Autism at Work: Findings from the DXC Technology Dandelion Employment Program

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Overview

- Employment in autism
  - What do we know?

- Barriers to access
  - The job interview, disclosure of diagnosis, first impressions

- DXC Technology Dandelion Employment Program
  - Overview
  - Research
    - Qualitative results: Challenges & Enablers
    - Quantitative results: Impact of health & wellbeing

- Conclusions & next steps
“What is important isn’t the money, it’s giving something back to society that’s important. I can get by on a little bit of money, I’m ok, that’s not important. Without a job, I feel like I’m a drain on society... I feel like I’m not giving anything back, I feel it’s my duty – it’s the right thing to do... we have an understanding of how society works, even if we don’t fit in. Logically we understand how it works, this is something we do understand, even if we don’t understand people’s emotions we do understand how society functions”

DXC candidate, personal communication, 2016
Background

- 164,000 Australians estimated to have autism DX (ABS, 2017)
- 1-2% of the population, 240,000-480,000
- Cost of autism in Australia is AUD $8.1–11.2 billion (Synergies Economic Consulting, 2011)
- Reducing employment gap between people with and without disabilities would result in rise to GDP of 0.85% (Deloitte Access Economics, 2011)
- In the general population, workforce participation provides social inclusion, economic independence, improved health and well-being
- Increasing diversity within workforce and harnessing talents and expertise of people on the autism spectrum, may lead to broad organisational benefits as well as benefits to the individual and to their family (Austin & Pisano, 2017)
- People on the autism spectrum have lowest labour force participation rates
  - Australia: 40% (ABS, 2017)
  - Worldwide: 20% (United Nations, 2015)

**Figure 1** Labour force participation in Australia for people with ASD, people with a disability and the general population

![Bar chart showing labour force participation rates in Australia](image)

Employment programmes and interventions targeting adults with autism spectrum disorder: A systematic review of the literature

Darren Hedley¹, Mirko Uljarević¹, Laun Cameron¹, Santoshi Halder³, Amanda Richdale¹,² and Cheryl Dissanayake¹

- Systematic review of employment programs and interventions involving people on the autism spectrum
- Identified 10 review & 50 empirical papers
- N = 58,134 individuals
  - US Rehabilitation Services Administration-911 database; n = 34,501
  - Other studies; n = 1-130
- IQ 30-164; most report IQ >70
Main findings

Employment experiences

• Despite often high education level and abilities at least equivalent to those without autism, people on the autism spectrum experienced disadvantage including:
  - Underemployment, over-representation in low-paid, casual/entry-level positions
  - Lack of support & understanding in workplace
  - Desire for, but lack of workplace accommodations for symptoms of autism
  - High economic cost to families (preparing for work, transport, interview preparation, emotional)
  - Family loss of income, career opportunities, work skills & competitiveness

Employer focus

• Employers involved in the UK NAS (National Autistic Society) employment program recognised contribution of supportive environment to success over individual abilities

• However, few studies focusing on employers, employer perspectives, changing employer perspectives & attitudes toward employing people on the autism spectrum
Employment as main outcome: US Vocational Rehabilitation Services

- Positive outcomes associated with accessing VR services, but outcomes dependent on State
  - Benefit from on-the-job supports, counselling, guidance, job search assistance
  - Supported employment programs increase earning, reduces service costs, improve likelihood of gaining competitive employment
- But...
  - Transition aged adults with autism work fewer hrs/week, earn less & cost more than those without autism
  - Males with autism and anxiety/depression experience 50% reduction in odds of finding employment
  - Black/African-Americans had worse job outcomes than other groups
- Predictors of success at work include being White, older age, higher education level, no comorbid condition, recipient of job maintenance services
- Adults on the autism spectrum were more likely to be denied services due to the severity of their disability compared to other disability groups
Other specialised support programs

- University of North Carolina TEACCH Program
  - Job coach assists with job placement/training
  - Good job retention (89%)
  - No recent studies

- Project SEARCH
  - 9-month supported industry training internship for youth with autism/developmental disabilities in final year of high-school
  - Good competitive employment outcomes (87% vs 6% IEP only vs 55% receiving supported employment services)
  - Individuals in program received higher wages, fewer intervention hours

- UK National Autistic Society (NAS) Prospects
  - Evidence that program leads to increases in independent living skills, improved employment outcomes

- Small number of independent supported employment programs reported benefits of the programs
Development of workplace skills

• Intervention techniques
  - Video modelling, audio coaching, behaviour skills training, technology (iPhone/PDA), ABA, on-site and simulation training, job coach
  - Studies supported behavioural techniques for teaching skills, and emerging support for addition of technology

Non-employment related outcomes

• Small number of studies reported improved outcomes (quality of life, autism symptoms, cognitive skills) following supported vs sheltered employment; social behaviour/communication following workplace-based social training program
  - Studies affected by poor methodology, lack of baseline data, non-random assignment to treatment groups

• Limited-to-no evidence of employment improving cognitive, mental health, well-being, adaptive functioning, quality of life
Barriers to access: Job interviews & bias

- Interviews & first impressions may lead to negative impression of the person on the autism spectrum
- Human Resource (HR) processes place significant weight on CV/job history
  - People on the autism spectrum more likely to have scattered/inconsistent job history
- HR also emphasise team work, social communication & skills
  - These are often assessed during the interview, reference checks etc.
- Disclosure may be helpful (identify supports, explain behaviours), but may also lead to discrimination
  - Prejudice & stereotype bias
  - First impressions?
“Thin slice judgements” & first impressions

• Differences in social expression (e.g., unusual gaze, face expressions, vocal prosody) by people on the autism spectrum may affect social interactions (Sasson et al., 2017)

• People on the autism spectrum may be judged by others as “awkward or odd”

• May reduce quantity and quality of social interactions, or intentions to initiate social interactions

• Thus, people on the autism spectrum may be disadvantaged by these judgements of others

• “How people respond to unfamiliar individuals prior to social interaction is governed in large part by first impressions, which are near instantaneous judgements of personality and character traits based on “thin slices” of information” (Ambady & Rosenthal, 1992; Sasson et al., 2017)

  - How might first judgements by others affect employment or other important decisions concerning the person?
Neurotypical Peers are Less Willing to Interact with Those with Autism based on Thin Slice Judgments

Noah J. Sasson¹*, Daniel J. Faso², Jack Nugent², Sarah Lovell³, Daniel P. Kennedy²,³* & Ruth B. Grossman³,⁴*

Facial Affective and Communicative Expressions at Emerson College
• “Thin slice” of pre-recorded video of children and adults with autism and non-autistic controls
• Social behaviours rated less favourably than controls
• Reduced intention to pursue social interaction compared to controls
First impressions of adults with autism improve with diagnostic disclosure and increased autism knowledge of peers

Noah J Sasson and Kerrianne E Morrison

- First impressions (e.g., awkwardness, likability, trustworthiness) of video recordings of people with autism were more positive when their diagnosis was disclosed, compared to no label, or mislabelling as typical developing, or with schizophrenia.
- Ratings for TD improved when labelled as having autism.
- Improved autism knowledge led to more favourable ratings.

Figure 2. First impressions of the ASD and TD stimulus groups across the four labeling conditions: no label, accurate label, opposite label, and schizophrenia (SCZ) label ("p < 0.005).
Job interview training

• Should we focus efforts on training autistic individuals to be better at the job interview?
• Maybe we can train HR departments to do a better job of interviewing autistic candidates?
Virtual Reality Job Interview Training in Adults with Autism Spectrum Disorder


- Adults with autism randomised to VR-JIT or “treatment as usual” (not described)
- VR-JIT = simulated job interviews & training with “Molly” (virtual interviewer)
- VR-JIT showed improvements in role-play interview performance & self-confidence
- But, this approach is still focused on “changing” the person on the autism spectrum, rather than improving the environment to be accommodating of people on the spectrum
Maybe we need to re-think how to best recruit people on the autism spectrum
The DXC Technology Dandelion Program

Overview & Study Results
“He has always been an outstanding student - Dux of both Primary and High School, all the top prizes for every subject, OP1, University scholarship - which is the "positive" side of Aspergers. He got his Physics Degree but then hit the wall in a big way in his final year. It was looking very bleak - not just for him, but me also as a parent who had been struggling to deal with all the challenges Aspergers brings. It was clear that he wasn't able to continue with his University studies, but the problem was he was unable to job search effectively, even with me having 16 years as an Employment Consultant assisting him. It once took him 4 hours to pick up the phone and talk to a prospective employer, even with me having made a Resume for him and having written a script of what he should say. That's precisely why I believe this program is excellent.”
DXC Technology Dandelion Employment Program: An alternate pathway to employment
Dandelion Program Structure

**Year 1: Job Awareness**
The staff member is trained in the environment and job processes and commences work activities. Technical and social development is tracked and staff integration into the workforce commences.

**Year 2: Self Advocacy**
Involves the individual improving their work profile and taking note of their key strengths and support that may be required. Introducing the staff member to networking opportunities and focus on certifications.

**Year 3: Transition**
The individual is setup for transition at the end of the program and to provide all opportunities for employment. The recruitment of a new team on the Autism Spectrum.

Workplace education
Current in program or DXC; $n = 58$
Resigned, various reasons; $n = 4$
Left to competitive employment; $n = 3$
Retention rates; 2015-2018

• Staggered starts
  - 1/2015 (SA); 6/2015 (QLD); 9/2015 (ACT); 8/2016 (ACT); 1/2017 (ACT); 1/2018 (VIC)

• Overall retention rate in the program = 89%
  - 94% considering 3 who have gone on to competitive employment in IT sector outside of the program

• 4 x resigned
  - 1 x did not pass 6 month probation due to mental health concerns
  - 1 x did not enjoy IT work
  - 1 x returned to University
  - 1 x found testing role “too complex”
Transition to work: Perspectives from the autism spectrum

Darren Hedley¹, Ru Cai¹,², Mirko Ujlarevic¹,², Mathilda Wilmot¹, Jennifer R Spoor³, Amanda Richdale¹,² and Cheryl Dissanayake¹

- Focus groups from Adelaide DHS team
  - Autistic employees, n = 9
  - Family, n = 6
  - Support staff, n = 7
  - Co-workers, n = 6
- Identified 3 main themes, 10 subthemes
  - Challenges
  - Enablers
  - Outcomes
Enablers

- Positive feedback to build confidence
  - “People here are great without a doubt ... we have been given the confidence to be able to speak to the other people ... to get their perspective, [co-workers] have been very welcoming to us, they've been very nice ... they are ready to lend a helping hand and give advice ... they don't say that you've done 'that' wrong, but positive feedback, because some people stress about... because I do, I stress about negative feedback all the time.” [Participant]

- Autism support person
  - “Just to have someone there who understands autism [and] explains things when certain situations occur ... I would question "why would they react in a specific manner?" ... after that's been explained, I thought “Oh, I get a better understanding”.” [Co-worker]

- Being aware of sarcasm and how to communicate effectively with employees on the autism spectrum
  - “Changing the way I talk to them ... being very concise in what I want instead of using my sarcastic way ... that doesn’t work ... it’s going to be taken literally instead ... it’s just getting used to it - saying what I mean to be done.” [Co-worker]

- Be integrated into (not isolated from) the broader workforce
  - “By us integrating probably as well as we have ... we can joke ... we can have a laugh, we can talk about gaming ... got to keep them on track for that one though, when you got something they enjoy they’re quite happy to talk about it, but yeah I think that’s probably helped us a lot [to] sit next to each other.” [Co-worker]
Challenges

• Downtime – not having anything to do
  - “One little thing that does frustrate [him] is when they don't have anything to do ... it's just as stressful ... and he's frustrated.” [Parent]

• Communicating with others, being “too honest”
  - “People on the autism spectrum tend to just deliver information not realising ... the way you present it could be offensive. I do remember [him] giving compliments, but they really weren't.” [Parent]

• Comorbid conditions, attention difficulties
  - “I also have ADHD which makes it extremely hard to concentrate on very large or very small tasks, they've got to be just the right size. Too big and my mind is seriously overwhelmed, too small and my mind doesn't want to put any focus to it because it will be over and done with too quickly.” [Participant]

• Social norms
  - “Sometimes the lift was a bit slow and so there'd be fifteen people waiting for a lift ... they'd see the door open and they'd just walk ahead, so it was just etiquette ... just minor things ... but for people like us we might go “we were here first”, you know, you wait your turn to get into the lift when there's twenty people waiting.” [Co-worker]
Outcomes

• Determination and dedication to the task
  - “There’s a difference of attitude ... these guys really want to make something out of this ... they see it as an opportunity ... they really apply themselves well, whereas other contractors probably may come in saying this is just another job.” [Co-worker]

• Benefits to the organisation
  - “I can only see positives from what we are doing here as an organisation, and ... for [the trainees] too, getting into the work place and being able to utilize their talents. This is what we do, we want to test everything and look at it from different perspectives, and this is what [the trainees] are bringing to the table ... there’s nothing but positives.” [Co-worker]

• It’s the little things!
  - “I’ve really enjoyed seeing the progression ... [he] would hardly ever talk to me or many people, but now when he’s in the kitchen and I say ‘hi’ to him, he takes his earphones off and says hello back so it’s just, I have these little wins and whenever one of them does something sort of really nice actually I mention it ... I’ve gotten just as much out of it as they have so ... it’s been good.” [Support-worker]
  - “It’s changing people and it’s changing their perceptions, the spin offs have been incredible to the [staff] around us.” [Support worker]
Outcomes cont’d

• Financial & ability to contribute to the family
  - “[In my] previous job I was getting paid the minimum wage ... which wasn't much, barely enough to live on. I was barely able to keep my car serviced ... [now] I’m able to have a lot more money to become more independent ... instead of becoming a financial burden I actually became a significant augmentation to the house income.” [Participant]

• Independence
  - “I can’t remember before him ever brushing his hair, even as a teenager, [it] was only if we brushed it. ... his personal hygiene was even suffering and lacking whereas every morning now he's up ... he sets two alarms because he likes to stay in bed but I don't get him up ... he does get himself up, which is a good thing.” [Parent]

• Social relationships
  - “It has helped me change quite a bit. Before here I was anti-social and mostly stayed at home 90 % of the days, never go out except when I had to. Now I tend to spend time out in town and around, hang out with friends a lot more, and [I’m] quite social at work.” [Participant]
Organisational benefits

Figure 1.
Co-worker perceptions of the value of the Dandelion Employment Program to the organisation (n = 188 responses)

- The Dandelion Program serves an important purpose
- The Dandelion Program is a good strategy for this organisation
- I believe in the value of the Dandelion Program
Figure 2.

Co-worker perceptions regarding impact on their own work resulting from implementation of the Dandelion Employment Program

(n = 187 responses)
“The job provides a purpose, you're looking forward to getting up in the morning, to going to work. It is challenging yes, sometimes stressful, but in the end I know that I've done good.”
1 year of Employment
Longitudinal Data
Does employment lead to improvements in health and wellbeing, and general quality of life, over time?

- Multiple self-report survey questionnaires
  - health and wellbeing, psychological wellbeing, job satisfaction, quality of life, autism traits etc...
- Administered online (Qualtrics) in the first few weeks of starting work, and every 6 months thereafter
- Data available across 4-sites, complete data sets for 35 individuals for first year in program
  - 3 x time points (baseline, 6 months, 12 months)
- Analyses - Repeated measures ANOVAs
Calculated “change scores” by subtracting Baseline (start work) scores from 12 month scores

\[ S_{\text{CHANGE}} = S_{\text{12MONTH}} - S_{\text{BASELINE}} \]
10 items, 0-40

9 items, 0-27
Change in Depression & Anxiety symptoms over time are strongly correlated, $r = .61, p < .001$
2 items, 0-100

14 items, 14-70
Change in QOL & Mental Wellbeing over time are also strongly correlated, $r = .64$, $p < .001$
12 items, 0-36

20 items, 20-100
Change in Job Satisfaction & Perceived Social Support over time are also moderately associated, $r = .36$, $p = .037$
Preliminary conclusions...

- It’s too simplistic to assume that simply providing employment, even in a supportive environment, will lead to generalised benefits in terms of mental health and wellbeing, or Quality of Life.

- Over 12 months, we are seeing that while many individuals show stability or limited change on our measures of health and wellbeing,

- There are some individuals who show improvements over time on our measures,

- And a proportion of individuals worsen in terms of mental health and wellbeing, and quality of life, compared to when they started with the program.

- A closer, individual differences based analysis of these data therefore appears warranted (stay tuned!).
Next steps

- We need to better understand the heterogeneity, or variability, in long-term outcomes associated with employment of individuals on the autism spectrum.

- More importantly, we need to understand what predicts both poor and good outcomes.

- We need to better identify those individuals who are having difficulties or finding the work environment challenging.

- And, importantly, what can be done to ensure more individuals are achieving the best possible outcome, and are thriving at work.
Contributions & thank you to...
Thank you
latrobe.edu.au/otarc