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Original Research Article

Tracking the long-term outcomes of a supported employment internship programme for autistic adults without a learning disability

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Abstract

Supported employment initiatives with work experience (e.g. internships) can increase employment rates for autistic people. However, such initiatives (a) are often not evidence-based, (b) focus on quantitative outcomes such as employment rates and (c) examine group-level changes without considering individual variability. Considering the effects that (un)employment can have on autistic people's well-being, it is important to examine the wider impact of supported employment initiatives. This study evaluated the long-term employment and wider outcomes of autistic adults who engaged with a supported employment internship initiative at group and individual levels. Autistic adults without a learning disability ($N = 27$, 'interns'; $M_{age} = 23.3$) involved in internships across seven organisations, participated in the study. Interns reported on (a) employment-related characteristics, (b) daily living skills, (c) general self-efficacy, (d) quality of life and (e) mental health pre-internship at six and 12–24 months post-internship. The overall employment rate increased from 25.93% to 55.56% from pre- to 12–24 months post-internship, and income and number of hours worked also increased. There were improvements in daily living skills, but other wider outcome measures did not change significantly at a group level, despite individual variability. This evidence has important implications for supporting long-term outcomes for autistic people.

Lay abstract

Internships for autistic people can help them find and keep employment. Only a few internship programmes have scientific findings about how helpful they are for autistic people, and these mostly look at employment-related things like whether a group of autistic people gets a job or not. Having or not having a job can have a big effect on how happy and comfortable autistic people feel. We wanted to find out whether an internship programme affected both autistic people's work and comfort levels. To do this, we asked 27 autistic adults without a learning disability (whose average age was 23 years) doing internships to complete five online surveys at three timepoints: before the internship, six months after the internship and 12–24 months after the internship. The surveys asked about employment (for example, if they had a job and how much they earned), daily living skills, their own confidence in their ability to succeed, how satisfying their life is and their mental health. Two years after the internship, more people had jobs and earned more money. The group's daily living skills improved, but there were no changes in their confidence in their ability to succeed, how satisfying their life was or their mental health overall. However, some people did experience changes in these areas. These findings are important for understanding how to support autistic people in finding and keeping jobs in their adult lives.

Keywords

employment, autistic adults, transition, supported employment, work experience

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There is a well-established employment gap for autistic people: 77% of autistic people report that they want to work (National Autistic Society, 2016) yet actual employment rates for autistic people are very low. In many Western countries (e.g. the UK, Australia, Israel, Canada and the USA), autistic people have low employment rates (27%–33%) compared to people without a disability (75%–80%) and compared to most other disability groups (Australian Bureau of Statistics, 2019; Beenstock et al., 2021; Office for National Statistics, 2022, 2023; Public Health Agency of Canada, 2020; Roux et al., 2021). For example, autistic people in the UK have the second lowest employment rates (29%) of all disability groups (Office for National Statistics, 2023). National statistics may reflect varying levels of inclusivity in research and underlying recognition of diagnoses (Memmott, 2021, 2022, 2023). However, these data emphasise a discrepancy between those who want to work and those who are employed. Autistic people who are in employment are often underpaid and/or are in jobs below their level of education and ability (Baldwin et al., 2014; Chen et al., 2015). Employment (or lack of it) can have a broad impact on wider outcomes among autistic people, beyond the immediate consequences of financial (in)security and (lack of) independence (Hedley et al., 2023; Nicholas et al., 2018). Employment can give autistic people's life an additional meaning, facilitate crucial opportunities for social and community participation and influence the quality of life and mental health (Hedley et al., 2019; Hedley, Uljarević & Hedley, 2017; Walsh et al., 2014).

One barrier to employment relates to the transition from education to employment and adulthood. The support and opportunities needed for autistic young people to gain crucial work experience and develop practical skills are often lacking during this transition. These factors are important for maximising autistic individual's employment potential and independence. To start with, autistic young people can have vastly different educational experiences and access to support depending on what type of school they attend. Special schools that cater to autistic people with a learning disability (LD) often provide vocational training and work experience to support the transition out of education (Holwerda et al., 2013), but mainstream schools for students without LD are often poorly prepared to support autistic students (Dillon et al., 2016; Emam & Farrell, 2009; Nwoko et al., 2022; Pellicano et al., 2018; Thomas et al., 2023). Moreover, leaving school and moving from child to adult services has been described as '[dropping] off the end of the cliff' (Beresford et al., 2013, p. 173), with a distinct reduction of support that is crucial for autistic people navigating this important transition (Baldwin et al., 2014).

Autistic people without a LD are an important and overlooked group in the transition from education into employment and adulthood for several reasons. First, autistic people without a LD are often overlooked for support because they are often perceived as not 'autistic enough' to get support, but also not 'normal enough' to fit in (Crane et al., 2019). Second, autistic people without a LD have been found to receive less support, have more unmet service needs and were three times more likely to have no access to daytime activities (e.g. workshops, charity engagements or employment) compared to peers with a LD (Shattuck et al., 2011; Taylor & Seltzer, 2011a, 2011b). Third, autistic students without a LD have reported insufficient and stressful post-16 support in mainstream UK settings, which provide fewer opportunities compared to their non-autistic peers (Crane et al., 2022). These challenges can affect an autistic individual's preparedness to meet adult milestones such as obtaining employment.

Evidence suggests that supported employment initiatives that include work experience are beneficial for autistic people's employment trajectories, but few initiatives have been evaluated (Baker-Ericzén et al., 2022; Hedley, Uljarević & Hedley, 2017). Such initiatives include work experience in a community or broader setting and elements of additional support, including job coaching and training for autistic individuals before and during work placements (e.g. support finding appropriate jobs and interview skill training). Supported employment initiatives may also include autism training for employers. Of those initiatives that have been evaluated (e.g. *Project SEARCH, TEACCH Supported Employment programme,* and *Prospects*), these programmes show good post-engagement employment (66%–96%) and retention rates (80%), months and even years after participants engaged with their programmes (Howlin et al., 2005; Keel et al., 1997; Mawhood & Howlin, 1999; Schall et al., 2015; Wehman et al., 2017, 2020). Another initiative (*DXC Dandelion Program*) found low unemployment rates (12.5%), increased income and more hours worked after finishing the programme (Hedley et al., 2019, 2023; Spoor et al., 2021). Case studies and qualitative evaluations that focused on post-work experience outcomes found that the experience was valuable for autistic individuals' personal development, independence and learning of critical skills for community engagement and further competitive employment (Burt et al., 1991; Flower et al., 2019; Hedley et al., 2018; Hillier et al., 2007; Lee et al., 2019; Remington et al., 2021; Remington & Pellicano, 2019; Romualdez et al., 2020). These evaluations demonstrated sustained benefits for those who engage with them, highlighting the necessity for future evaluations to incorporate a long-term focus in their design.

However, many of the existing initiatives that have been evaluated are not accessible or appropriate to many autistic people, including autistic adults without a LD. For example, the *Autism Academy for Software Quality Assurance (AASQA) CoderDojo* and Project SEARCH are restricted to autistic individuals who are still in school, and Project

SEARCH primarily targets autistic people with a LD. Additionally, the DXC Dandelion Program is limited to the information technology sector in Australia, and TEACCH offers a narrow range of employment opportunities (e.g. clerical and stocking jobs), which are often part-time and poorly paid. These limitations highlight the urgent need for evidence-based supported employment initiatives with a broader scope. Such initiatives should extend beyond school-age participants, be available to autistic individuals without a LD and offer diverse opportunities across various industries.

A further gap in research surrounds how employment literature has largely focussed on job-based metrics (e.g. employment and retention rates, and income), rarely assessing the wider outcomes that employment can influence an autistic person's life such as quality of life or mental health (Hedley, Uljarević, & Hedley, 2017). There are mixed results from the few studies that have measured such wider outcomes. For example, Hedley et al. (2019) found small improvements in 36 participants' daily living skills but no changes in their depression, anxiety and well-being 12 months into employment via the 3-year DXC Dandelion Program. Similarly, Remington et al. (2021) found no change in autistic interns' mental health and work self-efficacy immediately after an internship with Deutsche Bank, UK (DB UK). However, it is unclear if/how such measures maintain or change beyond a supported employment initiative. As Hedley et al. (2019) recommended, future research should also assess other aspects of quality of life (e.g. stress and physical health) to assess well-being more holistically. Indeed, García-Villamisar et al. (2002) found a significant improvement in the quality of life of 21 autistic adults five years after they engaged with a supported employment scheme. However, since the one follow-up occurred five years after the 30-month average employment period and without accompanying data on employment status, it is difficult to reliably attribute such improvements to employment. Overall, more research is needed to explore both the employment-related outcomes (e.g. employment status, level of seniority, income and hours worked) and wider outcomes (e.g. perceived self-efficacy at work, applied practical skills, quality of life and mental health) of supported employment initiatives over time, to gain a more holistic understanding of their influence.

Despite supported employment initiatives showing positive findings at the group-level (i.e. mean scores across a group of participants), evidence suggests that employment outcomes may vary widely at an individual level. For example, employment outcomes may differ greatly among autistic individuals due to the heterogeneous nature of autism, intersecting individual factors and the complexity of the employment process for autistic people. Indeed, an 8-year longitudinal study found that employment outcomes differed depending on autistic adults' socio-demographic factors including age, gender, education status and diagnosis age (Bury et al., 2024). While evaluations of supported employment initiatives generally show high employment and job retention rates, individual experiences of employment vary due to the specific challenges autistic people face such as employment-related autism stigma and discrimination, barriers to accessing work, complex decisions regarding disclosure, a lack of workplace support and negative effects of employment on mental health (Davies et al., 2023; Raymaker et al., 2023; Romualdez, Heasman, et al., 2021). Job satisfaction has also been shown to differ depending on factors such as a suitable person-environment fit (Coleman & Adams, 2018; Pfeiffer et al., 2018). These personal and contextual factors may have a particularly strong influence at an individual level for wider outcomes, such as quality of life and mental health. Therefore, even when wider outcomes are considered in evaluations of supported employment initiatives (such as in Hedley and colleagues', 2019 study), relying solely on group-based results risks overlooking meaningful individual differences (or lack thereof) that are masked by the group average. It is therefore important to assess the extent to which outcomes change at an individual level.

The current study aimed to track a range of long-term outcomes of a previously unevaluated supported employment internship initiative, *Employ Autism* (EA), at group and individual levels. Employ Autism partners with organisations throughout the UK to offer paid internships to autistic adults (age $\geq$18) alongside tailored support before, during and after the internship for interns and their employers. Employ Autism was developed by the UK's autism education and employment charity, *Ambitious about Autism* (AaA), in collaboration with their autistic youth council and other experts-by-experience, experienced professionals (educators, career guidance professionals and training providers) and employers to provide a strength-based internship programme for autistic people without a LD. Employ Autism (a) places emphasis on employers to improve their understanding of autism to create sufficiently inclusive workplaces for autistic employees, (b) is available to autistic people without a LD who are beyond compulsory secondary education age in the UK and (c) offers the opportunity for graduate-level work experience in a range of sectors while still retaining an established process of support.

Considering its broad range and potential applicability to many autistic people without a LD throughout the UK, it is important to evaluate EA to establish an evidence-base regarding its impact and utility in supporting autistic people's employment outcomes. Interviews with interns, employers and parents immediately after an EA internship showed that all groups felt that the experience was valuable for personal and practical self-development, as well as improving confidence and independence, and breaking down barriers to employment (Ashworth et al., 2023).

However, although participants reported actual or potential changes in employment and wider related constructs such as self-efficacy, practical skills and well-being, this qualitative study provided limited insight into the long-term influence on these outcomes. To address this gap, the current quantitative study aimed to capture long-term employment metrics and wider outcomes of interns involved with EA, offering a valuable comparison to other longitudinal evaluations of supported employment initiatives. To gain a holistic and comprehensive understanding of EA, this study tracks employment and various wider outcomes at both group and individual levels up to two years after EA internships. There are three main research questions:

1. How do employment-related outcomes (i.e. employment rates, highest level worked at, number of hours worked and income range) change after EA internships?
2. How do wider outcomes (i.e. daily living skills, perceived general self-efficacy, quality of life and mental health) change after EA internships?
3. To what extent is there variability in individual participants' employment and wider outcomes?

Methods

Employ Autism

Following a campaign by AaA's autistic 'youth patrons' to highlight employment inequalities for autistic people, AaA established EA to offer work experience for autistic adults (age ≥18) without a LD to support their transition into employment and bolster confidence. Employ Autism partners with organisations from different sectors in the UK (see Table 1 for a breakdown of internship sectors in this study) to provide paid, entry-level internships and tailored support, resources and expertise for employers. This support includes 'understanding autism' training for employers (see Ashworth et al., 2024), advice on accessible recruitment and ongoing guidance from AaA staff.

Employ Autism supports interns throughout the process. Staff provide personalised assistance and feedback on each internship's application process, offer interview preparation and create 'candidate profiles' to highlight strengths and necessary workplace adjustments. Regular check-ins during the internship are available, alongside assistance in implementing workplace adjustments. After the internship, interns undergo a review with AaA staff and can meet with a careers advisor. See Appendix A for a full breakdown of the EA process.

Design

This study adopted a longitudinal, within-participant design to evaluate the long-term outcomes of autistic adults engaged in an EA internship. Participants completed online surveys reporting on (a) employment-related characteristics, (b) daily living skills, (c) general self-efficacy, (d) quality of life and (e) mental health at three timepoints: before the internship, six months after the internship and 12–24 months after the internship.

Table 1. Internship sectors, number and percentage of interns, and internship length in days.

Organisation	Interns		Duration of the internship in days
	n	%	
Departments in the public sector			
Internship round 1	16	59.26	18
Internship round 2	2	7.41	18
Employment agency	1	3.70	39
Financial services company	1	3.70	199
Information technology company			
Internship round 1	1	3.70	60
Internship round 2	1	3.70	60
Recruitment company	2	7.41	164
Recruitment company 2			
Internship round 1	1	3.70	270
Internship round 2	1	3.70	94
Reinsurance company	1	3.70	119

Measures

Participant characteristics. Wechsler Abbreviated Scale of Intelligence Second Edition (WASI-II). The WASI-II (Wechsler, 2011) assessed participants' intelligence quotient (IQ) to characterise the participant sample and determine if they had a LD (IQ < 70) or not. Participants completed the matrix and vocabulary reasoning subscales for non-verbal and verbal intelligence to obtain a full-scale IQ two-subtest form (FSIQ-2) score. This measure was completed via Zoom, with the researcher sharing relevant stimuli via PowerPoint. Participants' answers were recorded according to WASI-II guidance.

Social Responsiveness Scale, Second Edition (SRS-2). SRS-2 (Constantino & Gruber, 2012) provided context for participants' profiles. Participants rated 65 items on a

4-point Likert scale (1 = *not true* to 4 = *almost always true*) across five subscales: Social Awareness, Social Cognition, Social Communication, Social Motivation and Restricted Interests and Repetitive Behaviour. Subscale scores were summed for a total score and converted to standardised T-scores. According to SRS-2, T-scores below 59 indicate no social communication differences related to autism. SRS-2 has shown good internal reliability in previous studies (α = .94–.96; Bruni, 2014) and in the current study (α = .90).

Employment outcomes. *Bespoke Employment Survey.* Participants reported their demographic characteristics at the time of first completion, and employment-related outcomes at the baseline and subsequent follow-ups. Employment-related outcomes included employment status, income range, highest level of employment, area of employment experience (based on multiple-choice responses) and the number of hours worked a week.

Wider outcomes. *Adaptive Behaviour Assessment System Third Edition (ABAS-3).* The ABAS-3 (Harrison & Oakland, 2015) assessed participants' daily functional skills. Participants rated items by how often they could perform a behaviour when needed: '1' (never/almost never) when needed), '2' (sometimes), '3' (always/or almost always) or '0' (unable).

The ABAS-3 includes Conceptual, Practical and Social domains. The Conceptual domain assessed communication, academic skills and task management (Communication, Functional Academics and Self-Direction subscales). The Practical domain assessed personal and health needs (Community Use, Home Living, Health and Safety, Self-Care and Work subscales). The Social domain is related to interpersonal interactions and recreational activities (Social and Leisure subscales). These domains form a General Adaptive Composite (GAC) score for overall adaptive behaviour. Raw subscale scores are converted to scaled scores, summed for domain scores and then converted to standard scores for the GAC and each domain. Higher scores indicate more adaptive functional skills. Harrison and Oakland (2015) reported the reliability and validity of this measure, and the current study found good internal reliability for all subscales (see Appendix B).

General Self-Efficacy Scale. The General Self-efficacy Scale (originally developed by Schwarzer & Jerusalem, 1995) assessed participants' perceived ability to cope with stressful life events. Participants rated ten items (e.g. 'I can usually handle whatever comes my way') on a 4-point Likert scale (1 = *not at all true* to 4 = *very true*). Item scores were summed, with higher scores indicating better self-efficacy. Previous studies found good internal reliability (α = .76–.90; Schwarzer & Jerusalem, 1995; Singh et al., 2019), as did the current study (see Appendix B).

Quality of Life with add-on Autism Spectrum Quality of Life. The World Health Organisation (WHO) Quality of Life Brief Version (WHOQoL-BREF; WHO, 1998) and the Autism Spectrum Quality of Life (ASQoL) add-on (McConachie et al., 2018) assessed participants' quality of life overall in regards to being autistic.

For the WHOQoL-BREF, participants rated 26 items on 5-point Likert scales addressing four domains: Physical Health, Psychological Health, Social Relationships and Environment. For example, a Physical Health item was 'how satisfied are you with your health?'. Scores for each subscale were summed and transformed into the WHOQoL 100-item scale, with higher scores indicating better quality of life. Previous studies reported good internal reliability (α = .66–.84; Skevington et al., 2004; WHO, 1998), but there was more variability in the current study (α = .53–.84; see Appendix B).

For the ASQoL section, participants rated eight items on a 5-point Likert scale for quantity, satisfaction and frequency (e.g. 'can you "be yourself" around your friends/people you know well?'), and one item ('are you at ease (OK) with "Autism" as an aspect of your identity?'; 1 = *not at all* to 5 = *totally*). The average score of items one to eight provided the total ASQoL score, and item nine indicated global 'autistic identity'. McConachie et al. (2018) found good internal reliability for the ASQoL (α = .82), as did the current study (see Appendix B).

Depression, Anxiety and Stress Scale - 21 Items (DASS-21). The DASS-21 (Lovibond & Lovibond, 1995) measured participants' mental health across three subscales: Depression, Anxiety and Stress. Participants rated 21 items (seven per subscale) on a 4-point Likert scale (0 = *never* to 3 = *almost always*), indicating how much each symptom (e.g. 'I find it hard to wind down') applied to them over the past week. Scores for each subscale are calculated by summing the relevant items, with higher scores indicating greater severity. Different ranges apply to 'severity ratings' for each subscale (see Lovibond & Lovibond, 1995). Previous studies reported good internal reliability for Depression (α = .83), Anxiety (α = .78) and Stress (α = .87; Norton, 2007), as did the current study (see Appendix B).

Participants

Recruitment. Participants were autistic adults (referred to as 'interns') taking part in an EA internship between 1 April 2021 and 31 January 2023. Once an intern accepted a position, AaA shared standardised information from the research team with the interns' employers and/or directly with the interns. This information outlined the independent evaluation of EA and what this involved, and invited them to be involved in the research via a survey link to provide informed consent. Participation was voluntary, and internships were not contingent on participation in the research.

Table 2. Number and percentage of samples that completed each measure by timepoint.

Measure	Baseline		6-months post-internship		12–24 months post-internship	
	n	%	*n*	%	*n*	%
Bespoke employment survey						
Employment status	27	100.00	27	100.00	27	100.00
Highest level of employment	24	88.89	27	100.00	26	96.30
Income range	16	59.26	12	44.44	8	29.63
Area of employment	21	77.78	26	96.30	24	88.89
Hours worked per week	11	40.74	10	37.04	9	33.33
ABAS-3	21	77.78	21	77.78	21	77.78
General self-efficacy scale	23	85.19	23	85.19	23	85.19
Quality of life	23	85.19	23	85.19	23	85.19
DASS-21	23	85.19	23	85.19	23	85.19

Note: For the third timepoint, participants completed the surveys within a 12–24-month window.

Characteristics. Forty-one interns participated in some element of the research. However, as this study focuses on long-term outcomes, this paper considers only those who completed the employment-related measures at three time points: before the internship, 6 months after it was completed and 12–24 months post-internship. There were no systematic demographic differences between the population and the final sample of participants (see Supplemental Material A).

The final sample comprised 27 interns across seven host-organisations (see Table 1). The number of responses per measure and timepoint varied due to question branching and some missing data. Table 2 summarises the participant numbers and the proportion of the overall sample who completed each measure.

One intern did not answer the question about whether they had a formal autism diagnosis, but application to and acceptance of an EA internship is contingent on candidates reporting that they are autistic, so this individual was retained in the dataset. All interns were invited to complete the SRS-2 to better understand the profile of the participants, and 24 from the final sample did so. Of the 24 interns who completed the SRS-2, 22 scored in the range associated with an autism diagnosis, according to the measure's sensitivity ($M_{\text{SRS-2}} = 69.54$, $SD_{\text{SRS-2}} = 9.19$). Most interns' SRS-2 scores fell within a range associated with communication differences that affect their daily lives to a 'moderate' degree ($n = 9$; 37.5%), followed by those in 'severe' ($n = 7$; 29.2%) and 'mild' ($n = 6$; 25%) ranges. All 27 participants completed the WASI-II, and their FSIQ-2 scores indicated that none of the interns had a LD (range = 84–114; $M_{\text{IQ}} = 101.33$, $SD_{\text{IQ}} = 8.32$).

The majority of the interns were White British men. At the time of first completion, the interns' average age was 23.3 years ($SD_{\text{age}} = 6.46$). The most common highest level of education was a bachelor's degree, followed by A/AS-Levels. Most participants had worked for one or two employers before starting the internship. See Table 3 for a full breakdown of the participating interns' demographics.

Procedure

This research received ethical approval from the Department of Psychology and Human Development at IOE, UCL's Faculty of Education and Society (no ethics ID numbers are provided for PhD research projects at IOE). After providing informed consent, participants reported their demographic characteristics and completed the bespoke employment survey. After sign-up, participants received a randomly generated 10-digit ID to pseudonymise their responses in subsequent surveys. Participants also received a detailed information document about the research process and how to contact the researcher or request adjustments.

Table 3. Interns' demographics by number and valid percentage.

Demographic	*n*	%
Gender		
Men (including trans men)	18	66.67
Women (including trans women)	9	33.33
Age category		
18–25	25	92.59
26–35	1	3.70
36–45	0	0.00
46–55	1	3.70
Ethnicity		
Any other mixed/multiple ethnic background	1	3.70
Chinese	1	3.70
Caribbean	1	3.70
Pakistani	1	3.70
White British	22	81.48
White Irish	1	3.70
Number of employers before the internship		
None	8	29.63
1–2 employers	10	37.04
3–4 employers	7	25.93
5–6 employers	1	3.70
More than 6	1	3.70
Interns' highest level of education[a]		
No formal qualifications	1	3.70
GCSEs[b] (14–16 years)	2	7.41
A/AS-level[c] (16–18 years)	5	18.52
BTEC[d] (career-focused qualification for people 14–19 years)	4	14.82
Foundation degree (vocational qualification 18+ years)	1	3.70
Bachelor's degree	11	40.74
Post-graduate certificate	2	7.41
Master's degree	1	3.70
Interns' parents' highest level of education[a]		
No formal qualifications	2	7.69
GCSEs (14–16 years)	3	11.54
A/AS-level (16–18 years)	3	11.54
BTEC (career-focused qualification for people 14–19 years)	1	3.85
Higher national diploma (specialist work-related qualification 18+ years)	3	11.54
Diploma of higher education	1	3.85
Bachelor's degree	9	34.62
Master's degree	2	7.69
Doctorate	2	7.69
Missing	1	
Region		
South East	11	40.74
London	9	33.33
South West	1	3.70
Yorkshire and the Humber	2	7.41
East Midlands	1	3.70
Scotland	2	7.41
Wales	1	3.70

aLevels of education are listed from lowest to highest levels.
bGeneral certificate of secondary education.
cAdvanced subsidiary/advanced level qualifications.
dBusiness and technology education council.

First, participants engaged in a Zoom session with the researcher to complete the WASI-II assessment via screen-share. Next, participants completed the first baseline set of surveys (SRS-2, daily living skills, general self-efficacy, quality of life and mental health) before the internship.

Excluding the SRS-2, the same surveys were completed every 6 months post-internship.

All measures were completed on the online survey platform, Qualtrics. The daily living skills measure took approximately 30 min, while other measures took about 10 min each. Participants were informed they could complete the surveys in multiple sessions to support participation (Nicolaidis et al., 2019), but they were required to complete the surveys within three weeks of receiving them.

Data analysis

Data were collected from 1 April 2021 through 31 August 2023. Data collection was organised around three windows: before the internship ('baseline'/timepoint 1; T1), 6 months post-internship (timepoint 2; T2) and 12–24 months post-internship (timepoint 3; T3). The broad third window of data collection accounted for the staggered internship start dates, different internship lengths, natural attrition and the intermittent missing data that resulted.

As data were collected every 6 months, some interns (i.e. those who completed internships early in the study timeline) engaged with the survey measures up to three times during the T3 period (12-, 18- and 24-month post-internship). When multiple datapoints existed for the same measures within the T3 window, common practices for handling intermittent missing data in longitudinal research maximise data use and maintain continuity (Jakobsen et al., 2017; Twisk, 2013) were followed. Specifically, for categorical data on employment status, income range, highest level of employment and area of employment experience, the most recent response was used in subsequent analyses. For continuous data, including the number of hours worked and the wider outcome measures, the average score of all completed responses within the T3 window was calculated and used in the analyses.

Descriptive. Descriptive statistics (frequency, measures of central tendency and percentages) were used to present the responses to the bespoke employment survey questions for T1, T2 and T3. Note that all reported percentages represent the valid proportion of participants who completed each measure at each timepoint, not necessarily the proportion of the total *N*. This approach helps reflect more accurate proportions when some questions were not relevant to the participant (e.g. people not answering questions on the highest level of employment if they were not employed). The relevant *n*s for each measure and timepoint are available in Table 2.

Group-level analysis. Repeated measures ANOVAs compared the groups' average scores on each repeated measure between each combination of timepoints (i.e. T1–T2, T1–T3 and T2–T3). Where data were not normally distributed, a Greenhouse-Geisser correction was applied. Post-hoc paired samples *t*-tests with Bonferroni adjustments were used to identify specific significant differences.

Individual-level analysis. The Reliable Change Index (RCI; Jacobson & Truax, 1992; Zahra et al., 2016; Zahra & Hedge, 2010) assessed individual participant change across repeated measures between different timepoints. It determined the direction and statistical reliability of change (see equation (1)).

$$\mathrm{RCI} = \frac{x_2 - x_1}{\sqrt{2\left(s\sqrt{1 - r_{xx}}\right)^2}} \quad (1)$$

Equation (1) calculates an individual participant's RCI using scores (x_1 and x_2) from two comparison points (e.g. T1 and T2), where 's' represents the standard deviation of all participants' scores at T1, and r_{xx} indicates the measure's test–retest reliability. Test–retest reliability was measured by intraclass correlation coefficient estimates based on a mean rating ($k = 3$), absolute agreement, and two-way mixed-effects model (Koo & Li, 2016; Shrout & Fleiss, 1979).

When RCI scores lie outside of a range of −1.96 to 1.96, changes are deemed statistically significant at the $p < .05$ level, indicating a significant change in score. Scores smaller than −1.96 signify reliable decreases, and scores greater than 1.96 indicate reliable increases.

Results

Employment metrics

Employment rates. The interns reported their employment status at each point of data collection (see Figure 1). At the baseline, interns were most commonly in education (with no concurrent employment) or unemployed. Over the subsequent timepoints, unemployment rates dropped and employment rates increased. The overall employment rate (including participants in full-time or part-time employment, and education with employment) increased from 25.93% at the baseline to 51.85% 6 months post-internship and 55.56% 12–24 months post-internship.

There were different employment journeys throughout data collection. Some interns entered employment (37.04%), but 22.22% were consistently unemployed throughout data collection, and 14.81% were consistently employed. Smaller proportions of participants were in variable employment states across the timepoints (e.g. a combination of employed, unemployed and/or volunteering; 11.11%), in consistent education with no employment (7.41%), in consistent education with employment (3.7%) or moving from education into unemployment (3.7%). See Supplemental Material B for a breakdown of each

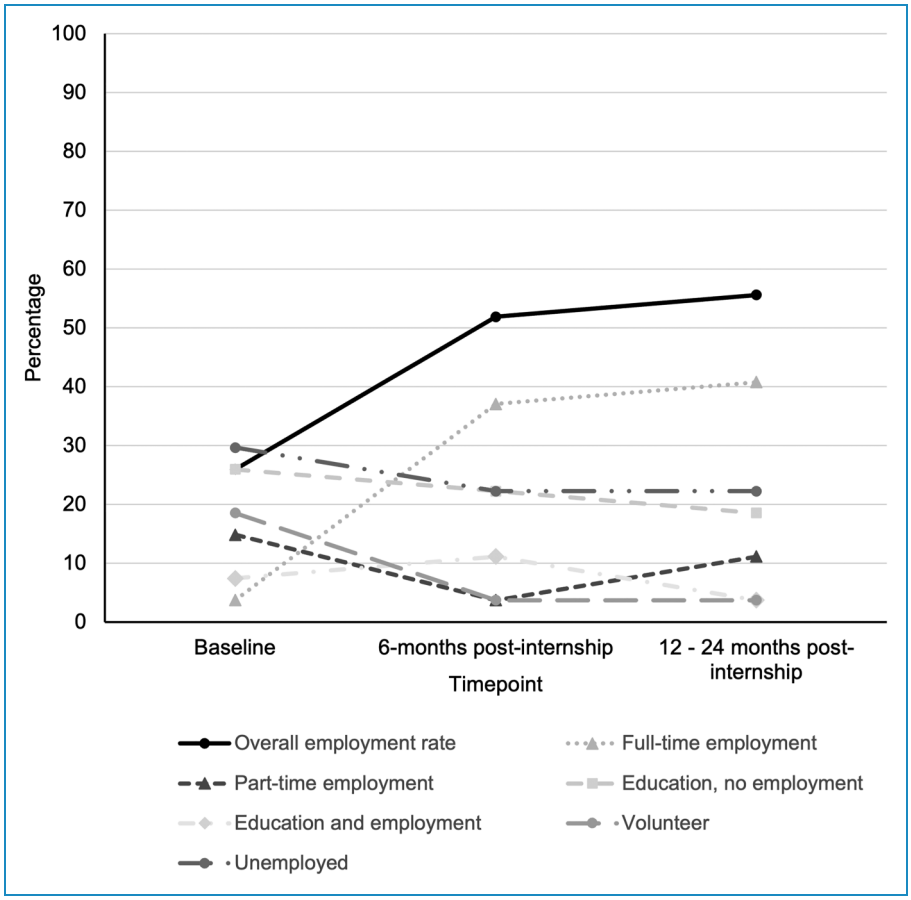

Figure 1. Employment rates at the baseline, and 6-months and 12–24 months post-internship.

participant's employment status at each timepoint of data collection.

Seven (25.93%) of the 27 interns subsequently accepted permanent contracts at their internship organisations. Of the 13 interns who were employed at more than one follow-up point, 85% (11 of 13) retained employment by the end of data collection.

Highest level of employment. At the baseline, most interns' highest level of employment was at a volunteer (25%), apprentice or intern level (41.67%) but after the internship, more interns reported working at higher levels. For example, 6 months post-internship 51.85% reported that their highest level of employment was as an intern/apprentice and 40.74% had worked in an entry or graduate role. Twelve to 24 months after the internship, approximately half (51.85%) the interns' highest level of employment was at an entry or graduate-level role (see Figure 2 for a full breakdown).

Employment area. The predominant areas of employment at each point of data collection were in administration, hospitality, the public sector and retail, but employment spanned many sectors including insurance, finance, recruitment, information technology, marketing, education and charity. See Supplemental Material C for a breakdown of the employment sector by time point.

Income and hours worked. Figure 3 shows the interns' income range at the baseline, 6 months and 12–24 months post-internship. At the baseline, most interns' income was less than £10,000 a year (75%). Six months after the internship, most interns earned £10,000 or more: 16.67% were in the £10,000–£19,999 income bracket, 41.67% were in the £20,000–£29,999 bracket and 8.33% were in the £40,000–£49,999 bracket. Similarly, 12–24 months post-internship, most interns earned £10,000 or more: 50% were in the £10,000–£19,999 income bracket, 12.5% were in the £20,000–£29,999 bracket and 12.5% were in the £40,000–£49,999 bracket.

Individuals in full-time employment consistently worked the highest average number of hours across all time points, ranging from 25 to 36 h. This was followed by those in education with employment (22–28 h), part-time employment (12–16 h) and finally volunteering (2–6 h). See Figure 4 for a full breakdown by employment status.

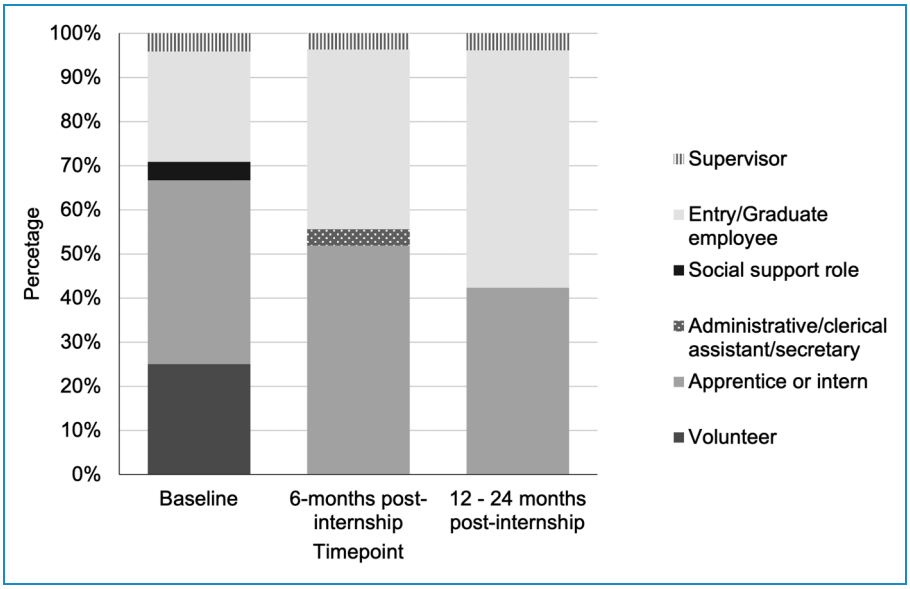

Figure 2. Interns' highest level of employment at the baseline, and 6-months and 12–24 months post-internship.

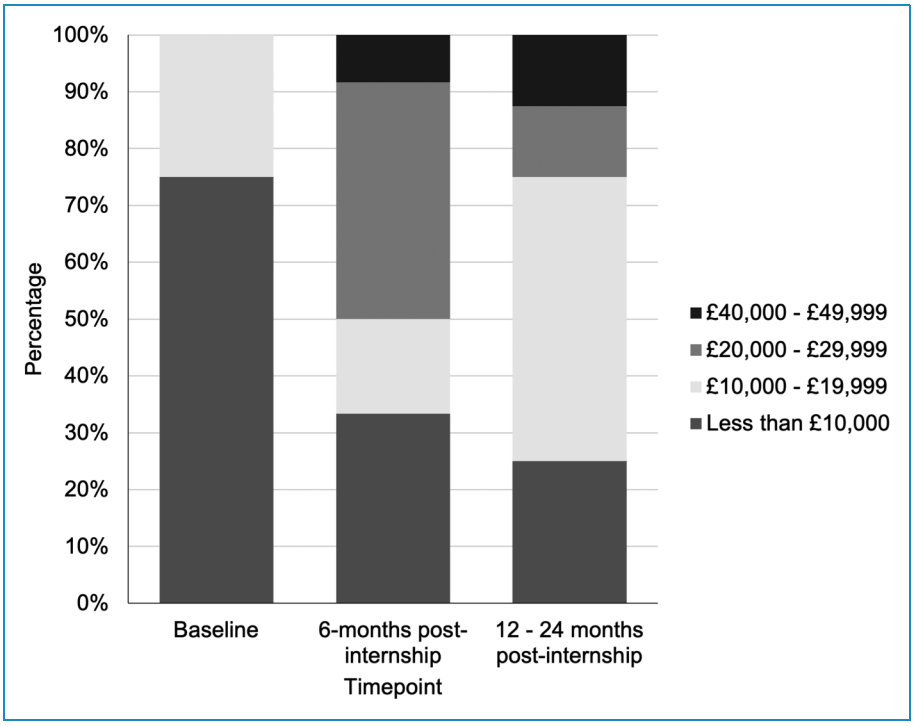

Figure 3. Income range at the baseline, and 6-months and 12–24 months post-internship.

Personal attributes/wider outcomes

We used repeated ANOVAs and post hoc analyses with Bonferroni corrections to assess change over time in each of the wider outcome measures on a group level (Table 4) and RCI analyses to assess individual-level change over time (Tables 5 and 6). Supplemental Materials D–G present a participant-by-participant breakdown of changes for each scale and time comparison permutation.

Daily living skills. Repeated measures ANOVAs showed significant differences between timepoints for three domain areas and six of the daily living skill subscales.

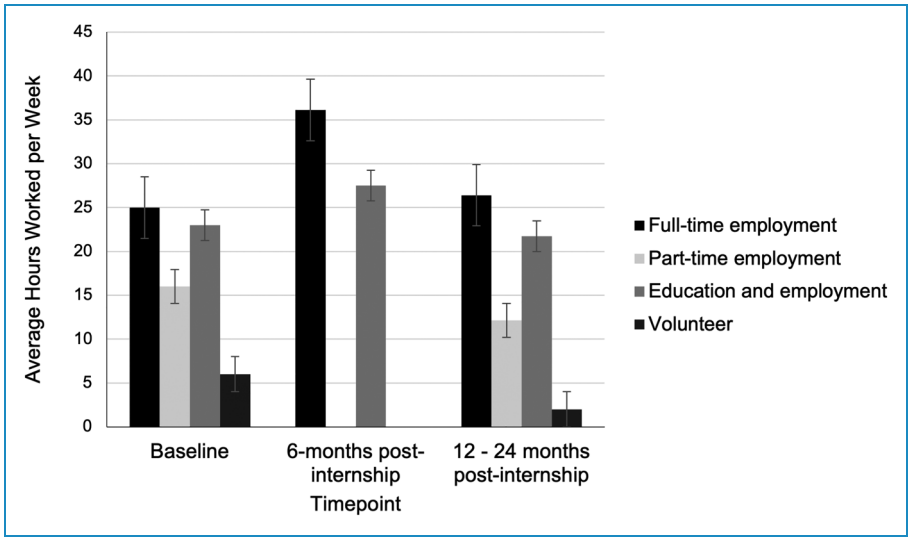

Figure 4. Average number of hours worked per week at the baseline, and 6-months and 12–24 months post-internship for those in full- or part-time employment, or volunteering.
Note: Full-time and part-time employment were defined by the participants. Interns reported their employment status (e.g. full-time or part-time employment) and indicated the number of hours they worked separately.

First, participants' scores on the Conceptual domain differed significantly between timepoints ($p = .012$), increasing from T1 to T3 ($p = .009$). Participants' scores also differed significantly between timepoints on one of the domain subscales: scores increased on the (1) Functional Academics subscale ($p = .026$) from T1 to T3 ($p = .025$) and T2 to T3 ($p = .022$).

Second, participants' scores on the Practical domain differed significantly between timepoints ($p < .001$), increasing from T1 to T3 ($p < .001$). Participants' scores also differed significantly between timepoints on four of the domain's subscales: scores increased on the (1) Community Use subscale ($p = .019$) from T1 to T3 ($p = .01$), (2) Home Living subscale ($p = .017$) from T1 to T3 ($p = .014$), (3) Health and Safety subscale ($p < .001$) from T1 to T2 ($p = .003$) and T1 to T3 ($p < .001$) and (4) Work subscale ($p = .047$) from T1 to T3 ($p = .045$).

Third, participants' scores on the Social domain differed significantly between timepoints ($p = .012$), increasing from T1 to T3 ($p < .001$). Participants' scores also differed significantly between timepoints on one of the domain's subscales: scores increased on the (1) Leisure subscale ($p = .003$) from T1 to T3 ($p = .003$) and T2 to T3 ($p = .036$).

There were no significant changes over time on the Self-Care, Communication, Self-Direction or Social subscales, nor the GAC domain (all adjusted $ps > .05$).

At an individual level, 20 participants showed reliable changes in their scores on one or more of the ABAS-3 subscales and domains. Overall, six participants showed only reliable increases in the various scores, and 14 had a combination of reliable increases and decreases in scores across one or more subscales (Supplemental Material D).

Self-efficacy. There were no significant group-level changes in self-efficacy scores between timepoints ($p = .262$).

At an individual level, five participants showed reliable changes. Four participants showed reliable increases in their self-efficacy score across one or more of the time points, and one participant showed a reliable decrease in their self-efficacy score between T1 and T3 (Supplemental Material E).

Quality of life. There were no significant group-level changes in participants' Physical Health, Psychological Health, Social Relationships, Environment, Autism Spectrum Quality of Life add-on or Autism Identity scores (all $ps > .09$).

At an individual level, 20 participants showed reliable changes in their scores on one or more of the quality of life subscales. Overall, eight participants showed reliable increases in their various scores, two showed reliable decreases in scores and 10 participants had a combination of reliable increases and decreases in scores across one or more subscales (Supplemental Material F).

Mental health. There were no significant group-level changes in participants' Depression, Anxiety or Stress scores (all $ps > .47$).

At an individual level, 13 participants showed reliable changes in their scores on one or more of the mental health subscales. Overall, one participant showed

Table 4. Descriptive statistics and repeated measures ANOVA by measure.

Measure	Comparison 1		Comparison 2		df (between, within)	*F*	*p*	η^2
	M	*SE*	*M*	*SE*				
ABAS-3								
Community use subscale								
Within-subject effect					1.53, 30.64	5.1[a]	.019*	.203
Post-hoc analyses							p_{bonf}	
T1–T2	6.05	0.7	6.48	0.75			.953	
T1–T3	6.05	0.7	7.37	0.69			.01**	
T2–T3	6.48	0.75	7.37	0.69			.121	
Home living subscale								
Within-subject effects					2, 40	4.49	.017*	.193
Post-hoc analyses							p_{bonf}	
T1–T2	5.29	0.68	5.95	0.85			.603	
T1–T3	5.29	0.68	6.82	0.81			.014*	
T2–T3	5.95	0.85	6.82	0.81			.298	
Health and safety								
Within-subject effects					2, 40	10.33	<.001***	.341
Post-hoc analyses							p_{bonf}	
T1–T2	6.81	0.65	8.33	0.82			.003**	
T1–T3	6.81	0.65	8.63	0.74			<.001***	
T2–T3	8.33	0.82	8.63	0.74			1.00	
Self-care subscale								
Within-subject effects					2, 38	2.98	.063	.136
Post-hoc analyses							p_{bonf}	
T1–T2	6.35	0.69	7.45	0.77			.126	
T1–T3	6.35	0.69	7.46	0.59			.121	
T2–T3	7.45	0.77	7.46	0.59			1.00	
Work subscale								

(continued)

Table 4. Continued.

Measure	Comparison 1		Comparison 2		df (between, within)	*F*	*p*	η^2
	M	*SE*	*M*	*SE*				
Within-subject effects					2, 38	3.31	.047*	.149
Post-hoc analyses							p_{bonf}	
T1–T2	7.4	0.36	8.15	0.64			.372	
T1–T3	7.4	0.36	8.62	0.57			.045*	
T2–T3	8.15	0.64	8.62	0.57			1.00	
Communication subscale								
Within-subject effects					2, 38	3.82	.044*	.151
Post-hoc analyses							p_{bonf}	
T1–T2	7.05	0.48	7.15	0.68			1.00	
T1–T3	7.05	0.48	8.03	0.58			.070	
T2–T3	7.15	0.68	8.03	0.58			.121	
Functional academics subscale								
Within-subject effects					2, 38	4	.026*	.174
Post-hoc analyses							p_{bonf}	
T1–T2	7.9	0.64	8.35	0.78			1	
T1–T3	7.9	0.64	9.23	0.76			.025*	
T2–T3	8.35	0.78	9.23	0.76			.022*	
Self-direction subscale								
Within-subject effects					2, 38	3.18	.053	.143
Post-hoc analyses							p_{bonf}	
T1–T2	7	0.59	7.85	0.75			.363	
T1–T3	7	0.59	8.33	0.68			.052	
T2–T3	7.85	0.75	8.33	0.68			1.00	
Leisure								
Within-subject effects					2, 38	7.74	.003**	.262
Post-hoc analyses							p_{bonf}	

(continued)

Table 4. Continued.

Measure	Comparison 1		Comparison 2		df (between, within)	F	p	η^2
	M	*SE*	*M*	*SE*				
T1–T2	6.4	0.72	6.8	0.75			1.00	
T1–T3	6.4	0.72	7.98	0.7			.003**	
T2–T3	6.8	0.75	7.98	0.7			.036*	
Social subscale								
Within-subject effects					2, 38	1.26	.295	.062
Post-hoc analyses							p_{bonf}	
T1–T2	8.15	0.65	8.25	0.71			1.00	
T1–T3	8.15	0.65	8.71	0.56			.434	
T2–T3	8.25	0.71	8.71	0.56			.687	
General adaptive composite domain								
Within-subject effects					2, 38	3.3	.048*	.148
Post-hoc analyses							p_{bonf}	
T1–T2	80	2.3	84.35	3.57			.213	
T1–T3	80	2.3	85.78	3.71			.055	
T2–T3	84.35	3.57	85.78	3.71			1.00	
Conceptual domain								
Within-subject effects					2, 38	5.03	.012*	.209
Post-hoc analyses							p_{bonf}	
T1–T2	83.5	2.48	86.85	3.83			.469	
T1–T3	83.5	2.48	90.84	3.43			.009**	
T2–T3	86.85	3.83	90.84	3.43			.279	
Social domain								
Within-subject effects					2, 38	4.98	.012*	.208
Post-hoc analyses							p_{bonf}	
T1–T2	84.6	3.12	86.1	3.48			1.00	
T1–T3	84.6	3.12	90.08	2.95			.012*	

(continued)

Table 4. Continued.

Measure	Comparison 1		Comparison 2		df (between, within)	*F*	*p*	η^2
	M	*SE*	*M*	*SE*				
T2–T3	86.1	3.48	90.08	2.95			.098	
Practical domain								
Within-subject effects					2, 38	8.75	<.001***	.315
Post-hoc analyses							p_{bonf}	
T1–T2	78.15	2.39	83.5	3.48			.043*	
T1–T3	78.15	2.39	86.79	3.12			<.001***	
T2–T3	83.5	3.48	86.79	3.12			.368	
Self-efficacy								
Within-subject effects					2, 44	1.38	.262	.059
Post-hoc analyses							p_{bonf}	
T1–T2	25.78	0.83	26.91	0.78			.529	
T1–T3	25.78	0.83	27.01	0.8			.424	
T2–T3	26.91	0.78	27.01	0.8			1.00	
Quality of life								
Physical health								
Within-subject effects					2, 44	0.04	.957	.002
Post-hoc analyses							p_{bonf}	
T1–T2	65.37	2.93	64.75	2.72			1.00	
T1–T3	65.37	2.93	65.32	1.94			1.00	
T2–T3	64.75	2.72	65.32	1.94			1.00	
Psychological health								
Within-subject effects					2, 44	0.98	.385	.042
Post-hoc analyses							p_{bonf}	
T1–T2	48.73	3.28	49.28	3.75			1.00	
T1–T3	48.73	3.28	51.99	3.04			.597	
T2–T3	49.28	3.75	51.99	3.04			.850	

(continued)

Table 4. Continued.

Measure	Comparison 1		Comparison 2		df (between, within)	F	p	η^2
	M	*SE*	*M*	*SE*				
Social relationships								
Within-subject effects					1.57, 34.51	2.7[a]	.093	.109
Post-hoc analyses							p_{bonf}	
T1–T2	49.63	4.55	53.26	4.23			.709	
T1–T3	49.63	4.55	56.64	3.72			.075	
T2–T3	53.26	4.23	56.64	3.72			.805	
Environment								
Within-subject effects					2, 44	0.2	.817	.009
Post-hoc analyses							p_{bonf}	
T1–T2	65.49	2.63	66.44	2.87			1.00	
T1–T3	65.49	2.63	66.95	2.04			1.00	
T2–T3	66.44	2.87	66.95	2.04			1.00	
Autism spectrum quality of life add-on								
Within-subject effects					2, 44	0.34	.715	.015
Post-hoc analyses							p_{bonf}	
T1–T2	3.37	0.12	3.44	0.14			1.00	
T1–T3	3.37	0.12	3.44	0.1			1.00	
T2–T3	3.44	0.14	3.44	0.1			1.00	
Autism Identity add-on								
Within-subject effects					1.47, 32.33	1.25[a]	.291	.054
Post-hoc analyses							p_{bonf}	
T1–T2	3.78	0.24	4	0.21			.515	
T1–T3	3.78	0.24	3.99	0.18			.559	
T2–T3	4	0.21	3.99	0.18			1.00	
Mental health (DASS-21)								
Depression								

(continued)

Table 4. Continued.

Measure	Comparison 1		Comparison 2		df (between, within)	F	p	η²
	M	*SE*	*M*	*SE*				
Within-subject effects					2, 44	0.64	.534	.028
Post-hoc analyses							p_{bonf}	
T1–T2	10.26	1.83	12.26	2.23			.858	
T1–T3	10.26	1.83	10.74	1.77			1.00	
T2–T3	12.26	2.23	10.74	1.77			1.00	
Anxiety								
Within-subject effects					2, 44	0.78	.466	.034
Post-hoc analyses							p_{bonf}	
T1–T2	8.61	1.15	7.3	1.28			.685	
T1–T3	8.61	1.15	7.73	1.45			1.00	
T2–T3	7.3	1.28	7.73	1.45			1.00	
Stress								
Within-subject effects					2, 44	0.43	.655	.019
Post-hoc analyses							p_{bonf}	
T1–T2	14.26	1.11	13.65	1.76			1.00	
T1–T3	14.26	1.11	15.25	1.33			1.00	
T2–T3	13.65	1.76	15.25	1.33			1.00	

[a]Mauchly's test of sphericity indicated that the assumption of sphericity was violated ($p < .05$), so a Greenhouse–Geisser correction was used; *p*-value adjusted for comparing a family of 3 using Bonferroni correction (p_{bonf}); $*p < .05$, $**p < .01$ and $***p < .001$.

only reliable increases in the various scores, five participants showed reliable decreases and seven participants had a combination of both reliable increases and decreases in scores across one or more subscales (Supplemental Material G).

Discussion

Supported employment initiatives have been found to improve employment outcomes for the autistic people who engage with them. However, considering the influence employment can have, there is a dearth of literature about how a range of wider outcomes at group and individual levels change after engaging with a supported employment initiative. This study offers the first longitudinal evaluation of both employment and wider outcomes (i.e. daily living skills, perceived self-efficacy, quality of life and mental health) of the EA-supported employment initiative for autistic adults without a LD. These findings have implications for understanding and supporting long-term outcomes for autistic people.

Our findings are consistent with the existing literature that work experience initiatives are valuable in supporting positive long-term employment outcomes for autistic people (see reviews by Baker-Ericzén et al., 2022 and Hedley, Uljarević, Cameron, et al., 2017). For example, interns' employment rates, the highest level of employment, number of hours worked and income increased after the internship, and 85% of interns retained employment. The results are also encouraging regarding underemployment

Table 5. Overall number of participants per time comparison, and number and percentage of reliably increasing or decreasing according to the RCI.

	Reliably increased		Reliably decreased	
	n	%	*n*	%
ABAS-3				
Community use subscale				
T1–T2	2	9.52	1	4.76
T1–T3	4	19.05	0	0.00
T2–T3	2	9.52	0	0.00
Total	8		1	
Home living subscale				
T1–T2	3	14.29	2	9.52
T1–T3	6	28.57	0	0.00
T2–T3	4	19.05	1	4.76
Total	13		3	
Health and safety				
T1–T2	7	33.33	1	4.76
T1–T3	8	38.10	0	0.00
T2–T3	2	9.52	0	0.00
Total	17		1	
Self-care subscale				
T1–T2	5	25.00	0	0.00
T1–T3	5	25.00	1	5.00
T2–T3	2	10.00	2	10.00
Total	12		3	
Work subscale				
T1–T2	7	35.00	5	25.00
T1–T3	7	35.00	2	10.00
T2–T3	6	30.00	2	10.00
Total	20		9	
Communication subscale				
T1–T2	4	20.00	3	15.00
T1–T3	5	25.00	1	5.00
T2–T3	7	35.00	3	15.00
Total	16		7	
Functional academics subscale				
T1–T2	5	25.00	0	0.00
T1–T3	7	35.00	0	0.00
T2–T3	5	25.00	0	0.00
Total	17		0	
Self-direction subscale				
T1–T2	4	20.00	2	10.00
T1–T3	6	30.00	1	5.00
T2–T3	2	10.00	1	5.00
Total	12		4	
Leisure				
T1–T2	1	5.00	1	5.00
T1–T3	8	40.00	1	5.00
T2–T3	6	30.00	1	5.00
Total	15		3	
Social subscale				
T1–T2	1	5.00	1	0.00
T1–T3	5	25.00	0	0.00
T2–T3	3	15.00	1	5.00
Total	9		2	

(continued)

(continued)

Table 5. Continued.

	Reliably increased		Reliably decreased	
	n	%	*n*	%
General adaptive composite domain				
T1–T2	9	45.00	2	20.00
T1–T3	11	55.00	5	10.00
T2–T3	6	30.00	3	15.00
Total	26		10	
Conceptual domain				
T1–T2	5	25.00	3	10.00
T1–T3	9	45.00	5	0.00
T2–T3	6	30.00	1	5.00
Total	20		9	
Social domain				
T1–T2	1	5.00	2	0.00
T1–T3	8	40.00	3	5.00
T2–T3	6	30.00	2	10.00
Total	15		7	
Practical domain				
T1–T2	8	40.00	4	15.00
T1–T3	8	40.00	1	0.00
T2–T3	6	30.00	1	5.00
Total	22		6	
General self-efficacy scale				
T1–T2	3	13.04	0	0.00
T1–T3	1	4.35	1	4.35
T2–T3	1	4.35	0	0.00
Total	5		1	
Quality of life				

(continued)

Table 5. Continued.

	Reliably increased		Reliably decreased	
	n	%	*n*	%
Physical health subscale				
T1–T2	1	4.35	1	4.35
T1–T3	2	8.70	0	0.00
T2–T3	2	8.70	0	0.00
Total	5		1	
Psychological subscale				
T1–T2	2	8.70	1	8.70
T1–T3	3	13.04	2	4.35
T2–T3	3	13.04	0	0.00
Total	8		3	
Social relationship subscale				
T1–T2	5	21.74	2	8.70
T1–T3	4	17.39	1	4.35
T2–T3	0	0.00	0	0.00
Total	9		3	
Environment subscale				
T1–T2	1	4.35	1	4.35
T1–T3	1	4.35	0	0.00
T2–T3	2	8.70	1	4.35
Total	4		2	
Autism spectrum quality of life add-on subscale				
T1–T2	4	17.39	4	17.39
T1–T3	1	4.17	2	8.33
T2–T3	3	13.04	1	4.35
Total	8		7	
Global quality of life				

(continued)

Table 5. Continued.

	Reliably increased		Reliably decreased	
	n	%	*n*	%
T1–T2	9	39.13	4	17.39
T1–T3	5	21.74	1	4.35
T2–T3	1	4.35	2	8.70
Total	15		7	
Mental health (DASS-21)				
Depression subscale				
T1–T2	2	8.70	1	4.35
T1–T3	1	4.35	0	0.00
T2–T3	1	4.35	3	13.04
Total	4		4	
Anxiety subscale				
T1–T2	1	4.35	2	8.70
T1–T3	0	0.00	1	4.35
T2–T3	3	13.04	2	8.70
Total	4		5	
Stress subscale				
T1–T2	2	8.70	4	17.39
T1–T3	2	8.70	1	4.35
T2–T3	4	17.39	4	17.39
Total	8		9	

for autistic people without a LD, where many are in jobs that underutilise their expertise and skillset, hindering career advancement and perpetuating further underemployment (Baldwin et al., 2014; Harvery et al., 2021; Hayward et al., 2018). In this study, an increasing proportion of participants reported working in graduate or entry-level roles post-internship, matching the proportions of participants whose highest level of education was at a university level. Additionally, participants reported working in a range of sectors, adding to an evidence base that challenges stereotypes suggesting that autistic people are best suited for roles in data or information and communications technology (Hagner & Cooney, 2003; Harvery et al., 2021).

Results of participants' improved daily living skills offer evidence that the supported employment initiative supported the development of applied, practical skills that are useful for engaging with the community, work and real-world experiences. These findings are encouraging for understanding how to support autistic people in their transition into employment, given the limited opportunities for autistic young adults to learn employment-specific skills (Cheriyan et al., 2021). However, other wider factors, including self-efficacy, quality of life and mental health, did not show group-level changes and were more variable in the extent to which individuals experienced change. Notably, a number of the current participants reported greater confidence, self-development and independence in qualitative interviews about EA (Ashworth et al., 2023). However, these changes did not translate to the current quantitative measures of wider outcomes. These results follow a similar pattern to Hedley and colleagues' findings. Qualitative interviews with autistic people involved with the DXC Dandelion Program suggested improvements in their well-being (Hedley et al., 2018), but quantitative results from the same programme only found improvements in daily living skills, not mental health (Hedley et al., 2019). Indeed, MacKenzie et al. (2024) found autistic adults' quality of life was not significantly related to employment status, suggesting the relationship between employment and wider outcomes such as quality of life and mental health is complex.

A lack of change for wider outcomes may be due to the numerous influences that contribute to more global measures of well-being such as quality of life and mental health. Autistic people experience increased rates of mental health conditions compared to the general population and several factors have been identified as important in predicting mental health, including age, gender, intellectual functioning, country of study, acceptance from external sources and personal acceptance (Cage et al., 2018; Lai et al., 2019). An individual's mental health may have more influence over life experiences than vice versa. Indeed, a review found employment did not predict autistic people's mental health outcomes, but depression could impede their employment retention (Schwartzman & Corbett, 2022). Similarly, autistic people often experience lower quality of life, and this can be affected by aspects such as mental health, sleep quality, autonomic symptoms, receiving social support and being in a relationship (Lawson et al., 2020; Mason et al., 2018). As such, supported employment initiatives may be able to influence practical skills that can be learned and developed with real-world work experience. However, supported employment initiatives cannot address the range of internal and external factors that influence mental health and quality of life.

Table 6. Number of participants with reliable increases, decreases or mixed changes per measure.

	Only increases	Only decreases	Increases and decreases	Total reliable changes
ABAS-3				
Community use subscale	5	0	1	6
Home living subscale	6	2	1	9
Health and safety subscale	9	0	1	10
Self-care subscale	6	1	1	8
Work subscale	6	2	5	13
Communication subscale	6	2	4	12
Functional academics subscale	11	0	0	11
Self-direction subscale	7	2	1	10
Leisure	10	2	0	12
Social subscale	5	0	1	6
General adaptive composite domain	10	4	2	16
Conceptual domain	10	2	1	13
Social domain	8	2	1	11
Practical domain	10	2	2	14
General self-efficacy scale	4	1	0	5
Quality of life				
Physical health subscale	3	1	0	4
Psychological subscale	6	2	0	8
Social relationship subscale	6	3	0	9
Environment subscale	2	1	1	4
Autism spectrum quality of life add-on subscale	4	3	3	10
Global quality of life	7	4	2	13
Mental health (DASS-21)				
Depression subscale	1	2	2	5
Anxiety subscale	2	2	2	6
Stress subscale	2	4	5	11

Other sources of educational, economic and social support for autistic people remain crucial to support global aspects of well-being.

This research highlights the importance of looking at the outcomes of employment initiatives over an extended period to see how the impact settles at group and individual levels. While income increased overall from the baseline, interns' earnings declined from 6 months to 12–24 months post-internship. Compared to 6 months post-internship, more interns earned £10,000–£19,999 (16.7% vs. 50%) and fewer earned £20,000–£29,999 (41.7% vs. 12.5%) at 12–24 months. This decline in income may relate to a rise in part-time roles at 12–24 months (11.1%) compared to 6 months post internship (3.7%), leading to lower earnings. Fluctuating income over time may reflect challenges in securing stable full-time work or a preference for part-time or flexible roles among some autistic adults (Finch et al., 2022), demonstrating how income should not be the only measure of employment success. Changes in daily living skills were observed but were mostly only significant when compared to scores 12–24 months post-internship. Additionally, there was meaningful variability in all wider outcomes between 6 months and 12–24 months post-internship. Of note, 65% of participants who completed the quality of life measures (15/23) demonstrated meaningful increases on the autism identity item,

suggesting the experience was influential for personal development up to 24 months after the internship.

These findings demonstrate the value of a longitudinal, broad assessment when considering employment scheme outcomes. Previous studies in this area often finish evaluations immediately after the work experience and solely use group comparisons to determine changes in outcomes. Our findings suggest that this approach may prevent the observation of individual differences or longer-lasting effects. For example, although Remington et al. (2021) found no significant changes in autistic interns' depression, anxiety or work-related self-efficacy scores immediately after a DB UK internship, there may have been significant changes in work-related self-efficacy months after the internship when the participants had an opportunity to apply their new skills in different settings. Additionally, Hedley et al.'s (2019) and Remington et al.'s (2021) lack of group-based changes in wider outcome measures may have hidden meaningful changes for some participants. Including individual-level analyses across a broad range of outcome measures in future employment could provide a more comprehensive understanding of long-term outcomes for different autistic people.

Limitations

It is important to note the limitations of this study. First, the small sample size and participant attrition during data collection restricted the employment-related analyses to a descriptive level. It was not appropriate to perform regression analyses to identify predictors of outcomes. Although there were no significant demographic differences between included and excluded participants or for missing data, those with more 'successful' outcomes may have been more motivated to stay engaged in the research and thus be included in the final sample.

Second, there may be a sampling bias since the participants are a particular group of autistic adults without a LD who were available and ready for an autism-specific internship. As such, our findings may not be generalisable to other autistic people with a LD or to those who, due to complex factors around disclosure (Romualdez, Walker et al., 2021), are uncomfortable disclosing an autism diagnosis at work. Similarly, the findings should be considered in the context of the relevant response rates. For example, there may have been a response bias related to social desirability, where interns with perceived poorer outcomes (e.g. lower incomes or working fewer hours a week) were less likely to answer the associated questions.

Third, the wider outcome measures may not have accurately captured changes. Indeed, there were some discrepancies in the internal reliability of the wider measures across timepoints, which may be due to T3 scores being averages from a 12–24-month window. While averaging data across such a window is a reasonable practical solution to maximise data retention in longitudinal studies with intermittent missing data, it is not without limitations. This approach can introduce bias and obscure variability, affecting internal reliability between timepoints (Jakobsen et al., 2017; Twisk, 2013).

Low Cronbach's alphas for the Quality of Life subscales might reflect that autistic people conceptualise quality of life differently from non-autistic people. These subscales may have failed to capture concepts relevant to autistic experiences of the quality of life, including people's understanding of autism and sensory processing, rather than health-related factors typically included in quality-of-life measures (Evers et al., 2022; Lam et al., 2021; McConachie et al., 2018). The particularly low alpha for the Social Relationships subscale suggests its items were not sensitive to autistic individuals' unique styles of communication and social interaction styles (Crompton et al., 2020; Davis & Crompton, 2021). Similarly, the general self-efficacy scale, designed for perceived ability in the workplace, may not account for other barriers faced by interns, such as limited support services (Chun et al., 2023). Future research should acknowledge the complexity of evaluating employment outcomes for autistic people by using bespoke measures sensitive to the autistic experience. Similarly, research should incorporate mixed longitudinal methods to capture outcomes that neither quantitative nor qualitative approaches can achieve alone.

Finally, it is important to stress that EA may not solely be responsible for the outcomes. The current participants were prepared and willing to participate in an autism-specific internship and generally open to subsequent job opportunities. As such, without a matched comparison group who were not engaged with a supported employment initiative, it is impossible to determine whether our participant group would have followed a similar employment trajectory as they transitioned from education into adult life, regardless of the supported employment experience. Unfortunately, this study lacked a comparison group of autistic adults due to recruitment issues, making it impossible to determine causal relationships between EA and the outcomes. However, while comparisons from pre- to 24 months post-internship provide insights into changes in outcomes within one group, future research should replicate such a larger-scale evaluation with a comparison group to determine more causal relationships.

Conclusion

This is the first longitudinal evaluation of a supported employment initiative that simultaneously tracked employment and wider outcomes to build a holistic understanding of its impact on autistic adults without a LD. Employment metrics improved up to two years after the internship, emphasising the importance of longitudinal studies to determine whether employment initiatives have a sustained

impact. Participants' daily living skills also improved post-internship, but there were no group-level changes in participants' mental health, quality of life or general self-efficacy, despite individual variability for all wider outcomes. Work experience initiatives may support the development of practical, applied skills but are not a panacea for more global factors. These findings highlight the necessity that resources for other forms of support (e.g. educational, economic, and social) remain alongside supported employment initiatives.

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Appendices

Appendix A. The employ autism process for interns and employers.

Stage	Intern	Employer
Recruiting organisations to Employ Autism	• Not applicable.	• Ambitious about Autism (AaA) promotes Employ Autism via various marketing and networking strategies both online and in-person events with potential host organisations. • The organisation volunteers to join EA, and begins liaising with staff at AaA to set up the internship.
Pre-application	• Roles are advertised on the AaA website and sent to those signed up to the EA mailing list.	• Employers attend online training hosted by AaA, *Understanding Autism in the Workplace*, which aims to equip employers with knowledge about autism and provide practical ways to support their interns and make their workplace more inclusive.
	• Questions about the role and application process can be emailed to a specific email address and someone from the AaA team can help.	
	• An optional pre-application meeting can be arranged with someone in the team to discuss suitability to the role, and/or get advice on CVs and the application task.	
Application	• The AaA team is available for any questions regarding the application form and information about the application task.	• Employers are offered tailored resources, support, and expertise from the team at AaA to make the interview process and any application task appropriate and accessible.
	• All applicants receive feedback on their application whether they are successful or not, and unsuccessful applicants are offered a meeting with a careers advisor to discuss the feedback.	
Interview	• For candidates offered an interview, the AaA team can help with preparation in-person or virtually.	• Employers share interview questions with candidates, interview the candidates, review the quality of any tasks set for the application, and decide on the successful candidate/s.
	• Interview questions and one-page profiles of the interviewer are shared with the candidate ahead of the interview.	
	• The candidate meets with a member of the team to develop a 'candidate profile', a document shared with the line manager and other interviewers that highlights strengths, interests, and any workplace adjustments required.	

(continued)

Continued.

Stage	Intern	Employer
During the internship	• There is a pre-placement call a week before the internship starts to ensure the young person has everything they need and to answer any questions.	• Employers provide workplace adjustments with the support of staff at AaA who can help the employers implement the adjustment appropriately. Examples of workplace adjustments include changes to working hours, logistics (e.g. how to travel into the office), communication preferences (e.g. written versus oral communication), reduced social obligation, changes to equipment, changes to the role, changes to clothing or appearance, the physical environment, flexible working location or changes to supports (e.g. information resources and mentors). • The team at AaA is available throughout the internship to offer support by answering questions from employers or providing relevant advice or information.
	• The team at AaA is available for questions or extra assistance for the onboarding process, for regular (but not mandatory) check-ins with the intern throughout the placement and can assist with requesting workplace adjustments or liaising with other issues the young people are not comfortable discussing with their line manager.	• The AaA team can also act as a liaison between the intern and the employer/s for any issues, such as requesting or implementing workplace adjustments.
	• At the end of the internship, there is a final check-in with the team from AaA to review the time of the internship.	
After the internship	• The young people are offered access to careers meeting with a careers' advisor.	

Table 8. Appendix B. Internal reliability of each measures' subscales

	α
ABAS-3	
Community use subscale	
T1	0.91
T2	0.92
T3	0.85
Home living subscale	
T1	0.87
T2	0.91
T3	0.91
Health and safety	
T1	0.85
T2	0.93
T3	0.85
Self-care subscale	
T1	0.86
T2	0.89
T3	0.86
Work subscale	
T1	0.82
T2	0.90
T3	0.90
Communication subscale	
T1	0.82
T2	0.88
T3	0.81
Functional academics subscale	
T1	0.86
T2	0.86
T3	0.87
Self-direction subscale	
T1	0.88
T2	0.92
T3	0.91
Leisure	
T1	0.90
T2	0.95
T3	0.93
Social subscale	
T1	0.87
T2	0.94
T3	0.89
General self-efficacy scale	
T1	0.83
T2	0.87
T3	0.81
Quality of life	
Physical health subscale	
T1	0.80
T2	0.67
T3	0.61
Psychological subscale	
T1	0.84
T2	0.80
T3	0.84

(continued)

Table 8. Continued.

	α
Social relationship subscale	
T1	0.71
T2	0.53
T3	0.60
Environment subscale	
T1	0.80
T2	0.74
T3	0.75
Autism quality of life	
T1	0.73
T2	0.73
T3	0.63

(continued)

Table 8. Continued.

	α
Mental health (DASS-21)	
Depression subscale	
T1	0.92
T2	0.92
T3	0.89
Anxiety subscale	
T1	0.80
T2	0.70
T3	0.86
Stress subscale	
T1	0.72
T2	0.83
T3	0.75