

What happens after school? Exploring post-school outcomes for a group of autistic and non-autistic Australian youth

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Abstract

Young autistic Australians are less likely to attend higher education and have lower employment rates than non-autistic Australians (Australian Bureau of Statistics, 2017). Few studies have examined post-school outcomes among this population. Using data from the first phase of a national longitudinal study including autistic ($n = 79$) and non-autistic ($n = 107$) 17-25-year olds, we found young autistic adults were a) less likely to be employed, b) more likely to attend technical and further education (TAFE) than university, c) more likely to enrol in higher education on a part-time basis and d) less likely to be engaged in both higher education and employment, than their non-autistic peers. Findings highlight a need to understand post-school trajectories of young autistic adults.

What happens after school? Exploring post-school outcomes for a group of autistic and non-autistic Australian youth

Autism spectrum disorder (hereafter referred to as ‘autism’ and individuals with a diagnosis as ‘autistic’¹) is a neurodevelopmental condition characterised by challenges with social communication and interaction and engagement in restricted, repetitive behaviours, interests and activities and sensory sensitivities (American Psychiatric Association, 2013). While understanding of autism is increasingly evolving, current estimates suggest approximately 1 in 59 individuals is autistic (Baio et al. 2018). Knowledge concerning autism in adulthood is limited, and research investigating challenges and needs among this population is in its infancy (Damiano, Mazefsky, White, & Dichter, 2014). What is apparent from the available literature are the challenges experienced by transition-aged youth in navigating employment and higher education (e.g., Taylor & DaWalt, 2017; Taylor & Seltzer, 2011; Shattuck et al., 2012), and at least in Australia, there are limited services available to meet the needs of young autistic adults without a co-occurring intellectual disability (Neary, Gilmore, & Ashburner, 2015). While available Australian data suggest that autistic adults attend university less frequently than non-autistic adults and are less likely to be employed (Australian Bureau of Statistics [ABS], 2019), few studies have examined post-school outcomes among this population. The current study addressed this gap by examining data from the first time point of a national longitudinal study, to determine rates of employment and further education among transition-aged young autistic adults.

Autism and higher education

¹ Recent research has indicated that many individuals with autism spectrum disorder prefer identity first language to describe autism, such as ‘autistic’ (Kenny et al., 2015). Therefore, we will use ‘autistic’ in the current paper.

From the available literature, we know that autistic individuals are less likely to complete a university degree than their non-autistic peers (ABS, 2019) and are likely to experience challenges while at university (e.g., Neary et al., 2015; Nuske, Rillota, Bellon, & Richdale, 2019). In one Australian study, Anderson, Carter, and Stephenson (2018) found that those who attended university may be hesitant to disclose their autism for reasons such as not feeling it was necessary, wanting to try university on their own, or being unsure how to go about doing so. They also found that many do not utilise supports that are available within university. Similarly, Cai and Richdale (2016) found that many Australian students attending university or technical and further education (TAFE) did not disclose their autism diagnosis until after a significant problem had occurred and support was needed. While the transition into post-school education can be challenging, recent research has indicated that those who are near completion or who have recently completed university have a concern about then transitioning into employment following completion of their degree (Vincent, 2019).

Autism and employment

In Australia, our best estimate for the autistic labour participation rate is 38%, which is lower than individuals with (53%) and without a disability (84%; ABS, 2019). That is, there are significantly fewer autistic individuals employed or actively seeking employment and available to start. Specific challenges in seeking employment reported for autistic individuals include navigating the job application process (Lorenz, Frischling, Cuadros, & Heinitz, 2016), passing successfully through the job interview (Strickland, Coles, & Southern, 2013), determining whether or not to disclose one's autism diagnosis (Higgins, Koch, Boughfman, & Vierstra, 2008), and, similar to non-autistic young adults (Scurry & Blenkinsopp, 2011), gaining employment in an area aligned with one's level of education (Baldwin, Costley, & Warren, 2014).

While there are several thousand autistic job seekers, available services do not have the capacity to meet the needs of autistic individuals, highlighting an area of urgent need in Australia (e.g., Parliament of Victoria Family and Community Development Committee, 2017). While government funded employment support services are available to most autistic Australians (via disability employment service [DES] providers), DES providers have largely low rate of successful placement of autistic clients into employment (Australian Government Department of Jobs and Small Business, 2017). Further, a recent Victorian State Government inquiry indicated that DES experience challenges in working with the autistic population, at least in Victoria (Parliament of Victoria Family and Community Development Committee, 2017). DES providers have no requirement for autism training (Australian Government Department of Social Services, 2018), and to our knowledge there are no data looking at the efficacy of DES services for autistic people. While there are autism specific School Leaver Employment Support (SLES) programs (e.g., Aspect Capable) and autism hiring programs (e.g., Specialisterne Australia, DXC Technology) that target young autistic adults, these remain infrequent and unavailable to most autistic Australians. The apparent lack of understanding of autism in the Australian community presents an additional barrier for autistic individuals in gaining mainstream employment (Jones, Akram, Murphy, Myers, & Vickers, 2018). For example, without an understanding of autism and the needs of autistic employees, employers may have concerns about the cost of adjustments (McFarlin, Song, & Sonntag, 1991), despite preliminary evidence suggesting hiring autistic employees doesn't come at an additional cost (Scott et al., 2017). Further, in simulated job interviews, autistic 'job candidates' have been rated less favourably than non-autistic candidates (Cage & Burton, 2019).

Among autistic transition-aged youth, successfully gaining employment has been cited as a particular challenge (e.g., Roux et al., 2013; Shattuck et al., 2012), and vocational outcomes among this group have been reported as low (e.g., Lounds Taylor & Seltzer, 2011). For those who do gain employment, individuals may face employment in unskilled roles more often than their non-autistic counterparts (e.g., Neary et al., 2015) or face disruptions such as having their employment terminated, due to factors such as social communication challenges (see Black et al., 2020; Chen, Leader, Sung, & Leahy, 2015). While the available literature highlights challenges for autistic youth in the years following school regarding both higher education and employment, research specific to this population in Australia has to date been limited (Anderson et al., 2018). Indeed, the Australian Autism Research Council highlights employment as a priority research area (<https://www.autismcrc.com.au/aarc>).

The aim of the current study was to explore post-school outcomes for a cohort of Australian autistic individuals without a co-occurring intellectual disability, aged 17-25 years and compare this pattern of activity to a cohort of similar-aged, non-autistic individuals. It was hypothesised that autistic individuals would be a) less likely to be engaged in higher education (HE); and b) less likely to be employed, compared to non-autistic individuals. Additionally, type of higher education (e.g., TAFE/community college, university) and enrolment (e.g., full-time, part-time) was explored, as to our knowledge this has not yet been examined in Australia. Given the paucity of data among this cohort, we sought to examine these data in detail, to determine the type of HE in which young autistic adults are engaged and to separate those who are engaged in one or multiple post-school activities. At present, we are unaware of such data being presented elsewhere.

Method

Participants

All data were extracted from the first phase of the [name-blinded for review] study, a national, longitudinal, online study of autistic and non-autistic young people aged between 15 and 25 years². Respondents in the present sample were $N = 186$ individuals who had completed high school ($M_{\text{age}} = 19.39$ years, $SD_{\text{age}} = 2.33$), of whom $n = 79$ identified as autistic (43 males, 35 females, $M_{\text{age}} = 20.25$ years, $SD_{\text{age}} = 2.20$, range 17-25 years) and $n = 107$ identified as non-autistic (26 males, 81 females, $M_{\text{age}} = 20.15$ years, $SD_{\text{age}} = 1.90$, range 17-24 years). All participants in the autism sample had a self-reported, clinical diagnosis of autism, and none reported an intellectual disability. None of the non-autistic individuals reported an intellectual disability.

Measures

In addition to providing demographic information including diagnostic information, age and gender (male/female³), participants completed the AQ-short, a 28-item measure used to broadly assess autistic traits (Hoekstra et al., 2011).

A series of direct questions were asked to establish employment (e.g., ‘Are you currently employed or have a job?’) and education (e.g., ‘Do you currently study at high school, university or TAFE/community college?’) status. The Modified version of the Vocational Index for Adults with Autism (M-VIAA; Sahin et al., in press), was used to provide the number of hours per week worked or spent in HE, and an adapted version of the

² As the Project Leader for the longitudinal study, the second author was involved in the [name of longitudinal study- blinded for review] design. All authors have been involved in data collection. For more information on the [name of study- blinded for review], see here [insert website for study with all reports and publications – blinded for review].

³ While we recognise that male and female are not the only two genders one may identify with, the first phase of the current study included only binary options. This has been rectified in follow up phases of the longitudinal study.

Labour Force Survey (ABS, 2014) was used to gather information about job seeking behaviour in the weeks prior to participation (e.g., ‘Are you looking for work or a job?’).

Procedure

Following university ethics approval, autistic and non-autistic individuals aged 15-25 years were invited to participate in a national longitudinal study including three time points (baseline, 12 months, 24 months); recruitment occurred between 2015-2018. Advertisements were placed on websites and social media accounts for autism specific organisations nationally (e.g., [blinded for review]), university and TAFE networks, and broad social media sites (e.g., Gumtree). Additionally, some participants, primarily in the non-autistic group, were recruited from the online recruitment platform Rulo (<https://rulo.io/>). Interested individuals contacted the researchers for an information sheet and consent form⁴, and following receipt of signed consent, including parent consent where participants were <18 years, they were sent an individualised link for a survey hosted through Qualtrics (Qualtrics, 2018). A hardcopy survey was available on request.

Data analysis

Only participants who had completed high school (ages 17-25 years) are included here. All analyses were conducted at the item level; those with missing data were excluded from specific analyses for these items but retained in the data set. Chi-square tests of independence and independent groups *t*-tests have been used to analyse data. The magnitude of effect size for Cramer’s *V* was interpreted using Cohen’s criteria; namely for *df* = 1, 0.10, 0.30, and 0.50 as small, medium, and large effects, respectively. For *df* = 3, 0.06, 0.17, and

⁴ Participants recruited via Rulo were supplied with participant information electronically and gave electronic consent.

0.29 as small, medium, and large effects, respectively (see Cohen, 1988). The magnitude of effect size for d was interpreted using Cohen's criteria; namely, 0.2, 0.5, and 0.8 as small, medium, and large effects, respectively (see Cohen, 1988).

Results

There were no differences with regard to the age of the two samples, $t(171) = -.01, p = .996$, however there were significantly more females in the non-autistic group (77%) compared to the autistic group (44%; $\chi^2(1) = 20.04, p < .001, V = .34$). As might be expected, the autistic group ($M = 77.04, SD = 10.91$) had a significantly higher score on the AQ-short than the non-autistic group⁵ ($M = 61.21, SD = 11.76$), $t(182) = -9.30, p < .001, d = 1.39$. See Table I for HE variables.

Higher education

There was no significant difference in the proportion of autistic and non-autistic individuals engaged in HE or of those who had already completed HE. A significantly larger proportion of autistic students compared to non-autistic students were engaged in part-time rather than full-time study, with a medium effect size. Finally, a significantly higher frequency of autistic students than non-autistic students reported studying at TAFE/community college rather than university, with a medium effect size.

[INSERT TABLE I HERE]

Employment

Regarding employment, a significantly smaller proportion of autistic individuals (34.6%) were employed compared to non-autistic individuals (68.2%), $\chi^2(1) = 20.52, p < .001, V = .33$, with a medium effect size. Exploring the differences in the number of hours worked

⁵ The AQ-short is not a diagnostic tool, and hence individuals were not classified into groups/excluded from self-reported group membership as a result of their AQ score.

weekly revealed that of those employed there were no differences reported in hours worked weekly between autistic ($M = 18.58$ hours, $SD = 12.26$) and non-autistic ($M = 19.80$ hours; $SD = 12.77$) individuals, $t(90) = 0.41$, $p = .680$, $d = 0.09$.

All post school activities

To consider all post-school activity and those engaged in multiple activities, current education and employment were combined into a ‘post-school activities’ variable with options ‘No HE or employment’, ‘HE only’, ‘HE and employment’, and ‘Employment only’ (Table II). A chi-square analysis between the four categories revealed a statistically significant difference between groups with a large effect size, $\chi^2(3) = 24.33$, $p < .001$, $V = .36$.

[INSERT TABLE II HERE]

Inspecting adjusted standardized residuals at each level for those $\pm z = 1.96$ revealed no differences between the proportion of autistic/non-autistic individuals in the ‘Employment only’ category. Differences were evident however between the number of those in the ‘No HE or employment’ group (more autistic individuals, $z = 2.10$), the ‘HE only’ group (more autistic individuals; $z = 3.60$), and those engaged in both ‘HE and employment’ (more non-autistic individuals; $z = 4.50$).

Only 11 individuals (eight autistic, three non-autistic) were neither engaged in HE nor employed. Of these, five had completed high school (3 autistic, 2 non-autistic), five had completed a TAFE Certificate or Diploma (4 autistic, 1 non-autistic), and one (autistic) had completed an undergraduate university degree. Each of the three non-autistic, and five of the

eight autistic individuals reported actively seeking employment, but had been unsuccessful at the time of data collection.

For those engaged only in HE, we explored how many people were seeking employment at the time of survey completion. A chi-square analysis indicated a statistically significant difference between groups, whereby the autistic individuals (51.2%) were less likely to be seeking employment than the non-autistic individuals (74.2%), with a small to medium effect size, $\chi^2(1) = 4.01, p < .045, V = .23$.

For those engaged only in employment, we explored number of hours worked and found that those in the autistic group (sample numbers provided here for each group due to some missing data for hours worked; $n = 11, M = 21.46$ hours, $SD = 13.37$), were working significantly fewer hours than those in the non-autistic group ($n = 15, M = 35.33$ hours, $SD = 10.55$), $t(24) = 2.96, p = .007, d = 1.16$, with a large effect size. We also explored hours worked among those engaged in both HE and employment. Given differences in the proportion studying full-time and part-time, we looked only at hours worked for those who were engaged in a full-time HE study load and who were also employed (80% of the non-autistic group, and 53% of the autistic group). We found no differences in hours worked between the autistic ($n = 7; M = 11.36$ hours, $SD = 6.41$), and non-autistic ($n = 44; M = 13.65$ hours, $SD = 7.42$), individuals studying full-time and employed, $t(48) = 0.77, p = .444$.

Discussion

In the current study we investigated the post-school activities of a sample of young autistic adults and compared this to a sample of same-aged, non-autistic peers. As anticipated, we found several differences between the groups regarding both employment and education. Our first hypothesis, that autistic individuals would be less likely to be engaged in HE than

non-autistic individuals was not supported; a similar number in each group were engaged in HE. This contrasts with current ABS data (2019), which indicates that autistic individuals are less likely to engage in education following high school. However, this difference may be explained by our study not including individuals with a co-occurring intellectual disability. Differences between groups were evident, however, in HE workload, with autistic individuals being more likely to study part-time. Part-time study may relate to issues associated with executive function difficulties and mental health problems reported for Australian HE students (Cai & Richdale, 2016), as part-time study is likely to be less stressful than studying full-time.

Differences were also evident in the type of HE, with autistic individuals more likely to attend technical and further education (TAFE) or community college than their non-autistic counterparts. This is perhaps unsurprising as TAFE programs are often more structured, with smaller classes, and are generally shorter than university programs. Many autistic individuals prefer structure (American Psychiatric Association, 2013), and there is evidence that autistic people benefit from vocational education and training (Flower, Hedley, Spoor, & Dissanayake, 2019), which is usually provided in the Australian TAFE setting. While some Australian TAFEs/community colleges may offer degree programs, they primarily offer certificate, diploma and trade qualifications in more practical, work-related areas, and some courses may offer articulation with a university degree. Smaller classes, as opposed to large lectures, may also better suit autistic individuals' learning needs. To our knowledge this is the first Australian study to investigate types of HE attended when comparing autistic and non-autistic young adults' HE participation. Initiatives such as the Neurodiversity Hub (<https://www.neurodiversityhub.org/>) tend to focus on university education, and work alongside universities to offer resources for students and staff, and connections with industry.

Our data suggest TAFE/community college providers need to be included in these initiatives too. Further, to best support autistic students, it is important that TAFE and community college providers have an awareness and understanding of autism, and recognise an individual approach to support is required (Anderson, Stephenson, & Carter, 2017; Nuske et al., 2019). Additionally, all HE providers need to provide evidence-based support strategies for autistic adults to ensure success for this population.

The second hypothesis, that autistic individuals would be less likely to be employed, was supported. When examining those only engaged in employment, there were no group differences. However, this finding is not without caveats, as there were also more autistic individuals among those seeking work, in the group neither employed nor engaged in HE. When examining number of hours worked by those employed, we found no group difference among those both employed and studying. However, among those only engaged in employment, autistic individuals were working fewer hours per week than their non-autistic counterparts. Interestingly, when including those who were also engaged in HE, the non-autistic group were employed at a rate (68%), which is above the national average for 15-24 year old Australians (58.7%; ABS, 2019), while the autistic group were employed at a rate (35%), also above the current best estimate employment rate for autistic Australians (27%; ABS, 2019). Nevertheless, the rate of employment for the autistic group was still well below that of their non-autistic peers. Furthermore, given that an average, full-time working week (without overtime) in Australia is 35 hours (7 hours per day), young non-autistic adults tended to be employed full-time while those with autism averaged hours equivalent to three days per week.

Autistic individuals were more likely to be engaged solely in HE than non-autistic individuals, while non-autistic individuals were more likely to be both employed and enrolled

in HE. Given findings of past studies indicating that autistic individuals experience many challenges completing HE (e.g., relating to executive functioning, communication challenges, and co-occurring conditions; See Cai & Richdale, 2016; Nuske et al., 2019), it seems logical the autistic individuals would be less likely to be engaged in both education and employment. This was supported by data on those seeking employment at the time of survey completion. While 51% of the autistic group enrolled in HE were seeking employment, 74% of the non-autistic group were seeking employment. The discrepancy between groups on seeking employment while enrolled in HE suggests that although many autistic individuals do seek both HE and employment, this proportion is lower than for non-autistic HE students. It is possible that some autistic adults do not seek employment while enrolled in HE due to difficulties managing multiple responsibilities; this may relate to executive functioning challenges noted previously (Cai & Richdale, 2016). However, this may lead to a potential disadvantage following graduation for autistic individuals as work experience during HE enrolment can assist with gaining post-HE employment. Thus, unlike their non-autistic counterparts, many young autistic adults may have no work-experience to enhance their perceived employability when seeking a job after graduation. This work pattern also means that autistic individuals are prevented from gaining skills, opportunities, and ultimately independence at a similar rate to their non-autistic peers if they do not or cannot earn a wage while studying. This education and work pattern of young autistic adults warrants further investigation.

Strengths and Limitations

To our knowledge, this is the first Australian study that has both compared post-school outcomes for autistic and non-autistic young adults and examined HE across university and vocational training sectors (TAFE/community college). Primary limitations of

the study were reliance of self-reported autism diagnosis and modest sample size. Given data were drawn from a longitudinal study examining a range of variables (e.g., mental health, wellbeing, physical health), there were limitations on the amount of information that could be gathered about employment experiences. Thus, we were not able to fully explore whether those young autistic adults who were only engaged in employment were under-employed, which has been reported previously as a common challenge among autistic people (e.g., Baldwin et al., 2014). Additionally, we did not measure whether working hours aligned with individual preferences, rather than being indicative of under-employment, or whether individuals were under-employed relative to their qualifications and experience (although this may be an issue across both groups). Lastly, while there was a higher proportion of females in the non-autistic sample than the autistic sample (with 44% females in the autistic group and 75% in the non-autistic group) we do not believe this is likely to have impacted results.

Implications and conclusion

The current study highlights differences in the post-school outcomes between autistic and non-autistic young adults. Given a similar number in each group reported engaging in HE, it is important that all HE providers, not just universities (which tend to be the focus of current research), are knowledgeable about autism and understand how to provide appropriate supports that may assist autistic students. The results of this study also add to the continuing evidence-base indicating that there are discrepancies in post-school employment for young autistic adults compared to non-autistic adults. These discrepancies occur during HE where part-time employment is a means of self-support and gaining workforce experience and independence skills. This is one of the few studies investigating post-school outcomes for autistic Australians. More research is needed among this age group so that we can better

understand barriers to post-school activities, particularly employment, and then determine how to remove them.

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Table I

HE Variables

Variable	Autistic <i>n</i> (%)	Non-autistic <i>n</i> (%)	Comparison
HE attendance: Current ¹	58 (73.4)	86 (80.4)	$\chi^2 (1) = 1.26, p = .262, V = .08$
HE attendance: Completed ²	14 (66.7)	16 (76.2)	$\chi^2 (1) = 0.47, p = .495, V = .11$
HE enrolment:			$\chi^2 (1) = 10.12, p = .001, V = .27$
Full-time ³	36 (63.2)	74 (86.0)	
Part-time ³	21 (36.8)	12 (14.0)	
HE institution:			$\chi^2 (1) = 16.51, p = .001, V = .34$
TAFE/community college ³	19 (33.3)	6 (7.0)	
University ³	38 (66.7)	80 (93.0)	

¹ % from within the whole sample. ² % from among only those who were not currently studying. ³ % from among those who were currently studying.

Table II

Post-school activity categories

Variable	Autistic <i>n</i> (%)	Non-autistic <i>n</i> (%)	Comparison
Post school activity			$\chi^2 (3) = 24.33, p < .001, V = .36$
No HE or employment* ¹	8 (10.3)	3 (2.8)	
HE only*	43 (55.1)	31 (29.0)	
HE and employment*	15 (19.2)	55 (51.4)	
Employment only	12 (15.4)	18 (16.8)	

¹ Despite the small number of observations in this category, less than 20% of the expected count cells were $n < 5$, and thus this category was retained for analysis (Siegel & Castellan, 1988). *Differences were evident in the standardized residuals, highlighting an observed difference between groups.

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