



Better Outcomes and Successful Transitions for Autism (BOOST-A): From research to practice

FINAL REPORT

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The project team was comprised of researchers and autistic project assistants from the School of Occupational Therapy, Social Work, and Speech Pathology, and the School of Health Promotion, Curtin University. The team gratefully acknowledges the support of the CRC participants' representatives in the recruitment of participants to the BOOST-A workshops and providing workshop venue facilities; and to the young people on the spectrum and their families and teachers who contributed to the development of the promotional and training video resources.

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The findings of this research and content, including the Autism-Career Explorer (A-CE) have been further developed into *myWAY Employability*, a smart web platform to help young people on the spectrum plan and prepare for their working life. *myWAY Employability* has been delivered through a collaboration between Autism CRC and its participants. The project was co-led by Curtin University and supported by Aspect and the Queensland Department of Education, along with technology development partner The Project Factory and research partner CSIRO e-Health Institute. *myWAY Employability* is proudly supported by the Telstra Foundation, funded under the Tech4Good Challenge initiative.

The Cooperative Research Centre for Living with Autism (Autism CRC)

The Cooperative Research Centre for Living with Autism (Autism CRC) is the world's first national, cooperative research effort focused on autism. Taking a whole of life approach to autism focusing on diagnosis, education and adult life, Autism CRC researchers are working with end-users to provide evidence-based outcomes, which can be translated into practical solutions for governments, service providers, education and health professionals, families and people on the autism spectrum.

Copies of this report can be downloaded from the Autism CRC website autismcrc.com.au.

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1. BOOST-A: From research to practice

1.1 Background

Young people on the autism spectrum without intellectual disability have poorer post-school employment outcomes than their non-autistic peers, and their autistic peers with intellectual disability. Less than one quarter of young people on the spectrum are involved in transition planning, and when they are involved in the process, it is usually not in an active role (Shogren & Plotner, 2012). These poor outcomes are in part due to inadequate transition planning to assist in the setting of personal goals to prepare the young person on the spectrum for leaving high school.

The Better Outcomes and Successful Transitions for Autism (BOOST-A) was developed as an accessible and appropriate transition planning protocol for use by young people on the spectrum without intellectual disability and the trusted adults in their lives who assist with them in planning their future goals. A clinical trial of the BOOST-A involving high school students on the spectrum in Western Australia, Victoria, New South Wales and Queensland, was carried out between 2016 and 2017 (Hatfield, Ciccarelli, Falkmer & Falkmer, 2018). The findings of this study highlighted the usefulness of the BOOST-A in increasing self-determination among young people to plan for their future life after school.

Community awareness of how the BOOST-A can be used to inform and facilitate transition planning to work, or further education or training immediately after school is the first step to maximising opportunities for successful transition among young people on the spectrum. Training prospective users in the BOOST-A is integral to maximising its benefits. Providing training to a wide range of potential users may increase uptake and use of the tool within the community.

1.2 Project objectives

The two original objectives of the Project were to:

1. Disseminate information about the BOOST-A to young people on the spectrum and the people who support them in planning their transition to employment when they leave school; and
2. Provide training in multiple and accessible formats to potential end-users of the BOOST-A about evidence-based principles for successful transition planning and on how best to use the tool to commence and progress transition planning activities.

Two additional objectives were subsequently added to the project:

3. Develop an autism-specific career interest exploration tool as an alternative to the Career Interest Test, for use in the interests section of the BOOST-A for use within *myWAY Employability*.
4. Develop written content for the *myWAY Employability* online resource. The content pertains to activities related to career exploration, goal setting, preparing for work experience, further education/training, or finding a job.

1.3 Organisation of this report

This report provides information about the development and delivery of the Utilisation Project materials, the outcomes, and recommendations that emerged from the end users:

- Section 2 details the methodology and delivery of the BOOST-A information workshops to the general community;
- Section 3 provides the findings from the analysis of feedback provided by workshop participants, including recommendations for improvement to the research version of the BOOST-A online program;
- Section 4 reports on the development of two audio-visual (video) resources to facilitate promotion and use of the BOOST-A;
- Section 5 details the development of a new career interest tool (Autism-Career Explorer; A-CE) as a replacement to the Career Interest Test component of the BOOST-A; and
- Appendices include materials used for the promotion and evaluation of the BOOST-A workshops.
- A draft of a journal article of the development of the A-CE is not yet available for public access as it is embargoed until publication in a relevant peer-reviewed journal.

2. BOOST-A information workshops

2.1 Planning the BOOST-A information workshops

A two-hour information workshop was developed using a combined didactic and interactive format. This presentation style was based on feedback obtained from the young people on the spectrum and their parents and/or teachers, who had used the BOOST-A as part of the process evaluation of the nation-wide clinical trial. Workshop content was driven by the need to inform end users of the BOOST-A about the **five key employability principles** underlying the tool:

1. **Start early**
2. Look at the **big picture** and include real life experiences
3. **Dream big** – don't underestimate what the young person can achieve
4. Keep the **young person at the centre** of transition planning; and
5. Have a **champion** on the team.

A pilot BOOST-A information workshop was delivered to health professionals from a not-for-profit disability service provider in Perth, Western Australia, to obtain feedback on length of the workshop, content, and delivery style. Minor changes to the content and delivery style were made based on the pilot feedback prior to delivery of the workshops.

Delivery of the free BOOST-A workshops were planned for four Australian states: Western Australia (metropolitan Perth and regional Kalgoorlie-Kambalda); Victoria (Melbourne); New South Wales (Sydney); and Queensland (metropolitan Brisbane and regional Mackay) in June-July 2018. The locations of regional workshops were planned in consultation, based on need identified by Autism CRC partners in Western Australia and Queensland.

2.1.1 Invitations and registration

Invitations to attend workshops (see Appendix A) were disseminated to sectors of the general community via numerous channels including the Autism CRC website and social media (Facebook and Twitter); the I Can Network, Aspect, Western Australian Department of Communities (Disability Services), Catholic Education Western Australia, Autism Association of Western Australia, Autism Queensland, and directly to not-for-profit organisations in Western Australia who deliver services to people on the spectrum.

Invitations to prospective workshop attendees also occurred through autism-specific community events. The Curtin University Autism Research Group (CARG) host an annual Autism Open Day in

Perth and regional Kalgoorlie-Kambalda, WA. There were approximately 400 attendees at these events in 2017 that included young people on the spectrum, families, teachers, health professionals, and other interested persons. Flyers advertising the planned BOOST-A workshops were distributed at these events, and attendees were invited to register their interest in attending a future workshop in Perth or Kalgoorlie, along with their contact details. The workshop flyers were also distributed at an All Abilities Expo in 2017 in Perth, WA. All those who had registered their interest at these three community events received an email from the Project Team to advise them of the BOOST-A workshop dates in Perth and Kalgoorlie and invite their attendance. A newspaper article promoting the BOOST-A workshops was published in the Kalgoorlie Miner newspaper (See Appendix B) as this region is widespread.

Community members interested in attending workshops were directed to contact the Project Leader via email for registration information. The Workshop Project Assistant sent each person an email containing an Eventbrite invitation link and details of the date, time, and location of the relevant BOOST-A workshop in their area. Each workshop registrant was emailed access to the research version of the BOOST-A, including their unique login and password.

2.2 Workshop delivery

Twenty BOOST-A information workshops were offered and 14 were delivered based on 102 registrations. Dr Megan Hatfield delivered two workshops in metropolitan Perth, which were held at the Bentley campus of Curtin University. Dr Marita Falkmer delivered one workshop in Sydney (at Autism Spectrum Australia in Frenchs Forest); and two in Melbourne (at the La Trobe University city campus). The two workshops in Melbourne were co-presented with Mr Joel Wilson; an autistic advocate and a Curtin University Associate. Associate Professor Marina Ciccarelli delivered two workshops in Kalgoorlie, WA (at the Curtin University, WA School of Mines); four in Brisbane (at Autism Queensland in Sunnybank Hills); and two workshops in Mackay (at Autism Queensland, The John Villiers Centre of Excellence, East Mackay), and one online workshop to mentors of I CAN Network.

The workshops were two-hours in duration, and provided information about the theoretical underpinnings of the BOOST-A; provided participants with opportunities to share their own experiences in supporting young people on the spectrum in the transition from school to further study or employment; and outlined a step-by-step interactive guide to using the BOOST-A. Participants were provided with a copy of the powerpoint slide deck after the workshop for future reference.

2.3 BOOST-A Information workshop attendees

Workshop attendees included young people on the spectrum, families of young people on the spectrum, school teachers and educational assistants, allied health professionals (occupational therapists, speech and language pathologists, and psychologists), local coordinators, work placement professionals, mentors, and supporters of the autism community. Separate workshops were held for families and professionals to allow attendees to share their experiences and ask questions that were relevant to them and from their perspective of supporting young people on the spectrum to transition from high school to employment. Table 1 outlines the number of workshop attendees at the various locations. The number of young people on the spectrum who attended the workshops are noted in the table.

Table 1: Demographics of BOOST-A information workshop participants

Location	Teacher/ Professional (n)	Family (n)	New BOOST-A accounts requested post-workshops (n)
Perth, WA	9	4	11
Kalgoorlie-Kambalda, WA	3	7 †	
Melbourne, VIC	3	5 §	1
Sydney, NSW	9	2	
Brisbane, QLD	30	9 §	8
Mackay, QLD	14	7 ‡	1
I CAN Network (online)	4		
TOTAL	72	34	21

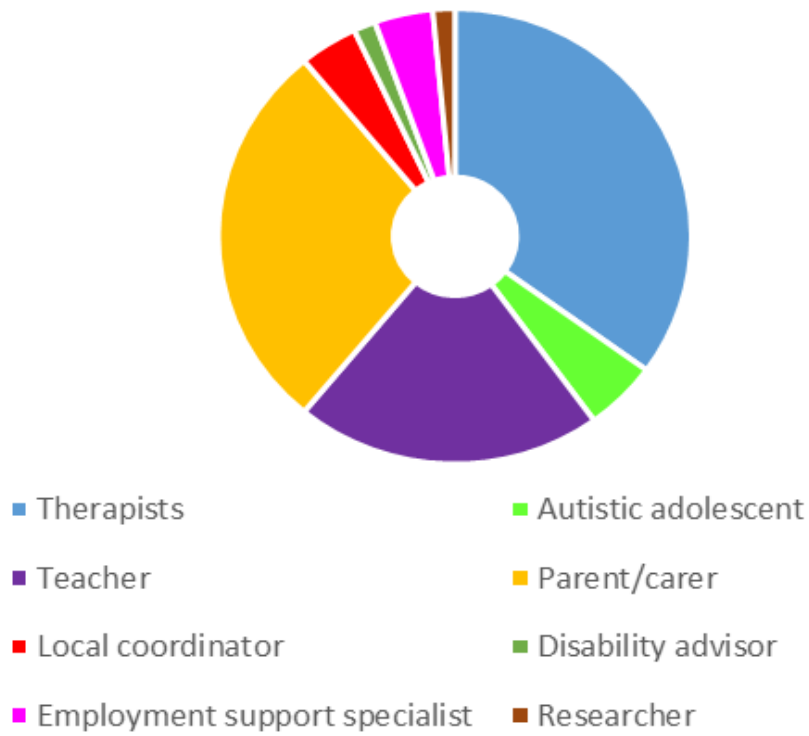
§ One young person participant

‡ Two young person participants

† Three young person participants

The majority of professionals attending the workshops were therapists (occupational therapists, speech pathologists, and psychologists), and teachers associated with Aspect and Autism Queensland schools (see Figure 1). Less Local Area Coordinators from Disability Services Commission in WA attended than were expected due to changes in service provision, namely the introduction of the National Disability Insurance Scheme in WA. Teachers from the Catholic Education and public education sectors were the least represented cohort at the BOOST-A workshops.

Figure 1: Roles of pre-post workshop survey respondents



3. Evaluation of the BOOST-A workshop outcomes

3.1 Evaluation protocol

The Project Team aimed to evaluate outcomes of the BOOST-A information workshops to determine any changes in self-perceived knowledge and confidence to support a young people on the spectrum in the transition planning process, and intended and actual use of the BOOST-A tool as part of the transition planning process. This was planned as a pre-post evaluation and 5-month post-workshop follow-up (see Figure 2). Ethics approval was provided by Curtin University Human Research Ethics Committee (approval # HRE2018-0692).

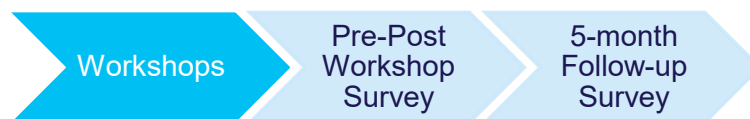


Figure 2: Planned process of evaluation of BOOST-A workshop outcomes

3.1.1 Pre-post workshop survey

Workshop participants were invited to complete a brief paper-based survey immediately before and immediately after the workshop (see Appendix C). They were advised that their participation in the survey was voluntary and would not in any way affect their attendance at the workshop or their access to the research version of the BOOST-A program.

Survey respondents were asked to identify their primary role related to transition planning for young people on the spectrum. Options included, 'Parent/carer'; 'Teacher'; 'Therapist'; and 'Other'. Young people on the spectrum who attended the workshop with a parent/carer and who responded to the survey, selected 'Other' and identified as being on the spectrum.

Respondents were asked a total of six questions. Two items on the pre-workshop survey were statements that required respondents to select their level agreement on a 5-point Likert scale, where 1 = Strongly disagree and 5 = Strongly agree:

- *Question 1: I have the knowledge I need to assist the teen with autism to prepare for leaving school.*
- *Question 2: I feel confident in supporting the teen with autism to prepare for leaving school.*

Items on the post-workshop survey included the *same two statements* from the pre-workshop survey, and *two additional* questions that required a free-text response:

- *Question 3: What actions will you take towards supporting the teen with autism to prepare for leaving school after the workshop today?*
- *Question 4: How else might technology be useful to assist the teen with autism to prepare for leaving school?*

The last question was asked to obtain participants' suggestions for future design and functionality of the BOOST-A within the context of a holistic online service. In particular, transitioning to further training, education, or employment after school, and any other ways in which technology could be used to support the transition planning of young people on the spectrum. During the step-by-step demonstration of the BOOST-A career exploration and goal setting tool, workshop participants were asked to provide feedback on any aspects of the tool that could be improved in the future. The information provided was used to inform the development of the Project Lead's funding proposal to Telstra Foundation's Tech4Good Challenge to develop *myWAY Employability* smart web application.

3.1.1.1 Pre-post workshop survey results

Eighty-five of the 106 participants returned a completed pre-post workshop survey. Level of agreement towards the two statements on the pre-workshop survey and the post-workshop survey were calculated as group means (shown in Table 2). The non-parametric Wilcoxon signed-rank test was used to determine any significant differences in responses by each participant (within-group), with the level of significance set at $p=0.05$. Similar results were found when the data were tested with the parametric paired t-test.

There was a significant increase in perceived knowledge and confidence in transition planning among participants after they participated in the BOOST-A workshops.

On average, participants disagreed at the beginning of the workshop that they had the knowledge, and neither agreed nor disagreed that they had the confidence to support a young person on the spectrum to prepare for leaving school. By contrasts, at the end of the workshop, participants on average agreed that they had the knowledge and the confidence to support a young person on the spectrum to prepare for leaving school.

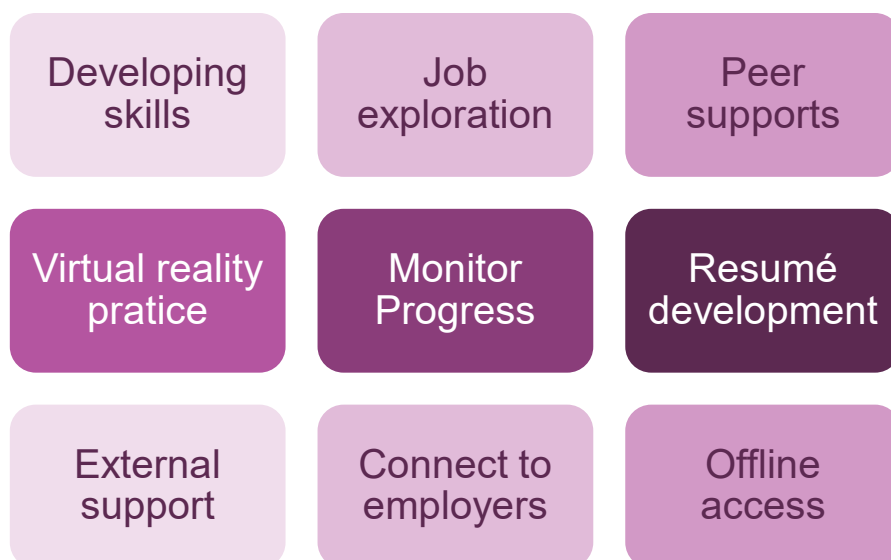
Table 2: Changes in workshop participants' perceived knowledge and confidence to assist teens on the spectrum with transition planning

Survey question	Mean Pre-workshop score (n=85)	Mean Post-workshop score (n=85)	Mean (SD) Change score (Post-Pre)	p
I have the knowledge I need to assist the teen with autism to prepare for leaving school.	2.8 (1.0)	3.9 (0.8)	1.0 (1.02)	<.0001
I feel confident in supporting the teen with autism to prepare for leaving school.	3.0 (1.0)	4.1 (0.6)	1.1 (0.9)	<.0001

In response to the open-ended question, *What actions will you take towards supporting the teen with autism to prepare for leaving school after the workshop today?*, participants' responses strongly indicated their intentions to use the BOOST-A in the future, and/or to recommend it to others to use. As an example, one participant responded that they would:

**“Use the tool! Introduce others to the tool.
Spread the word.”**

Participants' responses to the open-ended question, *How else might technology be useful to assist the teen with autism to prepare for leaving school?* were categorised under nine main themes.



Participants' qualitative feedback on the content, functionality, and usability of the BOOST-A was documented to inform future development of the tool. Their responses are detailed in Table 3.

Table 3: Workshop participant suggestions for improvement on features of the BOOST-A

Feature	Comments
About Me: Strengths section	<p>The strengths assessment looks too much like a test and/or traditional mental health questionnaires.</p> <p>Why are there five options (Likert responses) in the Strengths questionnaire, it was difficult for some especially as two options do not have an explanation.</p>
About Me: Interests section	<p>Interest section – if you have chosen one job category but change your mind, you can't "un-tick" it and choose to leave them both blank.</p> <p>Is it possible to choose both job category options?</p> <p>It is important to explain that choosing one job option category doesn't mean that's what you would definitely like to do, but choosing none means the profile might not be as detailed.</p>
About Me: Work preferences	<p>Could touch [tactile] be part of the work preference assessment?</p> <p>The 'Think about lights, the weather and temperature inside and outside' was difficult to understand.</p>
About Me: My skills	<p>The 'My skills' section is quite vague and all the small steps in, for example, "getting ready" may have to be discussed (what does it mean to shower... do you know all the steps?)</p>
Job options	<p>If you change the job preferences, then the job ideas still have their "old" ticks for Yes, No, Maybe?</p>
My Goals: Goal setting	<p>Would it be possible to number the goals so that they are listed in order of priority, or time to completion?</p> <p>May need to discuss how to break down the suggested goals into smaller steps</p> <p>Could reminders be sent out if the program has not been logged on to in a long time, or as a reminder of the goals after some (regular) time/s</p>
My progress: Reflection	<p>Perhaps explain that the reflection section can be done by team members separately and/or the adolescent and their team together.</p> <p>Is it possible to have 'Reflection' added to each goal?</p>

3.1.2 Five-month follow-up survey

Five months after the workshops, the Project Leader emailed workshop participants who had returned a completed pre-post workshop survey, with an invitation to participate in a follow-online survey (see Appendix D). Participants were asked questions about their use of the BOOST-A program since attending the workshop; any challenges they had experienced to using the BOOST-

A; any perceived benefits of using the BOOST-A; and their current perceived knowledge and confidence to support a young person on the spectrum to plan and prepare for life after school.

An online survey in Qualtrics was emailed to 80 workshop participants, and contained the following questions:

- In what Australian State did you attend the BOOST-A training?
- Have you started using the BOOST-A tool with a young person/s on the spectrum as part of their transition planning, since you attended the BOOST-A training workshop?
- Which sections have you commenced working on with your young person on the spectrum?
- Please tell us briefly, if and how, the BOOST-A has been helpful in transition planning.
- Please tell us why you have not used the BOOST-A to assist with transition planning for a young person on the spectrum. Include any reasons that have made it difficult for you to use the BOOST-A. (open text response option)
- Please tell us your agreement with these statements. –
 - I have the knowledge I need to assist a young person on the autism spectrum to prepare for leaving school
 - I feel confident in supporting a young person on the spectrum to prepare for leaving school

Response options included “Strongly agree”, “Agree”, “Disagree”, and “Strongly disagree”.

3.1.2.1 Five-month follow-up survey results

Fourteen people responded to the five-month follow-up survey. Although the response rate was low (18%) the feedback was overall positive.

14 survey respondents:

- 2** Parents or family members
- 3** Speech pathologists
- 4** Occupational therapists
- 5** Teachers

Attended the workshop in:

- 2** New South Wales
- 3** Western Australia
- 9** Queensland

“I have the knowledge to assist a young person on the spectrum to prepare for leaving school”:

11 Agreed
3 Neither agreed nor disagreed

“I feel confident in supporting a young person on the spectrum to prepare for leaving school”:

10 Agreed
2 Neither agreed nor disagreed
1 Disagreed

The majority of respondents had not yet started using the BOOST-A with a young person on the spectrum

Reasons for this were that many respondents were not currently working with an young person on the spectrum in their transition planning, but anticipated that they would be in the future. Most of these respondents were teachers.

The About Me and My Teams section were the components most used

How one professional used BOOST-A in practice:

“The BOOST-A has been helpful in many ways! I am using it with three clients (and counting). It has opened up the clients’ eyes to their skill sets and where unidentified deficits may lie. It has helped the clients identify other possible job opportunities that they may not have considered before.

It has made the process of thinking about life after school less daunting and more organised, therefore increasing engagement and participation from the client. It has also given parents hope in their child's transition after school and made them feel like their child will have direction with their pursuits after school. It has increased accountability of parents, schools, and clients to follow through with proposed actions and goals set in meetings. I have also had a teacher say it has made things easier for them when selecting appropriate work experience opportunities for the child.”

BOOST-A encouraged one young person to Dream Big (as told by his father):

During the session [BOOST-A workshop], [my son] *J* identified that he wanted to be involved in organising and delivering public speaking events. This was unknown to me prior to the workshop.

At his school, he approached his teachers with a plan to do a presentation during Book Week on his fantasy world that he had created. I received a concerned email from *J*'s teacher that he would not be able to meet his expectation on the size of the presentation he wanted to give. When I explained to her that it had come from the BOOST-A workshop and he was told to "Think Big", the school came on board and put some extra things in place. *J* wrote to one of his teachers to request approval to miss some class time to give the presentation and how he intended to make up the time missed. He also had to engage and work with the library staff to deliver the presentation in the library.

The result was reported in the school newsletter: CELEBRATING BOOK WEEK - Special guest presenter was Year 9 student *J* who has created his own fantasy world. *J* spoke very well to his English class and then did his presentation at lunchtime to a crowd of about 40 students. He is a very talented young man who also showed his audience how he created all of his characters out of clay. *J* would like to put all of his writing together and create a book. You never know, one day it might be a contender to win Book Week!"

4. Audio-visual promotional and training resources

Two video resources were developed to promote the BOOST-A and provide an online training resource for autistic people, parents, professionals and service providers. The videos were designed to showcase valuable content and usability of the BOOST-A from the first-person perspectives of three young people on the spectrum and the trusted adults who support them in transition planning.

Three young people who had participated in the trial of the BOOST-A and provided feedback in the process evaluation of the BOOST-A (Hatfield, Falkmer, Falkmer & Ciccarelli, 2018) were invited and agreed to participate in the BOOST-A promotional and training videos. Adults (two parents and two teachers) who had supported each of the young people with their trial of the BOOST-A also agreed to participate in the videos, providing their own experiences and insights using the BOOST-A tool.

The video footage was filmed at each young person's homes and school or university. Some footage was filmed by an autistic filmmaker and the remainder was filmed and edited by a non-autistic film maker. Project team members facilitated the on-location filming, selected and sequenced the video footage for editing, and provided the narration for the promotional video. The video development was aligned to the Autism CRC's commitment to "inclusive research practices and coproduction of outcomes with those on the spectrum and their families to ensure research provides practical and tangible outputs that benefit the community" (<https://www.autismcrc.com.au/about-us>).

The final edited promotional video is approximately six minutes in length and available to view [here](#). The video tells the stories of each of the young persons' transition planning journeys, including the challenges they face, and what benefits to transition planning they gained from using the BOOST-A.

Parts of the raw video footage were included as a viewable resource in the BOOST-A training workshops to share the voices and experiences of these young people and their supporters with workshop participants. Feedback from workshop participants was that the video content helped them to see the potential relevance of the BOOST-A to themselves or to the young people they were supporting.

The edited promotional video was viewed by conference participants at the International Society for Autism Research (INSAR) conference in Montreal Canada (May 2019); the Asia Pacific Autism

Conference in Singapore (June 2019); and the Autism@Work Symposium in Melbourne, Australia (July 2019).

The 20-minute training video was designed as an alternative to the in-person BOOST-A training workshops. The BOOST-A research team believe that the BOOST-A should be used in accordance with the five employability principles underpinning the development of the tool, and so a short training resource was needed.

The video outlines the five employability principles of the BOOST-A and takes the viewer through the four BOOST-A modules and when and how best to use the components of the BOOST-A at various stages of transition planning. Video and still footage of the three young people and their teachers/parents using the research version of the BOOST-A is integrated into the training video.

Resources on [inclusionED](#) about transition planning that include the BOOST-A and the five employability principles, are provided to teachers as information resources and classroom practices, and contain edited video segments from the training video.

inclusionED is an online professional learning community, co-designed with educators, for educators. It provides free evidence-based and research-informed teaching practices and tools to support diverse learners in inclusive classrooms. *inclusionED* has been delivered through a collaboration between Autism CRC and Queensland University of Technology (QUT) and developed in consultation with teachers, policy makers, parents and students around Australia.

5. Developing the Autism-Career Explorer (A-CE)

5.1 BOOST-A utilisation project objective three

As the development of the *myWAY Employability* online resource progressed, the project team became aware of the need to replace a component of the About Me module of the research version of the BOOST-A.

A third objective was added to the BOOST-A Utilisation Project - Develop an autism-specific career interest exploration tool as an alternative to the Career Interest Test, for use in the interests section of the BOOST-A for ongoing community-wide use of the tool.

The following steps were completed to achieve this third objective:

- Undertake an environmental scan of contemporary career exploration tools to identify potential occupational categories for inclusion in the interests section of the BOOST-A;
- Apply principles of relevant heuristics in decision making to the design of the interests section of the BOOST-A;
- Apply principles of language and design that are appropriate for young people on the spectrum to present occupational categories for exploration and selection in the interests section of the BOOST-A;
- Conduct iterative user testing of prototypes to determine relevance and acceptability of the occupational categories, and language and design of the career exploration components of the BOOST-A, from the perspectives of young people on the spectrum.

5.2 Autism Career Explorer (A-CE)

To achieve this third objective, a research assistant who has a teaching qualification and a psychology honours degree, was employed to assist with the development of an alternative interests section of the BOOST-A. She also facilitated and conducted user testing of prototypes of the tool with a small user group of young people on the spectrum to determine acceptability of the new tool - the Autism Career Explorer (A-CE).

5.2.1 Theoretical basis for the A-CE

The 15-item A-CE is informed by John Holland's theory of vocational personality and environments that proposed career interests cluster based on underlying personality traits (Holland, 1973, 1996).

In other words, people can be classified according to six broad vocational “personalities” with aligned work environments. These six vocational personalities are **Realistic** (hands-on, practical), **Investigative** (analytical); **Artistic** (creative, original); **Social** (helping, guiding, socialising); **Enterprising** (managing, directing, influencing); and **Conventional** (organising, systematising) (RIASEC). The RIASEC is widely used in personality tests and as part of vocational exploration and career planning among the general population at an international level.

We believed that basing the A-CE on Holland’s model would help avoid the vocational stereotyping of autistic people (Bury, Hedley, Uljarević, Dissanayake, & Gal, 2019; Lorenz & Heinitz, 2014), typically into the science, engineering and information technology professions. However, we made one significant change to Holland’s model to recognise that autistic people can have a positive connection with animals (O’Haire, 2013) and may show their nurturing tendencies toward animals rather than people. So, we moved interest in animal-care activities from the Realistic to the Social vocational personality type. This category was renamed “Helping”.

The BOOST-A originally incorporated the Career Interest Test (CIT- short form; Athanasou, 2003) in the About Me module. The CIT a 21-item, forced-choice questionnaire that required participants to make a dichotomous choice from sets of two job categories presented. Young people on the spectrum involved in the trial of BOOST-A reported difficulties with this forced-choice format (Hatfield et al., 2018). When designing the A-CE, we considered if this forced-choice format might imply a “right/wrong” answer for each pair of jobs presented and if this may have heightened the young peoples’ anxiety when completing the CIT.

To address the challenges of this dichotomous choice approach for autistic individuals, we looked for an alternate method of determining interest preferences when developing the A-CE. The format of the Visual Analogue Scale for ranking, rating and paired comparison (VAS-RRP) (Sung & Wu, 2018) allows respondents to place multiple items on a continuum that are ranked and rated, with pairwise-comparison. We believed the VAS-RRP format might be more appropriate for the slower, logical, and careful decision-making style of many autistic individuals (Vella et al., 2018) and reduce their anxiety when responding to the questions in the A-CE. The VAS-RRP response format formed the design of the A-CE to accommodate different decision-making styles and different working memory ability. Approval to use the VAS-RRP in the development of the A-CE for non-research and wide dissemination to autistic individuals via the online *myWAY Employability* service was granted to the project team by the VAS-RRP developers in 2020.

Young people may have difficulty with imagining their future life, because they have not yet experienced it. Many career interest inventories ask respondents to make preferences on future-

oriented domains such as jobs, work-related activities, and choices of university or vocational education courses. To address the potential difficulties that autistic individuals may have with making choices about an unknown future, we asked respondents to rank their preferences for “childhood activities” as the first seven items in the preliminary section of the A-CE. These childhood activities include those that often occur at school, such as “persuasive writing” and “conducting scientific experiments”; as well as some activities that often occur at home, such as “listening to music” and “packing for a holiday”. We believe that these types of activities are familiar to young people and may require less “future thinking” when identifying their preferred interests in activities. Completing preferences for childhood activities first may prime the respondents to the second section of the A-CE, which asks them to make preferences on eight future work-related activities, many of which they would not have yet experienced, but which may align to their preferred childhood interests.

Respondents were asked to place each activity on a visual analogue scale anchored with Strongly Dislike to Strongly Like to indicate “how much you like/dislike that activity”. Respondents can place items very close together or far apart. The VAS-RRP format of the A-CE also has a middle response option called “neither”, and allows for a “fine-grained” response (Sung & Wu, 2018). We believe that this may provide autistic individuals with a greater sense of control and precision about their responses to items in the A-CE, which may reduce their anxiety about completing this career explorer.

5.2.2 Co-design of the A-CE

Feedback on prototypes of the A-CE was obtained from a small advisory group of young people on the spectrum. This iterative design process allowed for relevant amendments to the content, language, and format of the A-CE. The advisory group endorsed the format of the A-CE, so this was retained, but many found the language in some of the items was unclear. Problematic language was replaced iteratively until we developed a set of items that were more widely understood by the advisory group.

The A-CE is designed as a motivating and engaging tool to assess the career interests of autistic young people aged 14 years and older. The A-CE will be an integral component of the About Me section of the BOOST-A that is embedded in the *myWAY Employability* comprehensive online transition planning service for autistic people. The authors plan to validate the A-CE in the near future and we will continue to engage with relevant stakeholders from the autistic and autism communities in this validation process.

5.2.3 Access to the A-CE

The current version of the A-CE will be available via the *myWAY Employability* online resource (www.mywayemployability.com) launched 6 August 2020. A research paper outlining the development of the A-CE has been prepared for submission to an appropriate peer-reviewed journal.

myWAY Employability is a smart web platform to help young people on the spectrum plan and prepare for their working life. myWAY Employability has been delivered through a collaboration between Autism CRC and its participants. The project was co-led by Curtin University and supported by Aspect and the Queensland Department of Education, along with technology development partner The Project Factory and research partner CSIRO e-Health Institute. myWAY Employability is proudly supported by the Telstra Foundation, funded under the Tech4Good Challenge initiative.

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7. Appendices

Appendix A - Advertising flyer for the BOOST-A workshops



Better Outcomes and Successful Transitions for Autism

BOOST-A is an online tool to help adolescents and young people on the autism spectrum to develop plans for life after school. It is designed to meet the needs of young people on the spectrum and focuses on strengths, interests and developing real-world skills.

Research on the BOOST-A has shown it is effective in improving self-determination in young people to plan for their future.

"It was non-threatening, no right or wrong and it was always about empowering the adolescent and looking at strengths." [Parent]

"It showed what sort of jobs would be applicable for my skills and where I could put my strengths into a job." [Adolescent]

Training in the use of the BOOST-A is offered through free 2-hour workshops for parents/carers, teachers and guidance counsellors, and local coordinators or health professionals who support adolescents on the spectrum.

All workshop participants will receive access to the research version of the BOOST-A program.

For more information about the BOOST-A and how to book a place at one of the workshops, please contact Marina

M.Ciccarelli@curtin.edu.au



Appendix B - Promotion of the BOOST-A workshop in the Kalgoorlie Miner newspaper (regional Western Australia) 11 June 2018

NEWS 3

Transition concern

very closely with those who try to integrate them into school and encourage them with them."

wide 4.7 per cent, or 14,075 early 300,000 students, were tied.

Kimberley region had the proportion of students tied with 13.1 per cent, by the Mid West, with 10.6 per cent, the Wheatbelt, with 8.1 per cent, and then the Goldfields with 3.7 per cent of students.

orth metropolitan region suspended, which was the proportion across the eight followed by the south itan area where 4.2 per cent of students were suspended.

ment of Education

schools deputy director general Stephen Baxter said each community had its own unique set of circumstances which influenced how children engaged with their schooling.

"We know regional areas deal with different complexities than those in the metro area," he said. "In some cases, challenges and difficulties outside of school hours can have an impact on children and how they engage at school."

"All schools are expected to work with their community in making local decisions about how they will use their resources to support positive behaviour."

"We provide resources to schools for their enrolled students and they direct the funds to provide support to best meet their needs."



Curtin University Associate Professor Marina Ciccaelli

Workshop boost for teen autism

■ Joanna Delalande

A workshop aimed at facilitating transition into after-school life for teenagers on the autism spectrum will be presented to Kalgoorlie-Boulder families and carers this week.

BOOST-A, or Better Outcomes and Successful Transitions in Autism, is a transition tool developed and planned for teenagers with autism who do not also have an intellectual disability.

Curtin University Associate Professor Marina Ciccaelli, who will be presenting the workshops on Friday and Saturday at the WA School of Mines' WMC Conference Centre, said the program sought to give teenagers a sense of control over the path they chose.

"It's a self-focused planning tool, so it narrows in on the things they are very good at rather than the things they can't do," she said.

"It is also highly individualised — we use language and images that are tailored to meet the specific needs of the teenager."

"The adolescent is central in the decision-making."

She said the program offered tools to adults who supported young people with autism by offering them a structured way of figuring out suitable career options.

Mary-Ann Spearing, who coordinates the CoderDOJO program designed for autistic children at the WA School of Mines, said it was a welcome rarity to have workshops such as these on site in Kalgoorlie. The first workshop, from 3.30-5.30pm on Friday, is aimed at teachers, health professionals and others involved with helping teenagers with autism.

The second will run from 10am to noon on Saturday and is aimed at family members and carers.

There are 12-15 spaces for each workshop. Registrations of interest can be made by emailing M.Ciccaelli@curtin.edu.au.



Alpa Kakkar, Sheetal Sharma and Antarbali Singh, 6, Saturday night. Picture: Kelsey Reid

Full culture at fun fest

s coming up on is a great thing, of our players ralian and I am me others who ist interested in

from around the world at the dozens of food stalls on hand.

Flavours from Thailand, India, Mexico, Vietnam, Germany, Croatia, the Philippines, the United Kingdom, Ghana and New Zealand were among the offerings.

Kalgoorlie Punjabi Beats coordinator Varinder Kaur said her performers relished the opportunity to promote their culture with the community.

"We really appreciate the opportunity — it is awesome," she said.

regular band, of musicians; the music and Irish culture." the diverse stage, event try delicacies

sito

Appendix C – BOOST-A Workshop Pre-Post Questionnaire

Participant name: _____

Role (Please circle): Parent/carer Teacher Therapist Other: _____

Thank you for coming along to the workshop today. Please circle the option that best describes how you feel.

Question 1: I have the knowledge I need to assist the teen with autism to prepare for leaving school.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Question 2: I feel confident in supporting the teen with autism to prepare for leaving school.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

BOOST-A Workshop – POST-Survey

Question 1: I have the knowledge I need to assist the teen with autism to prepare for leaving school.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Question 2: I feel confident in supporting the teen with autism to prepare for leaving school.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Question 3: What actions will you take towards supporting the teen with autism to prepare for leaving school after the workshop today?

Question 4: How else might technology be useful to assist the teen with autism to prepare for leaving school?

Appendix D - Follow-up study of BOOST-A workshop attendees

Thank you for taking the time to participate in this **5 minute** survey about the outcomes of your attendance at the BOOST-A training workshop earlier this year. We have contacted you via the email address you gave us to register you as an attendee for the BOOST-A training workshop and to login to the BOOST-A tool. We are interested in your use of the BOOST-A and its impact on your support of adolescent/s on the autism spectrum to plan for study or work after they leave school.

We would like to ask your permission to use your responses to the four question in pre-post workshop survey you completed at the workshop. This will help us to better understand the impact of the BOOST-A in the transition planning process.

Your participation is voluntary; your responses are confidential; and you have the right to withdraw from completing the survey at any time. It will not affect your ongoing access to the BOOST-A tool.

This study has been approved by the Human Research Ethics Committee at Curtin (approval # HRE2018-0692).

Any report of the study findings will not identify any individuals. If you have any questions, please contact Associate Professor Marina Ciccarelli at M.Ciccarelli@curtin.edu.au or (08) 9266 3692.

Do you provide your consent to participate in this study?

Yes ☐ No ☐

Do you provide your consent for Curtin researchers to use your responses to the pre-post workshop survey? This included the questions about your knowledge and confidence to support young people on the spectrum with their transition planning, and what action you planned to take after the workshop.

Yes ☐ No ☐

Q1. Please tell us your full name, so we can refer to your responses on the pre-post workshop survey you completed when you attended the BOOST-A training

Q2. Please tell us if you are: (Select ALL those that apply)

☐ Parent or family member of a teen on the spectrum

☐ Teacher

☐ Therapist

☐ Local coordinator

☐ Employment support specialist

☐ Other _____

Q3. In what state did you attend the BOOST-A training? (Please select ONE)

☐ Western Australia

☐ Queensland

☐ Victoria

☐ New South Wales

Q4. Have you started using the BOOST-A tool with a teen/s as part of their transition planning, after you attended the BOOST-A training workshop? (Please select one)

Yes ☐ If you answered Yes, please tell us if and how has it been helpful in transition planning

No ☐ If you answered 'No', please tell us why you have not used it. Include any reasons that have made it difficult for you to use the BOOST-A.

Q5. If you have used the BOOST-A, which of the following sections have you commenced? (Select ALL those that apply)

- ☐ About Me
- ☐ My Team
- ☐ First Meeting
- ☐ My progress

Q6. Please circle ONE option that best describes how you feel about this statement.

'I have the knowledge I need to assist the teen with autism to prepare for leaving school'

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Q7. Please circle ONE option that best describes how you feel about this statement.

'I feel confident in supporting the teen with autism to prepare for leaving school'

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Thank you for your participation in this survey

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Our values

**Inclusion**

Working together with those with the lived experience of autism in all we do

**Innovation**

New solutions for long term challenges

**Independence**

Guided by evidence based research, integrity and peer review

**Cooperation**

Bringing benefits to our partners; capturing opportunities they cannot capture alone



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Centres Program