2019; Lucas et al., 2022) Transition to employment identified as a stressor (Van Hees et al., 2015; Bolourian et al., 2018; Ames et al., 2022) Desire for support developing a disclosure plan for future employers (Briel and Getzel, 2014) Need for assistance not only obtaining but also keeping a job (Bublitz et al., 2017; Gobbo et al., 2018; Lucas et al., 2022) Need to prepare placement partners to appropriately support autistic students (Sullivan, 2021)

(Continued)

TABLE 4 (Continued)

Categories	Contributors	Challenges
Transitions	<p>Transition into PS:</p> <ul style="list-style-type: none"> Freshman summer transition programs or other pre-entry events (campus visits/tours, meeting with tutors/advisors, early enrollment, etc.) (Chown et al., 2018; Accardo et al., 2019b) Orientation week helpful to make connections and become familiar with space and resources. (Anderson, 2018; Anderson A. M. et al., 2019; Madaus et al., 2022) Information available online or in recruitment materials (Retherford and Schreiber, 2015; Chown et al., 2018) Apps as a potential effective and low-cost support (Francis et al., 2018) Disability services office (Retherford and Schreiber, 2015; Dymond et al., 2017; Anderson A. M. et al., 2019) Campus guides at beginning of semester (Barnhill, 2016; Chown et al., 2018) Residential orientation programs/moving in early (Chown et al., 2018; Goddard and Cook, 2022) Peer mentors (Roberts and Birmingham, 2017; Trevisan et al., 2021) <p>Transition out of PS:</p> <ul style="list-style-type: none"> Some students experienced the transition out of university positively and were excited for opportunity in identity development (Vincent, 2019) 	<p>Transition into PS:</p> <ul style="list-style-type: none"> Lack of (or inadequate) supports for transition into university, identified as a source of stress, anxiety, fear (Anderson and Butt, 2017; Shmulsky et al., 2017; McMorris et al., 2019; Ames et al., 2022) “Culture shock” with lack of structure and overwhelming sensory environment (Van Hees et al., 2015; Vincent et al., 2017; Cage and Howes, 2020) Need for assistance navigating to and on campus (Casement et al., 2017) Some orientation activities were too overwhelming (Goddard and Cook, 2022) <p>Transition out of PS:</p> <ul style="list-style-type: none"> Lack of supports for the life changes of transitioning out of university (aside from employment supports) (Lei and Russell, 2021; Lucas et al., 2022; Vincent et al., 2022) Source of anxiety, avoidance, and loss (Vincent, 2019)
Reliance on external sources	<ul style="list-style-type: none"> Informal social networks (parents, friends, family) (Casement et al., 2017; Anderson A. M. et al., 2019) Parental advocacy/involvement (Anderson et al., 2020a; Pesonen et al., 2021a) Private services such as psychologists, tutors, independent living supports, etc. (Anderson and Butt, 2017; Scheef et al., 2019; Anderson et al., 2020b) Non-university interest groups, use of external agencies (Anderson and Butt, 2017; Anderson et al., 2020b) Community-based activities/events (Ashbaugh et al., 2017) Online/social media supports (Cullen, 2015) Religion (Fabri et al., 2020) 	<ul style="list-style-type: none"> Challenges for parents advocating for their child or providing support (lack of knowledge, privacy laws that limit communication) (Fleischer, 2012; Viesel et al., 2020; Cage and McManemy, 2022) Lack of family supports (Viesel et al., 2020; Kim et al., 2021)
Financial	<ul style="list-style-type: none"> Presence of financial support based on disability (Cage et al., 2020) Presence of financial coaching and support with money management (Retherford and Schreiber, 2015; Siew et al., 2017) 	<ul style="list-style-type: none"> Lacking financial resources (Accardo et al., 2019a; Fabri et al., 2020) Having to access private resources such as tutors, psychologists, etc. (Anderson et al., 2020b; Cox et al., 2021)
Sexual health and education	<ul style="list-style-type: none"> Discussed with peer mentor (Ames et al., 2016) 	<ul style="list-style-type: none"> Lack of sexual education and knowledge (Rothman et al., 2021) Greater risk of victimization (Brown et al., 2017; Rothman et al., 2021)

Emergent areas of support themes

Nine emerging themes discussing the role and impact of the following on autistic students were identified, namely: interpersonal connections, individualized supports, the sensory environment, attitudinal impacts, factors impacting service navigation of available supports, diagnosis requirements, disclosure decisions, role of identity management, and the impact of intersectionality. The distinction between the support categories and the support themes is a respective focus on the purpose of supports versus factors influencing the effectiveness of supports. The themes are a secondary analysis of the contributors and challenges identified across the categories of support. A frequency count was also conducted for these themes (see Table 5), following the same process as with the other categories. The emergent areas of support themes are summarized in Table 6, and capture factors that, from perspectives of autistic PS students available in the literature, can become contributors or challenges when navigating campus supports.

Discussion

This scoping review summarizes the breadth of research conducted on supports for and the experiences of autistic students on PS: campuses. As evident in the results of the 156 international studies identified in this review, approaches to supporting autistic students were categorized into 10 categories of support, and where provided support must be integrative and respect the individuality of autistic students. While the presence of supports indicates progress on PS campuses, 9 emerging areas of focus were identified from the autistic perspectives in this work.

The literature highlights where the research has been focused relative to the 10 identified support categories. Our elicitation of the experiences of autistic PS students amplifies where supports/lack of supports have contributed to success or challenge. The social and academic categories had the greatest number of studies focused on support contributors, while those with the lowest frequency of support contributors were communication, vocational, financial, and sexual health. Support categories with the greatest noted challenges were social and academic. In contrast, those with the lowest frequency of studies reporting challenges were communication, reliance on other sources, and financial and sexual health. The low representation of

studies addressing financial supports and sexual health in the literature is noteworthy, particularly due to the identification of these as areas of importance by autistic members of our expert panel. Most of the categories had a higher frequency count of challenge (negative) than contributor (positive) indicators, except academic, communication, and reliance on other sources.

Academic accommodations, typically accessed through offices for students with disabilities, have been the most frequently studied form of supports for autistic students (Brown, 2017; Ames et al., 2022). Unsurprisingly, this was the category with the highest frequency count for contributory indicators. Likewise, it is possible that communication supports were cited less frequently as a challenge due to the lower emphasis placed on a need for communication supports in the literature. A low frequency of communication supports, despite common needs among autistic students, aligns with previous reviews (Widman and Lopez-Reyna, 2020; Pennington et al., 2021). Concerning reliance on other sources, the presence of supports outside the university, while often positive for the individual student, can indicate a lack of resources available within the university that is not explicitly stated within articles. For example, some students reported accessing private services (e.g., psychologist, tutor) outside of the university (Anderson and Butt, 2017; Scheef et al., 2019; Anderson et al., 2020b).

Significant overlaps between broad categories of supports were identified in this review. When this occurred, studies were categorized based on which support outcome was stated to be primary. Byrne (2022) identified a significant overlap between social, academic, and communication supports in connection with transitioning to employment. The interconnectivity between categories of support challenges the demarcation of types of support and rather suggests the need for both a granular and holistic perspective that recognizes the integrative nature of PS education and the PS ecosystem. The disproportionate representation of challenges to, over contributors to support, amplifies the ongoing call for proactive and effective supports for autistic students on PS campuses.

While demarcating categories of supports is useful to map where the research focus is being directed in the literature and identify where student support needs are not being examined, underlying those categories are connecting themes that highlight autistic students' experiences of PS education. The nine emerging areas of focus identified from this work were interpersonal connections, individualized supports, the sensory environment, attitudinal impacts, factors impacting the navigation of available services and supports, diagnosis requirements, disclosure decisions, identity development and management, and the impact of intersectionality. It is suggested that these themes are useful to integrate into existing support categories for autistic students on PS campuses to drive research and services on campuses. This review contributes to the findings of previous synthesis-type reviews by connecting the narratives about autistic students' experiences navigating PS education generally and in connection to supports (Gelbar et al., 2014; Anderson et al., 2017; Cashin, 2018; Kuder and Accardo, 2018; Anderson A. H. et al., 2019; Clouder et al., 2020; Nachman, 2020; Widman and Lopez-Reyna, 2020; Cox et al., 2021; Davis et al., 2021; Duerksen et al., 2021; Kuder et al., 2021; Pennington et al., 2021). This holistic perspective leads to the ability to summarize the interconnections between the known complexities to highlight knowledge gaps and situate where further research can

TABLE 5 Frequencies of emergent areas of support themes in included studies as contributors or challenges for support on PS campus.

Themes	Contributors	Challenges
Interpersonal	28	9
Individualized	13	23
Sensory environment	8	36
Attitudinal	21	51
Service navigation	14	27
Diagnosis	1	13
Disclosure	12	30
Identity management	13	17
Intersectionality	2	32

TABLE 6 Description of emergent areas of support themes in included studies.

Themes	Contributors	Challenges
Interpersonal	<ul style="list-style-type: none"> Positive relationships with instructors, peer mentors, peers, librarians, campus personnel (Rando et al., 2016; Accardo et al., 2019a; Bailey et al., 2020) Use of a support person in class (Ashby and Causton-Theoharis, 2012) One designated contact person on campus (Dwyer et al., 2022; Madaus et al., 2022) The quality of Relationship quality was often key to success of the support. (Ponomaryova et al., 2018; Pionke et al., 2019) 	<ul style="list-style-type: none"> Lack of relationships/support from faculty, peers, and campus personnel (Anderson et al., 2020b; Cox et al., 2021) Need for one contact person on campus (Thompson et al., 2019) Sometimes supports were ineffective due to the lack of relationship (Ness, 2013; Roberts and Birmingham, 2017)
Individualized	<ul style="list-style-type: none"> Presence of supports specifically designed for autistic students (Barnhill, 2016; Thompson et al., 2018; Nachman et al., 2022) Existence of personalized supports (especially tied to interpersonal relationships) (Ribu, 2018; Ncube et al., 2019; Cox et al., 2021) 	<ul style="list-style-type: none"> Need for more individualized, personalized approach and service provision (Simmeborn Fleischer et al., 2013; Bottema-Beutel et al., 2019) Lack of supports specifically designed for autistic students (Hu and Chandrasekhar, 2021; Ames et al., 2022; Nachman et al., 2022)
Sensory environment	<ul style="list-style-type: none"> Presence of quiet study rooms, sensory-friendly library and other spaces as beneficial (Anderson, 2018; Scheef et al., 2019) Tailoring delivery of curriculum to change in outdoor module, e.g., limiting base camp movements (Lang and Persico, 2019). 	<ul style="list-style-type: none"> Campus can be an overwhelming sensory environment (noises, crowding, lights, etc.) and interfere with academics, social interaction, housing, etc. (Knott and Taylor, 2014; Anderson et al., 2020a) Library not sensory-friendly (Pionke et al., 2019; Anderson, 2021) Outstanding need for sensory friendly spaces and sensory/ environmental supports with absence leading to a sense of isolation and exclusion (Van Hees et al., 2015; Cage and Howes, 2020) Need for more understanding (e.g., acceptance of stimming behaviors) (Sarrett, 2018)
Attitudinal	<ul style="list-style-type: none"> Attitudes key to academic success, and can contribute to the success of other supports (Austin and Peña, 2017; Everhart and Anderson, 2020) Disability cultural centers can provide a safe space and educate the campus community (Chiang, 2020) Existence of some programs to increase knowledge and decrease stigma of autism in general student population (Cai and Richdale, 2016; Gillespie-Lynch et al., 2021) Some faculty identified unique strengths of autistic students (attention to detail, focus, problem-solving, etc.) (Gobbo et al., 2018) Peer mentor programs can increase knowledge and understanding for the peer mentors (Hamilton et al., 2016; Thompson et al., 2018) 	<ul style="list-style-type: none"> Lack of understanding from university community members; need for more awareness (Accardo et al., 2019a; Cage et al., 2020; Underhill et al., 2021) Limited training for campus personnel (Dymond et al., 2017; Vadjal and Radoja, 2020) Fear of stigmatization (which can lead to social isolation and interfere with accessing supports) (Sarrett, 2018; Goddard and Cook, 2022) Masking identified as a mental health risk (Cox et al., 2017; Scott and Sedgewick, 2021) Need for focus on changing campus community's attitudes toward autism, rather than on individual interventions (Frost et al., 2019; Dickter and Burk, 2021)
Service navigation	<ul style="list-style-type: none"> Information about services available on institution's website (Ames et al., 2022; Vincent et al., 2022) Supports to assist with service navigation (Weiss and Rohland, 2015; Madaus et al., 2022) On-campus partnerships to assist autistic students (Hamilton et al., 2016; Hu and Chandrasekhar, 2021) 	<ul style="list-style-type: none"> Not knowing what supports they need or what is available (Dymond et al., 2017; Accardo et al., 2019b) Many institutions do not have available services advertised on their website (Bellon-Harn et al., 2018; Anderson A. M. et al., 2019) Barriers: wait times, cost, need for diagnosis (Barnhill, 2016; Kim and Crowley, 2021) Need for collaboration between service providers (Anderson, 2021; Bolourian et al., 2021) Suggestions: collaborate with external agencies, designate single contact person on campus, less stringent documentation requirements to indicate disability, find more effective ways to reach out to students (Petcu et al., 2021; Dwyer et al., 2022)

(Continued)

TABLE 6 (Continued)

Themes	Contributors	Challenges
Diagnosis	<ul style="list-style-type: none"> Case study of one student being diagnosed with autism following campus mental health consult (Chandrasekhar, 2020) 	<ul style="list-style-type: none"> Requirements for documentation of formal diagnosis can be a barrier to accessing services (Fabri et al., 2020; Viezel et al., 2020) Some students diagnosed after enrollment (Anderson, 2018; Cox et al., 2021) Some students may not be diagnosed during university or understand their own needs (Accardo et al., 2019a; Cage and Howes, 2020) Need for campus mental health supports to be able to identify autistic traits within presenting mental health concerns (Knott and Taylor, 2014; Chandrasekhar, 2020)
Disclosure	<ul style="list-style-type: none"> Disclosure of diagnosis opens up opportunities for support (Anderson A. M. et al., 2019; Von Below et al., 2021) Some found disclosure to teachers and peers to be a positive experience, leading to greater understanding and connection (Lizotte, 2018; Sullivan, 2021) 	<ul style="list-style-type: none"> Some students do not disclose disability to university (not wanting support, not thinking it would help, not knowing how) (Anderson, 2018; Adams et al., 2019) Disclosure necessary for most students to receive adequate supports (Matthews et al., 2015; Cai and Richdale, 2016; Masterson-Algar et al., 2020; Anderson, 2021) Hesitant to disclose disability in social or academic situations due to fear of stigmatization and negative reactions (Walters, 2015; Casement et al., 2017; Frost et al., 2019) Institutions should find more effective ways to reach all students rather than relying on disclosure from students (Kingsbury et al., 2020; Petcu et al., 2021)
Identity management	<ul style="list-style-type: none"> Increasing student agency helps each student validate their own identity (Harn et al., 2019; Budy, 2021) Disability cultural centers can normalize and communicate value for disabilities (Chiang, 2020) Autistic students identified strengths related to their autism (e.g., special interests lead to greater understanding and knowledge) (Vincent et al., 2017; Madaus et al., 2022) Some supports focus on autistic students' strengths (Anderson, 2018; Accardo et al., 2019a) 	<ul style="list-style-type: none"> Not feeling comfortable to disclose identity (Cox et al., 2017; Goddard and Cook, 2022) Perceived need to camouflage/mask, which can have a negative effect on mental health (Anderson et al., 2020b; Lei and Russell, 2021) Identified sense of disempowerment (Fabri et al., 2020) with need for self-advocacy and self-belief (Casement et al., 2017) Some students felt autism was a large part of their identity, but others did not and did not want to belong to an autism community (Frost et al., 2019) Range of self-acceptance (MacLeod et al., 2013; Miller et al., 2020) General lack of disability cultural centers (Chiang, 2020)
Intersectionality	<ul style="list-style-type: none"> Counseling supports for co-occurring mental health conditions (Accardo et al., 2019b) 	<ul style="list-style-type: none"> Impact of co-occurring mental health conditions as a barrier to success (Knott and Taylor, 2014; Accardo et al., 2019a) Chronic illness, physical health issues reported at higher rates (Simmeborn Fleischer et al., 2013; Fernandes et al., 2021) Need for inclusion of neurodiversity in Diversity, Equity, and Inclusion initiatives (Dwyer et al., 2022) Under researched autistic experience when impacted by race, gender identity, and sexuality (Frost et al., 2019; Miller et al., 2020)

advocate for systemic changes to improve the PS experiences of autistic students.

Emerging areas of support in post-secondary settings

The availability of supports and services, and process required for accessing, is identified as a key and persisting challenge to the efficacy of supports from the perspective of autistic students. These barriers are present at every stage of the process from obtaining and ‘proving’ a diagnosis, disclosing identity, and navigating the existing services. The complications represented within this process only pertain to existent supports, and do not fully capture additional complications arising from the absence of appropriate supports. These nine emerging themes from this scoping review highlight key areas to further study and implement innovative ways to address these needs.

Diagnosis and disclosure

The process of accessing services is complicated by barriers to accessing an autism diagnosis, consistent with many studies that demonstrate that students can be unaware of their autism and/or unable to access the formal diagnosis necessary for support services due to cost or time delay (Accardo et al., 2019a,b; Cage et al., 2020; Viezel et al., 2020). Disclosure as a barrier to support has been noted previously (Anderson A. H. et al., 2019; Anderson A. M. et al., 2019; Zeedyk et al., 2019; Cox et al., 2020; Fabri et al., 2020), with several articles noting that self-disclosure was an essential first step to accessing supports and accommodations in PS institutions (Nuske et al., 2019; Von Below et al., 2021). Disclosure is inherently interconnected with navigating personal identity and the surrounding attitudinal environment to assess such disclosure’s potential risks and benefits (Clouder et al., 2020). While the disclosure is technically a choice, the current reliance on disclosure to access formal or informal supports means that, for many students, that choice becomes illusory as there is little viable option beyond disclosure (Van Hees et al., 2015; Clouder et al., 2020).

Attitudinal environment

While disclosure occurs at the individual level, it is done within the relational and environmental context. Fear of stigmatization is commonly reported in studies, where autistic students may hide or not disclose their identity to others on campus due to fear of negative reactions (Casement et al., 2017; MacLeod et al., 2018; Sarrett, 2018; Frost et al., 2019; Goddard and Cook, 2022). Casagrande et al. (2020) identify a need for initiatives to improve the campus climate to increase a sense of belonging for autistic students. Additionally, the attitudinal environment has been identified as a key aspect for support efficacy, with positive attitudes leading to successful supports (Austin and Peña, 2017) and negative attitudes, misinformation or lack of knowledge leading to the breakdown of supports (Ashby and Causton-Theoharis, 2012; Hassenfeldt et al., 2019; Bailey et al., 2020; Anderson et al., 2020b). Some emergent research has focused on how to destigmatize autism within the broader PS campus through preliminary initiatives focused on university faculty, staff and peers (Gillespie-Lynch et al., 2015; Cai and Richdale, 2016; Davidovitch et al., 2019; Anderson, 2021; Bolourian et al., 2021; Dickter and Burk, 2021; Gillespie-Lynch et al., 2021; White et al., 2021), with varying

results. A common thread in the literature is a need for greater understanding and acceptance of autism in the PS campus environment generally and in connection to its direct impact of the efficacy of supports.

Service navigation

Service navigation generally is a noted challenge, with studies pointing to issues with communication transparency on available services (Accardo et al., 2019b; Viezel et al., 2020; Anderson et al., 2020b; Ames et al., 2022), siloed or rigid services (Nuske et al., 2019; Kuder et al., 2021), and the requisite of sufficient and/or trained staffing to meet needs (Fleischer, 2012; Glennon, 2016; Cox et al., 2021; Kim et al., 2021). One example approach toward addressing the challenge of identifying and navigating existent supports is to utilize an intermediary assigned to each individual student as a ‘coordinator’ to act as support in navigating services (McMorris et al., 2019; Thompson et al., 2019; Dwyer et al., 2022) with some studies implementing this recommendation (Madaus et al., 2022). Formal and informal collaborative relationships with autistic students and between services have been identified as having a bridging effect to better support students in navigating services (Knott and Taylor, 2014; Hamilton et al., 2016; Casement et al., 2017; Cho, 2018; Thompson et al., 2018, 2020; Hu and Chandrasekhar, 2021).

Individualized supports

There has been an increasing recognition in the literature of the need for individualized supports (Cashin, 2018; Kuder and Accardo, 2018; Anderson A. H. et al., 2019; Clouder et al., 2020; Nachman, 2020; Duerksen et al., 2021), and this review adds to that call. This need for individualized supports encompasses both the need to consider the individual and the need for autism-specific supports (Nachman, 2020). The process of individualizing supports is recognized to be challenging due to the diversity of autistic individuals, and the necessary recognition that supports can have opposing outcomes based on individual needs and preferences (Kuder and Accardo, 2018; Anderson A. M. et al., 2019). Underlying the call for individualized supports is the need for greater flexibility in the design, availability, and provision of supports. Early strategies and suggestions on individualizing supports highlight the important role of interpersonal connections. Beyond individualization, universal design that supports diversities on campus could significantly contribute to less stigmatizing and impeding challenges for students.

Interpersonal connections

Interpersonal connection was noted as having the capacity to meet socioemotional and academic needs (Duerksen et al., 2021), and to facilitate navigation of disconnected services (Clouder et al., 2020). Often, a positive and collaborative interpersonal connection was highlighted in the literature as a successful strategy to encourage both formal and informal supports to better meet students’ individual needs (Ness, 2013; Ames et al., 2016; Austin and Peña, 2017; LeGarry, 2017; Roberts and Birmingham, 2017; Cho, 2018; Everhart and Escobar, 2018; Lucas and James, 2018; Thompson et al., 2018, 2020; Anderson A. M. et al., 2019; Pionke et al., 2019; Accardo et al., 2019a; Bailey et al., 2020; Anderson, 2021; Cox et al., 2021; Kim et al., 2021; Lucas et al., 2022). Over time, positive quality of contact helps to engender a sense of trust to build a generative and helpful relationship (Everhart and Escobar, 2018; Pionke et al., 2019; Kim et al., 2021; Kim,

2022). On the other hand, a history of negative interactions and an absence of positive interpersonal relationships yields a sense of distrust, which contributes to the personal choice of whether to disclose one's diagnosis, the potential breakdown of services (Kim et al., 2021), and students falling through the cracks (Cox et al., 2021).

Peer mentoring programs seek to optimize the benefits of an interpersonal connection, and outcomes underline the importance of genuine connection (Ness, 2013; Roberts and Birmingham, 2017; Lucas and James, 2018; Thompson et al., 2018, 2020; Todd et al., 2019). Programs have had success with matching students through shared interests (Thompson et al., 2018) or shared experiences (Lucas and James, 2018; Todd et al., 2019), and yet, as highlighted by Anderson A. H. et al. (2019), there can be diametrically opposing outcomes based on individual preference and sense of connection. The literature points to the need for caution in terms of interpersonal connections without sufficient infrastructure for resources as connection alone is not a substitute for adequate supports (Thompson et al., 2021).

Sensory environments and financial supports

The literature points to two primary areas where there are persisting gaps in types of supports for autistic students: sensory environment accommodations (Ashby and Causton-Theoharis, 2012; Knott and Taylor, 2014; Van Hees et al., 2015; Barnhill, 2016; Cai and Richdale, 2016; Yager, 2016; Brown et al., 2017; Casement et al., 2017; Vincent et al., 2017; Thompson et al., 2018, 2019; Ward and Webster, 2018; Gurbuz et al., 2019; Cage et al., 2020; Grabsch et al., 2021; Kim et al., 2021; Scott and Sedgewick, 2021; Sullivan, 2021; Dwyer et al., 2022; Goddard and Cook, 2022) and financial supports (Accardo et al., 2019a; Fabri et al., 2020; Anderson et al., 2020b; Cox et al., 2021). The identification of these two areas is not unique to this review. Previous reviews have identified the need for sensory accommodations that implicate changes to the physical environment (Anderson A. H. et al., 2019), the need for access to funding generally (Clouder et al., 2020) and flexible funding arrangements (Cashin, 2018). Both types of supports indicate a general lack of infrastructural consideration given to the unique needs of autistic students regarding the energy, resources and time commitments required to successfully navigate and access the benefits of PS education that is more readily afforded to other students. The struggle of navigating a space not designed to be inclusive of their needs means that many autistic students may struggle to feel a sense of belonging on PS campuses.

Intersectionality and identity management

Understanding differential individual experiences on PS campuses is key to identifying how to facilitate individualized services and foster interpersonal connections. The foregoing categories rely on situating autistic students as individuals within PS campus environments. However, autistic individuals themselves are still underrepresented in the literature (Nachman, 2020; Cox et al., 2021), both as producers of knowledge and exploring the unique experiences of navigating barriers. Intersectionality, and the impact of multiple, intersectional identities outside of co-occurring mental health concerns, remain conspicuously under-discussed and under-addressed. Dwyer et al. (2022) recommends a need to integrate consideration of the intersectional identities of autistic students to support students adequately. Of the 34 times that intersectional considerations were mentioned in the literature, only three articles briefly and explicitly identify the impact of other marginalized identities, such as LGBTQ+

(Miller et al., 2020), race (Frost et al., 2019) and gender (Sturm and Kasari, 2019), on autistic students' PS experiences. This represents a persistent gap where intersectional autistic identities need to be further explored.

Autistic students are actively engaging in identity management to navigate their environments and sense of self, with implications on identity acceptance or rejection, disclosure, and general well-being (MacLeod et al., 2013; Miller et al., 2020; Anderson et al., 2020b; Cox et al., 2021). Identity management can be both a positive and damaging process, which should be accounted for in exploring autistic experiences. Positive expressions of identity management ground many individual-focused intervention strategies, such as empowerment, strengths-based approaches and self-advocacy (Anderson et al., 2018, 2020b; Accardo et al., 2019a; Budy, 2021). However, negative expressions of identity management often escalate co-occurring mental health concerns (Anderson A. M. et al., 2019; Lei and Russell, 2021) and can act as a barrier to accessing supports, whether due to fear of being bullied, othered or singled out (Casement et al., 2017; Cox et al., 2017; DeNigris et al., 2018; Goddard and Cook, 2022), or a desire to 'prove oneself' (Anderson et al., 2018). The role of identity management, as an internal process, points to the importance of actively including autistic voices to articulate unspoken factors contributing to autistic experiences.

This work collectively identifies multiple instances of autistic student exclusion, with deleterious impacts of a lack of support and imposed harm due to overt and covert action and inaction on PS campuses. This critical situation warrants immediate remedial and proactive action. While there has been focus in the literature on increasing inclusivity in the representation of voices in the literature, there remains an under-representation of autistic perspectives in this dialog. A strategy used in the literature to center autistic perspectives that is increasing in popularity is the use of participatory research processes (Fabri et al., 2016; Vincent et al., 2017; Hotez et al., 2018; Searle et al., 2019; Peña et al., 2020; Gillespie-Lynch et al., 2021). This review identified a few studies in the literature driven by self-identified autistic authors and an area that should receive more research attention. Examining these priorities on PS campuses must go beyond rhetoric and be demonstrated through policy and practice change.

Limitations

The included articles, while drawn from an international context, were limited to English publications due to the language capacity of the research team. Relevant international literature may have been excluded due to this constraint; our search and results did elicit a study outside of western societies. Given the iterative coding process for the emerging themes, we acknowledge that the themes developed and emerged throughout the data extraction process, as opposed to undergoing a solely inductive approach to thematizing as would happen in a traditional secondary review. For this reason, the themes generated in this review were considered emerging and will be a starting point for future research to examine further, as well as to explore additional concepts that might not have been captured previously within autistic post-secondary student supports. Moreover, current gaps and the urgency for proactive action,

informed our design, and we believe strongly advance this work in a way that a conventional discrete scoping review could not have done.

Conclusion

This scoping review offered a broad, international perspective encompassing supports and experiences of autistic PS students to capture the scope of the available literature. Results highlight the integrated nature of PS campuses that impacts student experiences and the efficacy of supports. As noted, a particular strength of this scoping review is its inclusion of an expert panel using autistic lived experiences (the ACP) into the methodology. This approach offered insight to align research interpretation with the perspective of lived experiences that enforces commitment to participatory action principles and to amplify the voices of autistic individuals in the literature and our communities. While the use of an expert panel incorporating autistic experiences has been utilized before in a scoping review (Scott et al., 2019), to our knowledge, this is the first scoping review addressing supports for and/or the experiences of PS autistic students to incorporate this step. This paper and its findings are not merely a review, but a resultant call to action in redressing barriers and creating PS environments that optimize student experience, nurture career development, and ensure best learning outcomes.

Author contributions

HN, DS, JC, HB, JR, MS, EC, AC, CD, CB, TK, PD, CH, TC, DN, and BD all made substantial contributions to the conception or design of the work, or the acquisition, analysis, or interpretation of data for the work through development work on the project, and/or contributions to the coding framework developed for this scoping review. HN, DS, and JC all provided contributions to drafting the work, while HB, JR, MS, EC, PD, DN, and BD all made substantial contributions to revising it critically for important intellectual content. BD, HB, and DN all provided approval for publication of the content. BD agrees to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work

are appropriately investigated and resolved. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/feduc.2023.1179865/full#supplementary-material>

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