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Autistic Students' Experiences, Opportunities and Challenges in Higher Education in Singapore: A Qualitative Study

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Abstract: The number of autistic people entering higher education (HE) is increasing steadily across the globe, yet research on understanding their experiences and support needs still focuses almost exclusively on the perspectives of autistic students attending HE in the U.S., U.K. and Australia. The present study sought to explore and understand (i) the experiences, opportunities, and challenges of autistic students in HE in Singapore; and (ii) non-autistic HE students' experiences of studying alongside and socially engaging with their autistic peers. Twenty autistic and twenty-two non-autistic HE students in Singapore completed an online survey with open-ended questions. Framework analysis identified themes similar to those in the extant literature (e.g., autistic students enjoyed greater autonomy in HE compared to school, but often found difficulty juggling their numerous academic responsibilities) and novel themes pertaining to Singapore's unique sociocultural context (e.g., Singaporean autistic people face high pressure to "blend in" due to societal values of conforming to social norms). Participants also noted considerable social isolation of autistic students, likely linked to a double empathy problem between autistic and non-autistic students. Improving inclusiveness both within HE and in the wider society is a necessarily joint effort among many stakeholders. Recommendations include HE stakeholders working together to develop and improve supports (e.g., implementing formal transition programmes) for autistic students and incorporating neurodiversity education into school curricula for all students.

Keywords: community participation; higher education; qualitative research; Singapore



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1. Introduction

Many researchers—both autistic and non-autistic ones—have written extensively about the implications of language used to describe autism, especially in recent years [1–3]. Scholars generally agree that there is no universal consensus regarding terminology, and some recent suggestions include avoiding ableist terms through using identity-first language (e.g., “autistic person”) or more neutral terminology (e.g., “on the autism spectrum” [2]). In light of this discourse, we use identity-first language in the present article unless person-first language (e.g., “person with autism”) is used by the particular source being referenced, in which case we quote the source verbatim [2].

Across Western countries, autistic students are entering higher education (HE) in increasing numbers (e.g., [4,5]), although still at lower rates than their non-autistic peers [6]. Although transition programmes aid overall adjustment to HE life and can facilitate the allocation of appropriate supports [7,8], many autistic students either have no formal transition plans or have plans that are not adequately followed up by HE staff [9].

When entering HE, one of the first hurdles autistic students encounter is accessing supports. To do so, as adults, they need to self-advocate. While some autistic students

adapt to self-advocacy well [10], others find it overwhelming, especially if they have little prior experience [11]. Additionally, accessing support services and resources often requires disclosing their diagnosis [7]. However, fear of stigma discourages students from disclosing their diagnosis to peers and staff [12], although, in turn, not disclosing can hinder social connections [13]. Reasons for non-disclosure are also often affected by sociocultural experiences and differences, including societal perceptions of autistic people that can be stigmatising [14,15], but these issues are understudied in non-Western countries [16]. Even if autistic students overcome these barriers and access support, HE resources and accommodations are often inadequate [17]. For example, while autistic students often receive academic accommodations [18], many also report gaps in such support (e.g., insufficient communication from academic staff [19]) or lack support overall (e.g., reasonable adjustments being refused [20]).

Other factors that influence autistic students' experiences of HE may relate to factors often associated with being autistic. While autistic students report several personal strengths which aid their academic achievement, such as writing and analytical skills [21], many also report significant challenges, such as keeping up with lectures and working on group projects [13]. Autistic students have also highlighted difficulties with independent living, specifically with scheduling and balancing responsibilities [22]. Stronger planning and organisational skills have positively related to autistic students' academic progress [23].

Finally, while some autistic students connect easily with peers [24], others struggle with social communication and engagement, and thus experience loneliness, isolation, and alienation [25]. Social supports such as having mentors [26] and dedicated support groups for autistic students [27] are helpful [24], as they facilitate autistic students' social integration [12] (see also [28] for a review). However, providing social support for autistic students alone may not address poor social inclusion in HE: as Milton [29,30] argues, the lack of social inclusion primarily stems from a double empathy problem. The double empathy problem is defined as "a disjuncture in reciprocity between two differently disposed social actors" [29] (p. 884) and attributes difficulties in perspective-taking to both parties—in this context, it refers to non-autistic students having limited insight into autistic students' experiences, and vice versa [29,30]. This can result in difficulties in autistic and non-autistic students understanding each other, hindering social connections between them. Supports that focus only on supporting autistic students without considering their social environment and the perspectives of non-autistic peers may not necessarily lead to successful inclusion.

The various challenges faced by autistic students often result in heightened stress and anxiety during HE [9]. Many autistic students report concerns regarding co-occurring conditions, especially mental health conditions; in fact, 21 of the 23 studies in Anderson et al.'s [24] review cited mental health concerns such as anxiety, depression, and loneliness as a challenge. These are common concerns reported by autistic adults generally (e.g., [31,32]) and thus may be heightened in, but not unique to, autistic young adults in HE.

1.1. The Present Study: Rationale and Aims

The present study addresses two limitations of the existing literature. First, most research hails from North America (e.g., [33,34]), Northern Europe (e.g., [21,22]), and Australia (e.g., [13]). To the best of our knowledge, there are only two studies exploring the experiences of autistic HE students in non-Western countries to date—Israel [35] and Japan [36]. Both studies were small—autistic students comprised only 4% of the sample ($n = 30$) in Davidovitch et al.'s [35] quantitative study, while Yamamoto and Nihei [36] compared the experiences of 4 autistic students to themes previously identified by 21 students with a diagnosis of schizophrenia [37]. Investigating experiences of autistic students in different educational and sociocultural environments enables a more global and comprehensive understanding and appreciation of similarities and differences. It also facilitates better understanding of experiences or correlates of success that may be universal versus those

that may be more context-specific, but the limited research from non-Western countries presently hinders this understanding [16].

Second, many autism-related HE studies to date surveyed or interviewed autistic students but not their non-autistic counterparts—for example, all 19 studies in Gelbar et al.'s [33] review included autistic students only. Studies that have included both autistic and non-autistic students (e.g., [21,38]) tend to separately present or compare autistic versus non-autistic students' experiences rather than examine them in an integrated way. Autistic students are appropriately the primary focus of such studies, but their experiences exist in relation to and in conjunction with their interactions with other students, and those experiences and interactions may be affected by communication and social differences between autistic and non-autistic students, further emphasising the role of the double empathy problem. Investigating both autistic and non-autistic students' perspectives in tandem therefore provides a more contextualised and comprehensive picture of autistic students' experiences and what/who can contribute to further improving these within the context of HE.

1.2. The Present Study's Educational/Sociocultural Context: HE in Singapore

Non-autistic people in East Asian countries (e.g., HE students in Japan [39]; adults in the Republic of Korea [15,40]) hold more stigma toward autistic people than their counterparts in Western countries like the United States. In other Asian societies such as Singapore, education and social assimilation are highly valued, such as the Chinese perception of an "ideal" child revolving around academics, family relations, and fitting into society [41]. Known for its exceptionally high academic standards and test results [42,43], Singapore has one of the most highly competitive educational systems in the world [42], which has raised concerns about Singaporean youths' high stress and anxiety levels over academic performance [44]. Attitudes about disability and difference are also socioculturally defined, with families of autistic people in Singapore often reporting shame and embarrassment, with some believing that a child with disabilities may bring disgrace to the family [14]. Further, in cultures such as Singapore which tend to value homogeneity in social norms (i.e., cultural tightness) over independence, and which tend to show less tolerance for difference [45,46], autistic individuals may face increased rejection [47] (see also Kim et al. [15] discussing this in the Republic of Korea). Such factors likely affect autistic students' HE journeys, and understanding these experiences within the context of HE may provide a more nuanced perspective of autistic students' experiences and perspectives in diverse socio-educational contexts.

The present study therefore investigated the following research questions:

1. What are the experiences, opportunities, and challenges faced by autistic students in HE in Singapore?
2. What are non-autistic students' experiences of studying alongside and socially engaging with autistic students in HE in Singapore?

2. Methods

2.1. Participants

Inclusion Criteria

All participants had to be over 21 years old (or over 18 years old if they were from the National University of Singapore, as per their research guidelines), able to self-report and complete an online survey, and fluent in English (Singapore is a multilingual country with four official languages: Malay, Mandarin, Tamil and English [48]. English is the working language of education, business and administration in Singapore [49] and is taught as a compulsory first language in schools [50]. Based on the 2020 population census, at least 79.8% of Singapore residents are literate in English [51]).

Autistic students who reported a diagnosis of Autism/Autism Spectrum Disorder/Asperger's Syndrome/Pervasive Developmental Disorder–Not Otherwise Specified by a qualified professional, and who were enrolled full time in, or had graduated between

2015–2019 from, an institute of HE in Singapore, were eligible. Autistic current students and recent graduates were recruited (compared to only non-autistic current students) to maximise the number of eligible autistic participants. The 2015–2019 timeframe was chosen as data collection occurred in early 2020, and students who graduated prior to 2015 would likely have had substantially different experiences from those who graduated more recently, especially since disability support offices were only started in 2014 in Singapore [52]. Institutes of HE in Singapore refer to universities/colleges and polytechnics (polytechnics provide practice-oriented skills and training that enable students to graduate as work-ready professionals [53]).

Non-autistic students had to be enrolled full-time in an institute of HE in Singapore, to not have an autism diagnosis, and to have had direct experience interacting with autistic students in an HE setting (for this reason, we invited non-autistic students who were at least in their second year of study).

2.2. Participant Characteristics

Twenty-six autistic students attempted the online survey, with 22 completing it. Data from two of the participants were not included in the analyses, as they had both graduated before 2015, leaving a final sample size of 20 autistic participants (see Table 1 for demographic characteristics). All but one of the autistic participants had previously attended mainstream schools. None reported previously having an Individualised Education Plan, and only one had received accommodations (extra time) in school prior to HE.

Table 1. Demographic characteristics of autistic and non-autistic participants.

Participants' Characteristics	Mean (SD) or N (%)	
	Autistic Students (N = 20)	Non-Autistic Students (N = 22)
Age in years	24.25 (2.38) [21–29]	22.64 (2.32) [20–30]
Gender		
Female	5 (25.0)	14 (63.6)
Male	15 (75.0)	8 (36.4)
Other	-	-
Nationality		
Singaporean	19 (95.0)	20 (90.1)
Other	1	2
Ethnicity ^a		
Chinese	20 (100.0)	21 (95.5)
Indian	-	1 (4.5)
Faculty/School of study		
Arts and social sciences	3	7
Business	2	2
Computing	2	1
Design and environment	-	1
Engineering	4	5
Medicine	-	2
Science	9	4

Table 1. Cont.

Participants' Characteristics	Mean (SD) or N (%)	
	Autistic Students (N = 20)	Non-Autistic Students (N = 22)
Current year of study		
Polytechnic—Year 3	1 (5.0)	-
University—Undergraduate Year 1	2 (10.0)	-
University—Undergraduate Year 2	2 (10.0)	4 (18.2)
University—Undergraduate Year 3	1 (5.0)	9 (40.9)
University—Undergraduate Year 4	4 (20.0)	8 (36.4)
University—Undergraduate Year 5	1 (5.0)	-
University—Masters Final Year	-	1 (4.5)
NA: Graduated ^b	9 (45.0)	-
Cumulative Average Point ^c (out of 5)	3.70 (0.59)	4.03 (0.47)
Co-occurring conditions reported		
None	16 (80.0)	
ADHD	2 (10.0)	
Social anxiety and depression	1 (5.0)	
Somatisation disorder with obsessive compulsive and anxiety traits	1 (5.0)	
Personally know someone who is autistic		
Close relative		2 (9.1)
Extended family		1 (4.5)
Friend		4 (18.2)
Acquaintance		14 (63.6)
Other		1 (4.5)
Interaction context with autistic student(s) in HE		
Co-curricular activities		2 (9.1)
Group projects		8 (36.4)
Internship		4 (18.2)
Lectures		1 (4.5)
Seminars/Tutorial classes		7 (31.8)

^a Singapore is a multi-ethnic Asian-majority society comprising four main ethnic groups: Chinese (75.7%), Malay (15.2%), Indian (7.5%), and Others (1.6%) [54]. ^b Mean number of years since graduation was 2.22. ^c Cumulative Average Point (CAP; maximum 5.00, where 4.50 and above indicates first class, 4.00–4.49 indicates second upper class, 3.50–3.99 indicates second lower class, and so on) is the equivalent of Grade Point Average (GPA; maximum 4.00); usage varies by institution. For this study, most participants attended institutions using CAP scores; thus, GPA scores were converted to CAP scores for analysis.

Thirty-seven non-autistic students attempted the survey, with 26 completing it. Four non-autistic participants did not meet inclusion criteria (one was in their first year of study, while three interacted with autistic peers only outside of HE), leaving a final sample size of 22 non-autistic participants (see Table 1).

2.3. Survey

Data were collected through open-ended questions in two separate anonymous online surveys—one each for autistic and non-autistic students—hosted on Qualtrics (<https://www.qualtrics.com>; accessed on January–April 2020).

The main survey questions pertained to autistic students' experiences, needs, opportunities, and challenges in HE, and non-autistic students' experiences of working and interacting with their autistic peers. Questions revolved around the most relevant and common aspects of HE investigated in the existing literature (e.g., focus group themes of "Transition to higher education" and "Social life" from Cai and Richdale [13]) or which

were otherwise highly relevant to the scope of this study (e.g., the Singapore context). The first author (EL) developed and/or reworded the questions following a review of existing research (e.g., question prompts from Van Hees et al. [5]) in consultation with the senior author (IM) and second author (SW), who is an autistic university Honours Psychology graduate (see Table 2 for survey outline; the full survey can be obtained from the first author).

Table 2. Outline of the seven domains of life in HE explored in the survey by participant group, with example questions.

Participant Group	Autistic Students	Non-Autistic Students
Domain ^a Excerpt of question	Transition into HE <i>“What was the transition from secondary school/junior college/national service to higher education like for you?”</i>	
	Academics: Learning/studying in HE <i>“How has learning/studying in higher education been for you thus far?”</i>	Academics: Learning/studying alongside autistic students in HE <i>“What are your experiences learning/studying alongside autistic students in higher education so far?”</i>
	Social life: Interactions and relationships with others in HE <i>“What are your experiences of social interactions and/or social relationships with others in higher education so far?”</i>	Social life: Interactions and relationships with autistic students in HE <i>“What are your experiences interacting and developing social relationships with autistic students in higher education so far?”</i>
	Self-advocacy <i>“Higher education students often have to speak up for themselves rather than rely on their family or teachers for help. Please describe and share your experiences of speaking up for yourself/advocating.”</i>	
	Preparing for transition out of HE and into employment <i>“Have you already taken any steps to prepare for employment after graduation? If yes, could you please tell us about these experiences?”</i>	
	The Singapore context and its effects on autistic students’ experiences of HE <i>“Please tell us if, and how, you think the Singaporean educational system and social context may affect different aspects of the higher education experience for you or other autistic students.”</i>	The Singapore context and its effects on autistic students’ experiences of HE <i>“Please tell us if, and how, you think the Singaporean educational system and social context may affect different aspects of the higher education experience for autistic students.”</i>
	Suggestions for HE to better meet the needs of autistic students <i>“Overall, based on your experiences in higher education so far, how do you think higher education needs to change to better meet the needs of autistic students, whether academically, socially, or emotionally?”</i>	

^a Refers to the broad aspect of /related to HE addressed in each survey question.

2.4. Procedure

The study was conducted in accordance with the Declaration of Helsinki [55]. Ethics approval was provided by the Institutional Review Board of the National University of Singapore (reference code S-19-376).

Autistic students were recruited through HE disability support offices, disability organisations, and university research portals. Non-autistic students were recruited through university student organisations and research portals. All recruitment was conducted through online postings, emails, and physical poster displays. Data were collected between January–April 2020. All participants gave informed consent before attempting the online survey, which comprised a demographic questionnaire followed by open-ended questions (Table 2). At the end of the survey, participants were given debriefing information and

directed to a separate form to provide information for reimbursement purposes (SGD 5 for non-autistic students; SGD 7 for autistic students, due to differences in survey length).

2.5. Data Coding and Analysis

Framework analysis [56], a type of codebook thematic analysis [57], was primarily conducted by the first author (EL), with guidance from and frequent discussions with the senior author (IM). Framework analysis was chosen for both its structured organisation of codes, which was important due to the different domains of HE investigated in the survey questions, and its flexibility in allowing iteration and reflexivity in the analytical process [58]. An inductive approach was deemed most suitable as autistic students' experiences of HE outside of Western countries are under-researched and such an approach would allow for themes that reflect Singaporean/Asian perspectives to be identified, rather than an a priori top-down approach of developing a coding scheme based on the predominantly Western literature to date [59].

The adapted framework analysis for this study largely followed the process described by Gale and colleagues [58] with the exclusion of Stage 1 (Transcription), as this was an online survey and responses were already digitised textually. In Stage 2, EL first read and re-read participants' responses in full to ensure data familiarisation. Stage 3 involved developing codes: EL employed "open coding", where all portions of participants' responses that seemed relevant to any survey question or to the research topic were given a code describing the portion (see [58]), regardless of whether the portion actually answered its respective survey question. Subsequently, in Stage 4, a working analytical framework was developed whereby codes were revised, integrated, and grouped into categories. In this stage, EL extensively discussed and reviewed the working analytical framework with the senior author (IM) and with the autistic co-researcher (SW). Responses were then re-read and codes/categories were further reviewed and refined as necessary to ensure relevance and coherence. The coding process was thus iterative and also reflexive to account for the researchers' positionalities and engagement with the analytic process [58]. In Stage 5, the analytical framework was applied—EL re-coded the responses based on the final analytical framework. In Stage 6, EL charted the data into the framework matrix (see also [56]), which IM and SW reviewed. Finally, in Stage 7, EL interpreted the data and identified common ideas/connections between ideas, which IM and SW reviewed and helped to refine. At all stages, any disagreements were discussed to consensus between the three researchers. The themes and subthemes identified were therefore developed inductively from participants' responses and were then grouped deductively according to each of the seven main survey domains; these domains were determined a priori as described in the Survey section above. The overall process thus utilised inductive analytical techniques within a deductive organisational structure.

As participants' responses may include personal details and information that are potentially identifiable, the raw survey data will not be made openly available. However, analysed data can be obtained from the corresponding author.

3. Results

Eighteen themes were identified (see Figure 1) across the seven broad domains explored in this study (see Table 2). Within each domain, themes from autistic students are reported first and denoted [AUT], followed by common themes identified from both sets of participants denoted [AUT/N-AUT], then those from non-autistic students denoted [N-AUT]. Quotes marked with [AUT] refer to autistic students and [N-AUT] to non-autistic students, followed by their participant number.

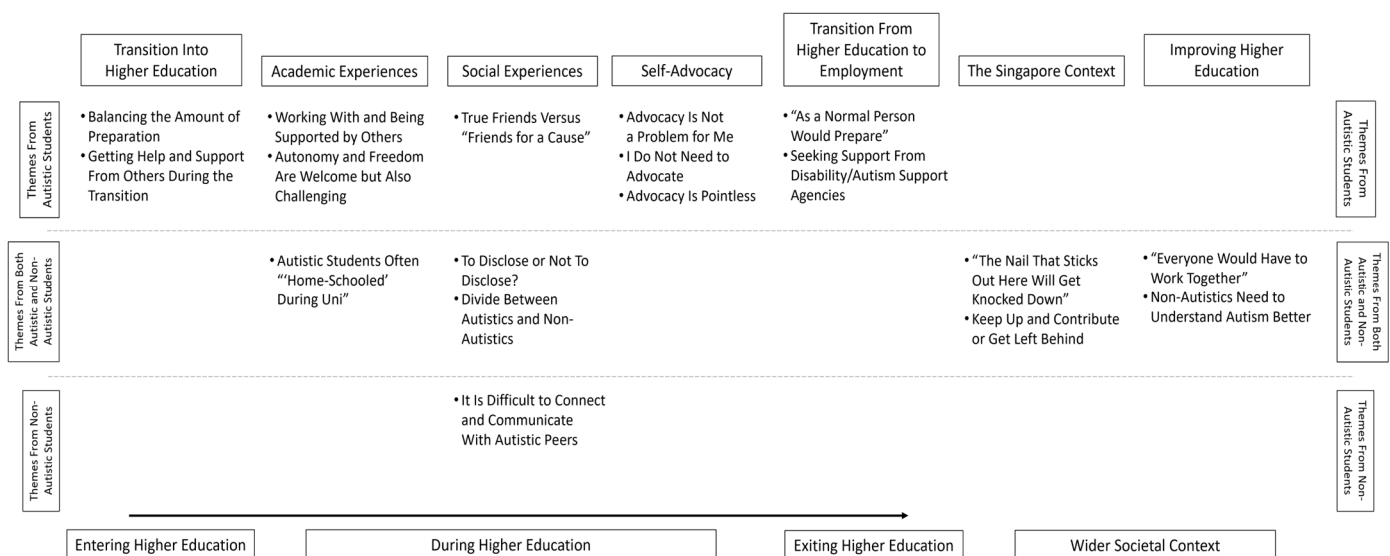


Figure 1. Themes organised by the seven domains explored in this study, by HE timeline and by participant group (autistic and non-autistic students).

3.1. Domain 1: Transition into HE

3.1.1. Theme 1.1: Balancing the Amount of Preparation [AUT]

Autistic students indicated that knowing what to expect during the transition to HE "provides a sense of assurance and security" [AUT; P13], while not knowing led to uncertainty, anxiety and stress. However, responses indicated there needs to be a balance so that students are not overwhelmed by the abundance of information they need to process: "I spent many late nights reading up . . . about what is expected (the email included a link to the Freshmen guide, and in there were so many links to other pages within the [institution] website, and in those pages there were more links. Because I didn't know which ones were important and which were not, I ended up trying to read all of it. It was a stressful experience." [AUT; P5].

3.1.2. Theme 1.2: Getting Help and Support from Others During the Transition [AUT]

Many respondents were supported by others during their transition into HE. Some had more direct help, such as a parent "driving me to the [institution] campus to bring some of the essential items to the Hall" [AUT; P5], while others were supported less directly: "I had sufficient encouragement from my colleagues and superiors to be more confident in presenting myself to others that the transition was actually smooth" [AUT; P2]. Students also made use of their respective institution's orientation programmes for incoming freshmen: "knowing course mates from orientation made the transition easier as I was not alone in my course" [AUT; P12].

3.2. Domain 2: Academic Experiences

3.2.1. Theme 2.1: Working with and Being Supported by Others [AUT]

Many autistic students mentioned group work, and some enjoyed it while others experienced it negatively, with one student describing it as his "least favourite [HE] activity" [AUT; P13]. Students also said that academic life was eased with the assistance of "supportive lecturers" [AUT; P3] and being able to "[consult] my seniors whenever I was in doubt" [AUT; P4].

3.2.2. Theme 2.2: Autonomy and Freedom Are Welcome but Also Challenging [AUT]

Autistic students described autonomy and freedom in HE as welcome, but sometimes challenging: "I like the freedom, but I also frequently end up not managing my time well, or forgetting important things" [AUT; P15]. Another positive aspect of HE was the ability to

plan their own timetable: “I could have more breaks between lessons, giving myself more time to study or do my own things” [AUT; P4]. However, this posed a struggle to some: “I found the increased need to plan my own study with the module-based curriculum new and hard to get used to” [AUT; P18].

3.2.3. Theme 2.3: Autistic Students Often “‘Home-Schooled’ during Uni” [AUT/N-AUT]

Autistic students often reported choosing to self-study rather than attend classes: “I didn’t attend lectures. I also didn’t attend tutorials. In some way you can think of it as I ‘home-schooled’ during Uni” [AUT; P6]. Non-autistic students echoed this, noting that some autistic peers “did not attend many of the lectures” [N-AUT; P2].

3.3. Domain 3: Social Experiences

3.3.1. Theme 3.1: True Friends versus “Friends for a Cause” [AUT]

Several autistic students reported making friends easily in HE. For example, one said of his friends: “Their personalities were a decent fit with mine, and . . . we share similar interests, so we got along well” [AUT; P15]. However, some noted that meaningful social connections partially depended on the structure of academic life, as social contacts were easily made through group projects, but groupmates tended to be “friends for a cause” and “the ‘friendship’ ended the day the project ended” [AUT; P5].

3.3.2. Theme 3.2: To Disclose or Not to Disclose? [AUT/N-AUT]

Autistic students had varied experiences surrounding diagnostic disclosure in HE. One autistic student “felt the need to disclose [his] autism . . . to minimise potential communication problems and misunderstanding since people don’t know about autism” and said that a group he disclosed his condition to “listen[ed] to me share [and] showed interest by asking more about it and asking how they can communicate with me” [AUT; P5]. Relatedly, one non-autistic student described making adjustments in response to a peer disclosing their autism: “As he was very open about his ASD, he told us about his condition and told us how our [executive committee] can help him to work better. For instance, saying things in a more straightforward manner, rather than using subtle social hints that people usually does [sic]. Towards him, we were a lot more understanding and even made accommodations that would help him with his work.” [N-AUT; P3].

Other non-autistic students stated a preference for greater disclosure from autistic students: “It may help us help them if the autistic students could be encouraged to be more open about their condition, so as to allow us to be more patient and understanding with them” [N-AUT; P2].

Another autistic student was “open about [her] condition” as “it’s a good filter for genuine friends”, but also reported a negative experience: “Someone reject[ed] my condition—‘I’ve worked with autistic children before and you definitely don’t have autism.’ . . . I felt like something that formed a very core part of me (life experience and way of thinking) had been rejected.” [AUT; P6].

Other autistic students mentioned past negative social experiences and stigma as reasons to avoid disclosing their condition in HE: “Why give them another label to judge me with?” [AUT; P10].

3.3.3. Theme 3.3: Divide between Autistics and Non-Autistics [AUT/N-AUT]

Both autistic and non-autistic students noted that autistic students sometimes behaved in ways that were “out of the norm” [AUT; P4], with non-autistic students describing such interactions as “slightly socially awkward” [N-AUT; P18]. The differences between autistic and non-autistic students often led to autistic students spending much of HE alone, though some were content with this: “I was alone for most of my first year. I was fine with that though” [AUT; P15]. However, others reported feeling ostracised by their non-autistic peers: “No one wanted to be my [dance] partner” [AUT; P19]. Non-autistic students also observed this ostracism of their autistic peers: “Most people in school tend to shun him as

most can tell he is ‘not like the rest of us’ . . . If he started to talk to the people seated near him [in class], sometimes they move their seats away from him.” [N-AUT; P14].

3.3.4. Theme 3.4: It Is Difficult to Connect and Communicate with Autistic Peers [N-AUT]

Non-autistic students noted that it was harder to “resonate” with their autistic peers [N-AUT; P13] and perceived a “barrier that separated the autistic peers from non-autistic students” [N-AUT; P5]. One student noted that “It was difficult to get [autistic peer] to understand my perspective and also difficult for me to understand her perspective” [N-AUT; P8].

3.4. Domain 4: Self-Advocacy

3.4.1. Theme 4.1: Advocacy Is Not a Problem for Me [AUT]

Some autistic students had no trouble advocating for themselves. One student spoke to multiple pastoral care staff at his institution about his “academic concerns and emotional concerns” [AUT; P5], while another “cleared misconceptions about autism multiple times” [AUT; P2]. Another student described receiving help from their parents yet noted needing to be independent from them: “I always speak up for myself—my parents aren’t going to be around to help me forever, and sometimes I have to speak up for myself to them!” [AUT; P10].

3.4.2. Theme 4.2: I Do Not Need to Advocate [AUT]

A few autistic students felt that they did not need to advocate for themselves, citing reasons such as “I didn’t feel disabled” [AUT; P11] and “I did not see the need [for] . . . special arrangements or supports, as I see myself as capable of going through the norms” [AUT; P9].

3.4.3. Theme 4.3: Advocacy Is Pointless [AUT]

Some autistic students argued advocacy could be pointless as they felt that “no one would understand [their] difficulties” [AUT; P3]. Another elaborated: “If a person has the misconception that autistic individuals drool from the mouth and are unable to string a sentence together, there’s no point trying to persuade him otherwise. If someone thinks autism is an inability to speak, why risk being labelled a liar by talking? When autism speaks, nobody listens.” [AUT; P6].

3.5. Domain 5: Transition from HE to Employment

3.5.1. Theme 5.1: “As a Normal Person Would Prepare” [AUT]

Many autistic students described preparing to enter the workforce “as a normal person would prepare” [AUT; P12] and cited methods such as “[applying] for jobs using main-stream job portals” [AUT; P4] and utilising their institution’s career services. Additionally, students described utilising connections with both personal and professional contacts: “A friend referred me to learn from [company]. . . . After that first meeting, the founder asked me to join them as an intern. I accepted and I guess I did well, because in January I just got offered a job!” [AUT; P10].

3.5.2. Theme 5.2: Seeking Support from Disability / Autism Support Agencies [AUT]

Some students sought help from disability / autism-specific organisations, such as receiving “assessment and employability training” [AUT; P5] from the Employability and Employment Centre and “seeking support from SG Enable in job finding” [AUT; P7] (SG Enable is “the focal agency for disability and inclusion in Singapore” [60]; their services include supporting people with disabilities in the job-seeking process and supporting companies to be more disability-inclusive).

3.6. Domain 6: The Singapore Context

3.6.1. Theme 6.1: “The Nail That Sticks Out Here Will Get Knocked Down” [AUT/N-AUT]

Respondents described a sociocultural emphasis on conforming to ideal norms: “The expectation to behave [in] more ‘normally’ and ‘socially acceptable’ ways makes it more exhausting for autistics” [AUT; P5]. Some also noted that autistic people would face rejection if they were unable to “blend in” as “Singapore especially encourages following the norm and rejecting deviants” [AUT; P10]. Non-autistic students expressed similar views, noting that “[autistic] students are always encouraged to be ‘normal’” [N-AUT; P2] and that “the nail that sticks out here will get knocked down” [N-AUT; P1]. One non-autistic student who has an autistic relative further described the stigma and possibly shame surrounding autism: “There’s still an inherent stigma of being autistic, so even my parents made me swear not to tell anyone about my family having someone with autism. My parents worried about this family member not being able to . . . be perceived normally.” [N-AUT; P10].

3.6.2. Theme 6.2: Keep Up and Contribute or Get Left Behind [AUT/N-AUT]

Several respondents described the emphasis on and competitiveness of academic achievement in Singapore: “The Singaporean educational system emphasises too much on grades” [AUT; P4] which could be “deleterious [or] beneficial” depending on one’s capabilities, as “people with autism [who] aren’t as adept . . . may be left behind by the system” [N-AUT; P1]. Non-autistic students also noted that “competition is high, so autistic students tend to be left out” [N-AUT; P17] because “many people would be mindful of a potential burden if they were to include the autistic student and choose not to work with [them] at all instead.” [N-AUT; P20].

3.7. Domain 7: Improving HE

3.7.1. Theme 7.1: “Everyone Would Have to Work Together” [AUT/N-AUT]

Most autistic students noted that existing HE supports were unsatisfactory: “The current measures of special arrangements (extended quiz or exam periods) yet expecting [autistic students] to do adequately well is not helpful” [AUT; P9]. Autistic students also thought that “the support systems for autistic students were weak” [AUT; P16], while non-autistic students observed: “[The education system] doesn’t seem to be flexible enough . . . and it’s really a hit or miss for [autistic students] whether they do find a warm and understanding environment” [N-AUT; P16]. Both groups of students thus called for more autism-informed accommodations *throughout* the HE journey. Additionally, the needs for “[increased] availability of mental health services” [N-AUT; P1], “designated quiet areas” [AUT; P5], and “orientation . . . guidebook[s] for students with autism” [AUT; P10] also surfaced.

Crucially, improving HE supports would require involvement from various stakeholders, as each could contribute a unique angle of support: “Implementation-wise I think everyone would have to work together. Policy makers and teaching staff would be responsible for administrative/academic systems, while peers would be responsible for social systems” [AUT; P10].

3.7.2. Theme 7.2: Non-Autistics Need to Understand Autism Better [AUT/N-AUT]

Many respondents thought that non-autistics need to be better educated about autism so that they can engage with their autistic peers as equals: “Not everyone is versed with [neurodevelopmental] conditions, and knowing what the condition is about may allow others to be more understanding of them” [N-AUT; P2]. Such change needs to take place at a level much wider than just the education system: “It requires the change of a societal mindset . . . we should teach people about inclusivity from a young age to avoid unnecessary discrimination” [N-AUT; P14]. Misconceptions about autism also need to be addressed: “[Non-autistic people] need to be educated that [autistic people] are just different. They are not ‘bad’ or ‘harmful’ towards our society. It is important that we become more open-

minded" [N-AUT; P13]. This would be a large-scale effort, and "de-stigmatizing [autism] is a key step using media outlets" [AUT; P11].

4. Discussion

The present study sought to investigate and understand (i) the experiences, opportunities, and challenges of autistic students in HE in Singapore; and (ii) the perspectives and experiences of non-autistic HE students studying alongside and socially engaging with their autistic peers. Framework analysis of participants' responses revealed a wide variety of experiences and perspectives of autistic and non-autistic HE students in Singapore, some of which were similar to those discussed in extant literature. For example, similar to experiences of autistic students in Western countries, our participants talked about how not sufficiently preparing for HE contributed to heightened and at times unnecessary anxiety and stress [9,13], although too much information about the transition could also be overwhelming. There was great diversity in responses about academic life, social experiences, disclosure, and self-advocacy, where autistic students reported a mix of successes, opportunities but also challenges, mirroring findings from existing studies in Western countries (e.g., [24]). Our finding that autistic students often made use of disability/autism-specific services alongside "mainstream" methods to prepare for employment is somewhat aligned with literature, where "mainstream" employment support from institutions has been found helpful [61], though other disability/autism-specific employment-support services were insufficient [62].

However, we also identified novel themes pertaining to Singapore's unique socio-cultural context that influenced the experiences and perspectives of our autistic and non-autistic participants. Regarding independence in organisation and planning, our autistic participants only reported challenges with *academic* responsibilities, whereas autistic students in other studies reported difficulties balancing responsibilities in general (e.g., [22]). This difference could be due to the emphasis on and competitiveness of education in Singapore, which may contribute to students feeling greater stress to juggle academic responsibilities specifically, compared to other responsibilities. Also, students in Singapore tend to live at home while in HE [63], which likely enables them to focus on academic activities while retaining existing supports from their families, compared to students in other countries who may leave home to study in other cities and therefore have to navigate additional responsibilities relating to independent living.

Additionally, while many autistic students in studies from other countries reported challenges relating to co-occurring mental health conditions (e.g., [33]), our autistic participants only briefly discussed stress and anxiety, and 80% reported no co-occurring mental conditions (see Table 1). Stigma towards mental health problems in Asian societies may affect reporting [64], however this low reporting could also be because we did not explicitly ask our participants to talk about their mental health during HE.

Participants also noted considerable social isolation of autistic students, as seen from themes in both academic and social aspects of HE. This appears to have, at least in part, roots in the wider societal context: Singapore's emphasis on conformity to the norm may exacerbate non-autistic students' difficulties with individuals who do not appear to fit within societal norms. Further, deep-seated societal [mis]perceptions and/or a lack of understanding of autism may contribute to some of the non-autistic students' reluctance to befriend or work with autistic peers. These themes cement the stigma surrounding autism, likely perpetuating not disclosing one's autism diagnosis in HE to avoid stigmatised attitudes, not advocating for accommodations and/or supports, and hiding one's autism, which in turn may lead to more difficulties and subsequent pressures to hide these difficulties, and so on, in a negative vicious cycle. Autistic masking has only been recently studied in Singapore [65] with similar findings emerging, but this negative cycle was also alluded to by autistic students and graduates in the Netherlands, who worried about being rejected by peers and academics in university climates that were not accepting of autism, which led to them hiding their autism, and distress at doing so [66]. Additionally, Singa-

pore's highly competitive academic environment also has social implications, as group work can be a source of both acquaintanceship/friendship as well as tension and competitiveness, thus compounding autistic students' isolation; similar experiences were noted by autistic university students in France [67]. Such persistent isolation of autistic students suggests that autistic students do not experience a sense of belonging in HE environments, which is of pressing concern because lower belongingness has been linked to poorer HE engagement and mental health [68] as well as poorer academic performance in HE students generally (see [69] for a review of interventions targeting student outcomes). Fostering more flexible and inclusive academic and social environments is therefore imperative to ensure that autistic students are able to thrive in, rather than be continually isolated within and disadvantaged by, HE contexts. Supportive relationships from academics, mentors, and peers inside and outside HE may help with this, as they did in the Netherlands [66]; having autistic-led spaces (e.g., social spaces [70]) may also help to foster acceptance and belonging for autistic students in HE.

Our findings also support the relevance of the double empathy problem within the context of HE [29], evidenced in both autistic and non-autistic students' responses across multiple themes. For example, non-autistic students described a perceived "barrier" between autistic and non-autistic students, which obstructs both sides' ability to understand and be understood by one another and leads to a potential "breakdown in reciprocity and mutual understanding" [71] (Theory of double empathy section, para. 3). The explicit duality of the *double* empathy problem highlights how both autistic and non-autistic individuals have agency over, and are affected by, the interactions between them. Yet, as highlighted in our Introduction, much of the research about autistic students' experiences of HE focuses primarily or exclusively on autistic students' perspectives—the relevance of the double empathy problem in HE clearly reinforces the importance of research exploring perspectives and experiences of both autistic and non-autistic stakeholders. The double empathy problem also highlights that non-autistic people need to acknowledge their role and contributions in shaping the interactions with, and the social environments of, autistic people, and further emphasises the need for institutions to consider how HE environments (physical spaces, institutional culture, and so on) can be adapted to become more inclusive for autistic students. More generally, society needs to address the stigma/misconceptions towards autistic people that are currently present within non-autistic communities.

5. Limitations

Our sample was less diverse than intended. Most participants (71.4%) were from a single university, and we only recruited three polytechnic students/graduates. All participants were ethnically Chinese except for one non-autistic student, hence it is possible that some of our findings may be less generalisable to individuals from other Asian ethnic groups or other institutions. However, nearly 80% of Singapore's population are ethnically Chinese [54], and the university which most participants attended has the largest student population of all Singaporean universities [72]. As this was the first study to explore autistic students' experiences in HE in Singapore, future work should explore experiences of autistic students across different HE settings.

Only formally diagnosed autistic students participated in this study, and autistic students were also mainly recruited through HE disability support offices and disability organisations. As such, students who did not have a formal diagnosis and/or who did not disclose their diagnosis to the aforementioned offices/organisations may have been underrepresented in the present study. Future research should consider inviting both formally diagnosed and self-identified autistic students through a wider range of formal and informal channels. This could increase the potential sample size of future studies and also ensure a more diverse representation of the experiences of autistic individuals.

Additionally, although some students spontaneously mentioned their living situations while in HE (e.g., in university campus halls), we did not explicitly ask for this information. If the autistic students live at home, as many HE students in Singapore do [63], this may

reduce their sense of inclusion and belonging in HE, as it did for autistic HE students in the Netherlands [66].

Our final limitation may pertain to the a priori selection of domains/aspects of HE investigated in the study and our use of online surveys. Broader questions not restricted to any particular aspect of HE (e.g., “What do you think about being in university/polytechnic?”) may have enabled other topics to be spontaneously mentioned by participants (e.g., discussions about mental health/wellbeing, as mentioned earlier). Additionally, collecting data through interviews or focus groups, where researcher–participant interactions are more dynamic, could have allowed for follow-up questions and elaborations and more in-depth responses. Online surveys were selected as they ensured anonymity and the opportunity to share experiences more openly (compared to interviews/focus groups) and were the most feasible choice for data collection during the early phases of the pandemic. Future qualitative studies could employ these or alternative methods of data collection (e.g., journalling or art creation).

Possible Implications and Recommendations for Research and Practice

Future research should include the perspectives of academic staff/faculty, as well as caregivers/family members of autistic HE students who are often involved in the students’ day-to-day lives, especially in countries where autistic students tend to remain within the family home while attending HE. Students who have experienced both living at home and independently could additionally be asked to consider if, and how, each living arrangement has influenced their HE experiences. Researchers should also examine factors that predict autistic students’ successful navigation and completion of HE (e.g., [73]), which will allow stakeholders to target these factors when improving supports for autistic students.

Promising transition programmes and supports, such as devising Individualised Education Plans for HE [74] and developing formal transition plans for autistic students [75], can be adapted to the Singaporean and other Asian contexts. Within HE, more autism-friendly supports such as quiet rooms could be set up. Faculty should allow more flexibility in lesson and assessment formats; peer networks could also be set up to strengthen social connections and reduce autistic students’ social isolation [12]. These supports have been specifically identified as helpful by our autistic participants in Singapore and by those in other countries (e.g., [18]).

Crucially, non-autistics need to understand autistic people better. Institutes of HE should invest in training their staff and their non-autistic students in understanding autism and neurodiversity more broadly and in valuing and supporting neurodivergent students. Neurodiversity appreciation could begin at the lower rungs of education. As a multiracial and multireligious society, Singapore’s schools intentionally focus on building racial and religious harmony through the curriculum and school events, starting at the primary school level [76]. Including neurodiversity in these efforts would encourage future generations to better understand autistic and other neurodivergent people from a younger age, perhaps mitigating the double empathy problem.

6. Conclusions

Key findings from autistic and non-autistic HE students in Singapore revealed a divide between autistics and non-autistics and that inclusivity for autistic people, both within HE and in the wider society, needs to be achieved. Institutes of HE should implement more autism-informed supports. In order to create more inclusive environments both in the broader society and in HE specifically, primary and secondary schools as well as institutes of HE should incorporate neurodiversity education into existing curricula, to promote the acceptance and integration of autistic individuals in and beyond the education system. Moreover, the relevance of the double empathy problem to HE indicates that inclusivity needs to be a joint venture between autistic and non-autistic individuals. Finally, a stronger commitment and increasing reasonable adjustments, flexibility and inclusion is needed from HE institutions and non-autistic stakeholders in HE, including peers, staff and

management, to improve inclusion, participation and educational outcomes for autistic students in HE.

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