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# Using a Transdisciplinary Approach to Facilitate a Successful Transition to Adulthood: A Case Study of an Adolescent with Autism

For most adolescents with autism, the transition into adulthood is difficult. This study describes the transdisciplinary approach used to improve some of the issues common amongst many adolescents with autism transitioning into adulthood. The transdisciplinary approach to intervention encourages the multi-disciplinary team to work across and beyond traditional boundaries in order to deliver a wrap-around intervention service specifically developed with and for the adolescent with autism, the family, the school and other relevant professionals. Using a case study, this study emphasises that employing a transdisciplinary approach and utilising a range of individual intervention strategies can facilitate successfully the transition from adolescence into adulthood.

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## INTRODUCTION

The transition from adolescence to adulthood typically includes completing secondary education, possibly gaining employment or engaging in higher education, taking on more household and financial responsibilities, becoming an active member of the community and experiencing social relationships (Wehman, 2006). However, for individuals with autism, achieving these 'social norms' can be particularly difficult.

The core characteristics of autism, which include social impairment, communication difficulties, restricted interests, repetitive behaviours and atypical sensory responses to sensory stimuli (American Psychiatric Association, 2013), impact on an individual's ability to engage in activities of daily life (Koenig and Rudney, 2010), conduct typical relationships (Test, Smith and Carter, 2014) and develop functional life skills (Wagner, Newman, Cameto, Levine and Garza,

2006; Carter, Lane, Cooney, Weir, Moss and Machalicek, 2013). As adolescents with autism approach adulthood, these difficulties can prevent access to age appropriate 'social norms' such as paid employment (Taylor and Seltzer, 2011); independent living (Farley, McMahon, Fombonne, Jenson, Miller and Gardner, 2009); academic achievement (O'Brien and Daggett, 2006) and relationships (Wehman, 2006).

Navigating the transitions between different people, routines and environments associated with age appropriate 'social norms' can be extremely difficult for adolescents with autism, increasing the risk of stress and anxiety related disorders (White, Oswald, Ollendick and Scahill, 2009). In fact, adolescents with autism are twice as likely to experience anxiety related disorders, than typically developing peers (Costello, Egger and Angold, 2005). Anxiety has been found to amplify autistic traits such as repetitive behaviours and social impairment, and may cause aggressive outbursts (Kim, Szatmari, Bryson, Streiner and Wilson, 2000; Tantam, 2003), which further isolate the adolescent with autism from accessing 'social norms'.

Autism is estimated to affect at least one percent of children in the UK (Baron-Cohen, Scott, Allison, Williams, Bolton, Matthews and Brayne, 2009) and as many as over two and a half percent in eastern countries (Kim, Leventhal, Koh, Fombonne, Laska, Lim, Cheon, Kim, Kim, Lec, Song and Grinker, 2011). As such, there is a growing urgency for effective strategies to facilitate the transition of these children into adulthood (Hendricks and Wehman, 2009). However, to date research has focused largely on early intensive interventions with young children with autism (Boyd, Odom, Humphreys and Sam, 2010). Very little is known about the effectiveness of intensive interventions during the difficult period of transitioning from adolescence to adulthood (Turner-Brown, Perry, Dichter, Bodfish and Penn, 2009) which is often stressful for the person with autism and their families (White et al., 2009; Hendricks and Wehman, 2009). Considering that for most adolescents with autism, the transition into adulthood is difficult, it is concerning that support needs for adults with autism and their families are reported to be largely unmet (Kogan, Strickland, Blumberg, Singh, Perrin Shattuck and van Dyck, 2008; Shattuck, Roux and Trani, 2012).

Using a case study, this present study aims to demonstrate a transdisciplinary approach tackling some of the issues common amongst many adolescents with autism transitioning into adulthood. The transdisciplinary approach used at Middletown Centre for Autism (MCA) involves a team of professionals working collaboratively to deliver a holistic intervention to the young person and a programme of support to the family, as well as to educational and health professionals working in the young person's school. One member of the transdisciplinary team becomes the main link with the family and school, known as the 'intervention coordinator'. In the transdisciplinary model, skills can be transferred between all members of the team, extending their traditional roles. The model allows support to be provided to any member of the team undertaking the role of intervention coordinator. An example of this would be a behaviour intervention specialist undertaking the promotion of communication skills with support from the team's speech and language therapist. The model is fluid and is built on a culture of on-going observation of the young person and capacitybuilding support to the family and the entire school staff.

## **Participant Background**

The initials of the young person at the centre of this study have been changed to maintain confidentiality. OB is an eighteen year old male, diagnosed with autism and moderate to severe learning difficulties, who lives with his parents and grandmother in a rural area of Northern Ireland. Consent was provided from both OB and his mother in accordance with MCA research procedures.

OB had attended a special needs school until the age of sixteen, when he was excluded following a succession of aggressive incidents which caused harm to other students and staff at the school. During his time at school, OB had received support from a psychologist, occupational therapist and behaviour support therapist. Between the ages of sixteen and eighteen years, OB and his family had been receiving support from an autism specific team from the Education and Library Board.

OB's mother was interviewed to determine areas of strength and need. OB's mother described him as quite sociable and affectionate. She reported that OB was generally in good health, was independent in basic activities of daily living (e.g. dressing and personal hygiene) and had very good communication skills and an excellent memory. Activities OB enjoyed included reading, computer use, participating in the youth club, singing in the church choir, and piano lessons. His mother reported that at the youth club and Sunday school, OB interacted well with peers, teachers and youth leaders and was generally well behaved.

Additionally, the school OB had attended to the age of sixteen had reported that OB was independent in basic activities of daily living and had good communication skills. However, they had raised concerns regarding OB's lack of safety awareness, sensory sensitivities to noise and outbursts of aggression.

A detailed history was gathered from a range of professionals from Education and Library Board services that had been involved in OB's care. The professionals revealed that OB found meaningful conversation difficult and preferred to compose and write down information on his choice of subject. The professionals thought that OB lacked maturity in all areas of social development and displayed frequent emotional and behavioural outbursts. It was noted that OB had particular difficulty with his self-help skills (e.g. seeking help, ideation), interaction with peers and remaining focused on tasks. The range of professionals contacted, also reported that OB had sensory difficulties including issues with personal space, boundaries and also noise sensitivities. In contrast to his mother's opinion, the professionals felt that OB had moderate to severe communication difficulties. They suggested his greatest area of delay overall was in social and emotional development. However, they pointed out that OB could cope well academically with familiar tasks and responded well to structure and routine.

#### Assessment

In addition to gathering detailed information about OB's abilities and difficulties, the intervention coordinator from MCA carried out a series of observations with OB in a range of environments to ascertain his current needs and strengths. As part of the assessment process, the Intervention Coordinator sought assessment of OB from a range of professionals (Table 1).

Assessment	Description	Assessment Findings
TEACCH	The TTAP evaluates six	OB obtained a high score in the sub
Transition	major functional skill areas:	scales of Vocational Skills (e.g.
Assessment Profile	vocational skills, vocational	sorting items) and Vocational
(TTAP) - Second	behaviour, independent	Behaviours (e.g. tolerating
Edition (Meisbov,	functioning, leisure skills,	interruptions). He achieved average
G., Thomas, J.B.,	functional communication,	scores in Functional Communication
Chapman, S.M.	and interpersonal	(e.g. following instruction) and
and Schopler, E.,	behaviour.	Interpersonal Skills (e.g. responding
2007)		appropriately to examiner), but
		achieved lower scores in Independent
		Functioning (e.g. calculating
		monetary amounts) and Leisure
		Skills (planning a community
		activity).

Table	1:	Assessments	used	with	OB
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Assessment	Description	Assessment Findings
Wechsler Adult Intelligence Scale (WAIS – III) (Wechsler, D., 1997)	This standardised assessment includes six verbal subtests and five performance subtests which when combined comprise the full-scale score which identifies intelligence level.	The majority of scores (4 of 6) fell within the moderate learning difficulty range. An area of relative strength was in visual processing with a score of low average. The area of Auditory Processing skills scored within the severe learning difficulty range.
Wechsler Individual Achievement Test (WIAT – III) (Wechsler, D., 2009)	Academic achievement was assessed using the Weschsler Individual Achievement Test-Third Edition (WIAT-III). This test comprises of subtests of reading, mathematics, written language and oral language.	Scores in both Word Reading and Spelling were equivalent to that of a pupil aged 9 years and 4 months. In the Numerical Operations scale, scores equivalent to those of a pupil aged 7 years and 8 months were achieved.
Neale Analysis of Reading Ability (NARA) (Neale, M.D., 1997)	This standardised assessment measures the accuracy, comprehension and rate of reading.	Reading comprehension was shown to be equivalent to a pupil aged 6years and 7 months. OB had difficulty extracting meaning from written text. He was unable to respond to questions requiring more abstract reasoning.
Adolescent/ Adult Sensory Profile (Brown, C. and Dunn, W. 2002)	This standardised test assesses how an individual responds to environmental stimuli.	Results indicated that OB had no significant difficulties in processing sensory input. However, OB showed definite preference for auditory input. The O.T. noted that OB seemed to require movement and auditory input to facilitate his attention to task. OB appeared to be very responsive to visual input and was able to detect small visual details in the environment.

Assessment	Description	Assessment Findings
British Picture Vocabulary Scale (BPVS–3) (Dunn, L.M., Dunn, B.M., Styles, B. and Sewell, J., 2009)	Using pictures and verbal commands, this standardised test evaluates an individual's receptive vocabulary.	OB's receptive language was found to be equivalent to a pupil aged 5 years 8 months.
Social Skills Improvement System (SSIS) (Gresham, F. and Elliott, S.M., 2008)	This assessment is used to facilitate the universal screening of students at risk for academic or social behaviour difficulties. The SSIS focuses on key skills that enable the academic success of students aged 3-19 years.	This test revealed that OB displayed an above average level of problem behaviours. Among Problem Behaviour subscales, average scores in externalising, internalising and bullying behaviours, were displayed, with elevated scores in hyperactivity and inattention.

#### **Individual Goals**

Considering the findings from the assessments and working in partnership with OB and his mother, the intervention coordinator from MCA identified the following goals of the intervention:

- To prepare OB for future prospects post nineteen years and possible transition to a supported training programme/work placement *OB requested that he would like to work in a shop when he was older*
- To address behavioural difficulties which are impacting on family life and future prospects
- To prepare OB to engage appropriately in social situations
- To teach OB functional life skills and to address skills required for future prospects *OB specifically requested to learn how to stay calm and how to tie*

OB specifically requested to learn how to stay calm and how to the his shoe laces

# **INTERVENTION**

The intervention followed the MCA's transdisciplinary approach which emphasises that:

- Team members commit to 'role release' (King, Strachan, Tucker, Duwyn, Desserud and Shillington, 2009), by teaching, learning, and working across disciplinary boundaries
- The team participates in an arena assessment, observing and recording across disciplines
- Staff, parents and child develop a plan together based on priorities and resources
- Team members share responsibility and are accountable for how the plan is implemented by the Intervention Coordinator
- Parents are always members of the team and determine their own role.

Following the transdisciplinary approach outlined above, the Intervention Coordinator liaised with OB, his parents and multi- professionals from MCA to create and execute an individualised intervention plan (Table 2) to support and facilitate OB in meeting his goals. In total, OB received 390 hours of intervention over a 20 month period.

Individualised Goal	Learning objective to achieve goal	Individualised intervention strategies	Outcome following intervention
1) To prepare OB for future prospects post 19 and possible transition to a supported training programme/ work placement	<ul> <li>To gain a supported employment placement</li> <li>To attend an I.T. course</li> <li>To attend weekly piano and voice lessons with a view to joining the church choir</li> </ul>	<ul> <li>Incremental approach to work placement, I.T. course and music lessons (i.e. Intervention Coordinator accompanying OB to activity initially, then gradually reducing level of support and increasing duration of activity).</li> <li>Visual supports, role play and social stories related to activity and transition between environments.</li> <li>Preparing activity environment before</li> </ul>	<ul> <li>OB was successfully employed in supported employment, stacking shelves for 1hour once a week in a local shop.</li> <li>Despite initial success attending the I.T. course, OB reported he was "not fussed on going back" and therefore withdrew.</li> <li>OB had to discontinue attending the piano and voice lessons due to economic and geographic limitations.</li> </ul>

# Table 2: Summary of individualised goals and intervention programme

Individualised Goal	Learning objective to achieve goal	Individualised intervention strategies	Outcome following intervention
		OB's visit and intensive autism specific training provided to appropriate individuals (e.g. work supervisor, piano teacher, I.T. tutor to facilitate a successful experience.	
2) To address behavioural difficulties which are impacting on family life and future prospects	• To recognise and express internal states and follow strategies	<ul> <li>Social stories</li> <li>Training parents to utilise similar strategies at home</li> <li>Activities to promote 'Theory of Mind'</li> <li>Emotional management, in particular anxiety and anger management.</li> </ul>	• OB has made significant progress in this area. When he uses his emotion cards, OB is usually able to say how he feels and then follow appropriate strategies.
3) To prepare OB to engage appropriately in social situations	<ul> <li>To develop an understanding of appropriate proximity with family members, acquaintances and strangers</li> <li>To teach OB to be able to ask for basic items at college and work (e.g. iPod, drink, toilet, help)</li> </ul>	<ul> <li>Social story to explain different proximities are appropriate depending on the person/ situation</li> <li>Model and video different appropriate proximities.</li> <li>Practice different proximities during one-to-one work.</li> <li>Social story to explain that if OB wants something he needs to ask the right person for it.</li> <li>Visual key ring for commonly desired items.</li> </ul>	<ul> <li>OB made good progress relating to how he behaves around different people and in different environments, which has helped him speak at the appropriate volume to customers in the shop he works in.</li> <li>OB was originally provided with visuals representing items which he commonly requested. On completion of the intervention, OB was able to ask for these items in a polite manner</li> </ul>

Individualised Goal	Learning objective to achieve goal	Individualised intervention strategies	Outcome following intervention
			in a variety of settings (e.g. work and piano lessons).
4) To teach OB functional life skills and to address skills required for future prospects	<ul> <li>To be able to calculate, understand and recognise money.</li> <li>To learn how to tie shoe laces; put away dishes; sort laundry; make a sandwich.</li> </ul>	<ul> <li>Label money using signs and verbal cues</li> <li>Practice using money (role play).</li> <li>Practice skills tying shoes laces and making sandwich.</li> <li>Use task analysis and visually structure each task.</li> </ul>	<ul> <li>OB's understanding of money has improved, however this still remains an emerging skill. OB is unfamiliar with paper money and is sometimes unaware that he needs to pay for items after he has selected them.</li> <li>OB can now tie his shoes laces; sort laundry; put dishes away; and make a sandwich.</li> </ul>

#### **Impact of Intervention**

OB participated fully in his intervention programme and made excellent progress towards achieving each of the four goals as outlined in Table 2. The impact of the intervention provided by MCA on OB's difficulties was assessed on completion of the intervention using self-report questionnaires. Questionnaires were completed by the Intervention Coordinator from MCA, the Education Board professional who referred OB to MCA, and OB's mother.

The Intervention Coordinator reported that she was very pleased with OB's progress, particularly in relation to his behaviour and new found independence from family members. She felt that the most important factor in achieving such progress with OB was "ensuring that all experiences were positive" as OB had previously experienced failure with other services. She noted that:

Over the duration of the intervention there were some occasions when OB had behavioural outbursts. However, on the majority of these occasions he

was able to complete the set activity; only once did the activity have to be terminated.

The Education Board professional who referred OB to MCA, stated that:

At the time of referral OB was unable to access education within the school setting. The intervention enabled OB to access a supported work placement and has assisted in the transition from school to adulthood... the intervention has been of great benefit to OB and his family.

A self-report parent evaluation completed immediately after the intervention ceased, indicated that OB's mother perceived improvement in OB's level of independence, self-confidence, behaviour and ability to cope in stressful situations, noting that:

...he is now secure in spending time away from mum....walks into work placement without assistance....behaviour is now fairly easily managed.... anxiety definitely related to speech volume, definite improvement over last 18 months...

# **Six Months Post Intervention**

Six months post intervention, the TEACCH (Training and Education of Autistic and other Communication Handicapped Children) transition assessment profile (T-TAP) and a short interview were conducted with OB. At this time, a semistructured interview was conducted with OB's mother by an evaluator blind to OB's intervention programme.

The T-TAP was conducted by the intervention coordinator and took place in MCA. Results indicated OB obtained scores in each category similar to pre intervention. OB achieved a high score in the sub scales of Vocational Skills (e.g. sorting items) and Vocational Behaviours (e.g. tolerating interruptions), average scores in Functional Communication (e.g. following instruction) and Interpersonal Skills (e.g. responding appropriately to examiner), and achieved lower scores in Independent Functioning (e.g. calculating monetary amounts) and Leisure Skills (planning a community activity).

Subsequently, an evaluator blind to OB's intervention programme interviewed OB at his home. A visual schedule and pictures were used to indicate what was expected of OB, to encourage OB to keep on topic and to indicate the end of the task. OB stated that he felt "happy" during the interview. He discussed his job in

the local shop and revealed he can independently get dressed and make sandwiches. OB stated that he liked to go out and would pay for items himself in the shop.

A semi-structured interview was also conducted with OB's mother by an evaluator blind to OB's intervention programme. OB's mother noted improvements in OB's ability to attend to tasks, daily living skills (such as dressing and personal hygiene), self-help skills (such as indicating when feeling unwell) and behaviour inside and outside the home. She felt his social skills had not shown much improvement but indicated that he does try hard to engage appropriately with others. She stated that she was still a little anxious when he was working, but was delighted and very proud that OB had a job and was left to work on his own for half an hour each day.

#### **Two Years Post Intervention**

The intervention coordinator contacted OB and his mother two years post intervention and conducted a short informal interview. To date, OB is still working in his local shop and has increased the duration of working independently from thirty minutes to two hours. She continues to feel that the transdiscplinary intervention provided to her son marked a turning point in his life. Prior to the intervention, she feels that her son had only limited access to their local community and was not engaged in any activities outside of the family home without her support. OB's mother feels that while she remains concerned that her son could have a behavioural outburst during work placement, she feels that the relationships that have been built between her family and the local shop staff mean that such outbursts could be managed without jeopardising the placement. OB's mother also reports that the placement has given her son a sense of purpose, increased self-confidence and improved social skills.

# DISCUSSION

This study described the transdisciplinary approach used at MCA to improve some of the issues common amongst many adolescents with autism transitioning into adulthood. The MCA transdisciplinary approach to intervention encourages the multi-disciplinary team to work across and beyond traditional boundaries to deliver a wrap-around intervention service specifically developed with and for the adolescent with autism, the family, the school and other relevant professionals. This case study described one adolescent's successful transition into adulthood using a transdisciplinary approach to facilitate improved levels of independence, behaviour and coping with stress and anxiety. Based on in-depth assessment and interviews with OB, his mother and previous health and education services involved in his care, the Intervention Coordinator utilised a range of intervention strategies including visual aids, graded activities, social stories, social skills training, parent training, task analysis and emotional management, to tailor an intervention programme to OB's individual needs and interests. These strategies are widely used and known to be effective with individuals with autism (Iovannone, Dunlap, Huber and Kincaid, 2003; Sansosti, Powell-Smith and Kincaid, 2004; Ingersoll and Dvortcsak, 2006; Rao and Gagie, 2006; Sofronoff, Attwood, Hinton and Levin, 2007).

The young adult in this study posed significant challenges regarding behaviour and engaging in social activities outside of the home environment. Prior to intervention, OB had displayed aggressive behaviour resulting in his removal from school. Thus, it was essential for the Intervention Coordinator to understand what triggered this type of behaviour and how this behaviour could be avoided or redirected in future. Techniques which were found to be particularly effective for reducing aggressive outbursts included social stories and role play.

A social story describes a situation, skill, or concept in terms of relevant social cues, perspectives, and appropriate responses in a manner that is easily understood by its audience.

Though known to be an effective strategy with younger children with autism, (Kokina and Kern, 2010), this study provides evidence that social stories can be effective at facilitating desired behaviours with an adolescent with autism.

Individualised social stories were also found to be beneficial as part of social skills training. Prior to intervention, OB had limited opportunity for social skill development. As such, OB, like many individuals with autism (Goodwin, Groden, Velicar and Diller, 2007), experienced high levels of anxiety and stress when confronted by social situations in different environments. Therefore, it was particularly important for the Intervention Coordinator to grade exposure to activities and social experiences outside of the home environment. A fundamental part of this process was introducing OB to social stories that clearly displayed and explained the social situations he would encounter during graded exposure.

In order for OB to engage in various activities and participate as a valued member of the local community, the Intervention Coordinator provided training and coaching to family members, OB's work placement manager and OB's music teacher in the use and application of all the intervention strategies used with OB. Coaching individuals directly involved with OB was found to be effective in improving OB's participation in activities inside and outside of the home environment and was particularly useful when integrating OB within a work placement. Similarly, previous studies have found coaching to be effective in improving participation in everyday activities and also improved parental competence among families with children with autism (Dunn, Cox, Foster, Mische-Lawson and Tanquary, 2012).

The transdisciplinary approach encourages a holistic intervention programme developed with and for the adolescent with autism and the family, and other relevant parties. Coaching the family and OB's work placement manager during the intervention programme had ongoing benefits for OB. Two years post intervention OB has maintained and extended his role within the local shop which has increased OB's self-confidence and further improved his social skills. Furthermore, OB's mother has confidence in leaving OB to work independently which has given both OB and his mother a greater level of independence.

This study emphasises that employing a transdisciplinary approach and utilising a range of intervention strategies that are individually tailored to the adolescent with autism can facilitate the achievement of age appropriate 'social norms' such as contributing to the community, gaining employment and undertaking more responsibilities at home and thus successfully transition from adolescent to adulthood.

# LIMITATIONS AND IMPLICATIONS FOR PRACTICE

Despite the positive feedback and perceived benefits of the transdisciplinary approach used at MCA, the limitations for this study include lack of generalisability to the wider population of adolescents with autism and the possibility of maturation affecting results. Additionally the qualitative nature of the follow-up may be seen as a limiting factor. While the qualitative engagement captured the individual experience and provides rich experiential data this could be said to lack objectivity in follow-up. The results should be considered within the context of response bias and a degree of subjectivity.

This study has highlighted the transdisciplinary approach used at MCA which employs a range of evidenced based interventions to customise a client centred intervention programme. This accommodates the needs of the individual with autism, their family and other agencies involved in their care and can be beneficial for all the parties involved. Practitioners offering interventions for adolescents during the transition to adulthood should consider utilising a range of interventions that best suit the needs of the adolescent. Additionally, this case study provides evidence to support the application of a transdisciplinary approach to guide future practice.

# CONCLUSION

The transition from adolescent to adult can be a particularly difficult period for individuals with autism (Hendricks and Wehman, 2009). This study emphasises that employing a transdisciplinary approach and utilising a range of intervention strategies that are individually tailored to the adolescent with autism can facilitate successful transition from adolescence to adulthood.

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