

# Twins with autism: utilising video feedback to improve job-related behaviours

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Employment for individuals with autism spectrum disorders (ASD) is a significant factor in assuring quality of life in adulthood. The research reported in this article examines the effectiveness of video feedback (VFB) in improving the job-related behaviours of twin adolescents with ASD and learning disabilities. The targeted behaviours included active engagement, decision-making, responding to others, hygiene, and transition making. A within-participant multiple-probe design across targeted job behaviours, replicated across two participants, was used. The experimental phases of the design consisted of (A) baseline, (B) VFB + job coach evaluation, (C) VFB + concurrent job coach and self-evaluation, and (A) maintenance. Using a modified Behavioral Observation of Students in Schools (BOSS) form broken into one-minute intervals, job coaches evaluated participants on job-related behaviours. Data gathered shows that VFB significantly impacted active engagement, responding to others, hygiene and transitioning. Decision-making was least impacted by the interventions. The use of VFB is one way that job-related behaviours of adolescents with ASD and other disabilities can be positively influenced.

**Key words:** video feedback, autism spectrum disorder, job training, vocations

## Introduction

Employment outcomes for individuals with disabilities have not significantly improved in the two decades following the passage of the Americans with Disability Act (ADA) in 1990. Adults with disabilities are unemployed at a rate of 13.6% compared to non-disabled adults at 7.2% (Allsup, 2013). Individuals with developmental disabilities experience an even greater unemployment rate of 60 to 80% (Sowers et al., 2002). For individuals with disabilities who obtain employment, the outcomes are not always positive, as they are most likely to hold the lowest-paying jobs (Kruse et al., 2010). Moreover, young adults with autism spectrum disorders (ASD) (the preferred term in the USA) (aged 19 to 23 years) have the lowest employment rate of any disability category. Young adults with ASD from lower-income families and those with decreased functional skills have the lowest rates of employment (Shattuck et al., 2012). Of employed individuals with ASD, 50% work in segregated vocational settings (Taylor & Seltzer, 2012).

ASD is characterised by a continuum of disorders ranging from severe to mild with substantive impairment in social interaction, language and communication (APA, 2013; Neisworth & Wolfe, 2005). Individuals assessed as having ASD can learn a wide variety of skills, but struggle with generalising these skills to different settings (Hughes et al., 2012; Weiss & Harris, 2001). In addition, they have difficulty with maintaining learned skills over time (Shattuck et al., 2007; Hurlbutt & Chalmers, 2004; Rhode et al., 1983). These issues prevent individuals with ASD from acquiring and retaining jobs (Barnhill, 2007; Hurlbutt & Chalmers, 2004). Researchers investigating longitudinal data with regard to individuals with autism and average intelligence quotient (IQ) found an employment rate of 16.4% for part-time and 9.6% for full-time work (Taylor et al., 2015). Earlier studies found that a co-morbid assessment of ASD and intellectual disabilities, maladaptive behaviours, and lower rates of independence with daily living skills were associated with decreased rates of vocational independence (Taylor & Mailick, 2014; Taylor et al., 2014).

Carefully planned education and training increases the likelihood that individuals with ASD will be successful in competitive work areas (Hurlbutt & Chalmers, 2002, 2004). Given the heterogeneity found in the disorder, young adults require a wide range of individualised services and support. Individuals with ASD who receive vocational training have the highest employment rates (Lawer et al., 2009); on-going support was also found to be a significant predictor of successful competitive employment for these young people. However, the researchers also concluded that individuals with autism are more likely to be denied services because of the severity of their disability. Hendricks (2010) found that on-the-job

support improved employment outcomes, but also acknowledged that there is limited research identifying particular training and support requirements for individuals with ASD.

Various employment-related programmes have yielded positive results. Burke et al. (2013) found that tablet-based assistive technology utilised in the workplace significantly improved vocational outcomes in comparison to traditional employment training. In another study, Allen et al. (2012) found that audio-cuing increased job task ability for adolescents in a job training situation. While there has been a long history of research addressing supported employment for individuals with disabilities (Cimera, 2007; Rogan et al., 2003; Weiner & Zivolich, 2003), research specifically addressing the needs of individuals with ASD is limited.

Historically, systematic instruction has been used to teach job tasks to adults with severe disabilities (Snell & Brown, 2011). In addition, antecedent prompts (for example, pictures, audio prompts) have been used to facilitate the acquisition of complex job tasks by providing prompts for each step of the task, and then teaching employees to use the prompts independently to guide their own performance (for example, Cihak et al., 2007). With the advent of video technology, researchers have begun to explore the feasibility and effectiveness of video strategies, such as video self-monitoring, video feedback, video modelling, video prompting and computer-based video instruction, for promoting the acquisition and maintenance of behaviours (Mechling, 2005).

Employment is an important factor that contributes to the quality of life of adults with disabilities (Rusch & Millar, 1998). It is an influential factor in the development of various adaptive skills in individuals with disabilities such as physical abilities, cognitive abilities and social skills (Stephens et al., 2005). At a minimum, in order to obtain and maintain employment, adults with disabilities must be able to demonstrate their ability to acquire and maintain job skills with a certain level of proficiency and job independence. Despite the acknowledged importance of work, employment opportunities for students with ASD have been limited (O'Brien & Daggett, 2006; Schall et al., 2006). Research has found that individuals with autism experience a decrease in vocational independence after secondary or post-secondary education. While this trend parallels that of those without disabilities, most individuals with ASD experience a continued decline in vocational independence, due to factors such as a decrease in structure, resources and services (Taylor & Mailick, 2014).

Analysis of data obtained from the 1999 disability supplement of the Survey of Income and Program Participation (SIPP) and from two national household surveys conducted in 1998 and 2000 (Rutgers Center for Public Interest) concluded that employment for individuals with disabilities increases reports of life satisfaction, decreases social isolation, increases the likelihood of community and political participation, and engenders inclusion in society (Schur, 2002). Further, employment was found to improve behaviours associated with ASD. In a study by Taylor et al. (2013), researchers found a positive bidirectional relationship between employment and improvements in behaviour.

Young adults with ASD who demonstrate higher levels of social skills are more likely to obtain and maintain employment (Chiang et al., 2013). A method for teaching social skills to individuals with ASD that is easily adapted to an authentic vocational setting is video feedback (VFB). VFB involves having subjects watch video of themselves performing tasks in a variety of settings. The subject then evaluates his or her behaviour and differentiates between appropriate and inappropriate responses (Maione & Mirenda, 2006). VFB is a technique that has been used to teach communication and social skills to students with disabilities (Chung et al., 2007; Deitchman et al., 2010; Embregts, 2003; Goodwyn et al., 2013; Maione & Mirenda, 2006; Rayner et al., 2009; State & Kern, 2012).

VFB has been utilised in a number of studies as one component of a comprehensive intervention package aimed at impacting the social skills of children with autism (Chung et al., 2007; Maione & Mirenda, 2006; Rayner et al., 2009), Asperger syndrome (State & Kern, 2012), emotional and behavioural disorders (Goodwyn et al., 2013), and intellectual disabilities (Embregts, 2003). Only Deitchman et al. (2010) examined the effects of VFB alone on the social skills of children with autism.

Deitchman et al. (2010) examined the effects of VFB on the social initiations of three children, aged five, six and seven, with ASD in general education settings. Video clips were recorded during centre time, lunch and playground time in the general education classroom. The participants were shown a 10-minute video that included examples and non-examples of social initiation and were asked to identify the example. The effects of VFB were researched using a multiple-probe across-participants design and data were gathered in natural environments, a design replicated in the present study.

Results revealed VFB as an effective tool for increasing and maintaining behaviours of three children with autism in their everyday settings. The daily, isolated

VFB sessions resulted in an increase in the frequency of social initiation for all participants with autism. Generalisation from special education to general education settings occurred and two of the participants maintained social initiating skills after VFB was removed. Deitchman et al. (2010) note, 'It is important to investigate strategies that may promote learner independence and the transfer of skills across settings'. The twins with autism participating in this research were also videotaped in their natural environments with a goal of improving their social behaviours, leading to greater independence and the generalisation of these improved behaviours across settings.

## **Method**

### *Background*

Research was conducted at a transition academy in the north-east USA. Students who qualify for individualised instruction and have an Individualised Education Plan (IEP) typically graduate from high school when they have met the high school requirements and have met their IEP goals (at about 18 years of age). However, for those students who have not met their IEP goals, particularly in the area of transition, post-secondary education may be appropriate and is available in most states up to the age of 21. The transition academy provides mandated services to students aged 18 to 21 who have intellectual disabilities, autism and other disabilities that require additional transition services beyond those provided in the US public school curriculum. The transition academy offers academic, vocational and community training to students as they make the transition from secondary to post-secondary opportunities. In partnership with a local university, educators and researchers collaborate on effective strategies for improving vocational outcomes for adolescents with disabilities.

### *Design*

A within-participant multiple-probe design (Gast & Ledford, 2010) was used to evaluate the effectiveness of VFB in improving targeted job-related behaviours. The single-subject method was appropriate to answer the research questions posed and ideal for examining the viability of the intervention in real-life settings (Byiers et al., 2012). Further, the researchers expected the various job-related behaviours to respond in the same way to VFB. The experimental phases of the design consisted of (A) baseline, (B) VFB + job coach evaluation, (C) VFB + concurrent job coach and self-evaluation, and (A) maintenance. This design allowed the researchers to examine the effects of two interventions. Since data were collected on multiple job-related behaviours at the same time, altering the length of baseline across behaviours was not possible (Gast & Ledford, 2010).

Effect sizes of early single-subject research were typically evaluated through visual analysis of graphical data (Gast & Ledford, 2010). However, this method is generally recognised as offering limited results, and effect sizes are now more generally statistically calculated for this type of research (Beeson & Robey, 2006). Calculating effect sizes within this study allows the reader to understand the strength of the intervention for each job-related behaviour.

### *Participants*

Two identical twins with autism participated in the study. Jack and John, 19-year-old white males, were in their first year of the transition programme. They had completed their high school requirements and transitioned to the academy with an IEP to continue working on functional academic skills, and vocational and independent living proficiencies. They attended the academy five days per week, working on functional academic work in the classroom one day per week, community participation/training one day per week, and on-site work training three days per week. These participants were selected because they had struggled to perform job-related tasks, and because of their inappropriate behaviours on job sites.

Jack has a level of overall cognitive functioning in the low range (Composite = 61) as measured by the Wechsler Adult Intelligence Scale – Fourth Edition (WAIS-IV) (Wechsler, 2008) and adaptive skills in the low range (Communication = 69, Daily Living Skills = 68, Socialisation = 56) as measured by the Vineland Adaptive Behavior Scales – Second Edition (Sparrow et al., 2005). He had established clear roles for those around him and was reluctant to take on responsibilities or tasks he had assigned to others (making lunch, selecting clothing, time management). On job sites he exhibited low stamina, difficulty managing frustration (yelling or crying), difficulty adapting vocalisations to the environment (volume) and compulsive behaviours (not washing his hands, rigidity around the need for task completion, sensory issues, and picking of skin on fingers and face).

John has a level of overall cognitive functioning in the low range (Composite = 65) as measured by the WAIS-IV (Wechsler, 2008) and adaptive skills in the low range (Communication = 72, Daily Living Skills = 71, Socialisation = 56) as measured by the Vineland Adaptive Behavior Scales – Second Edition (Sparrow et al., 2005). John needed significant support to socialise with peers and unfamiliar people, problem-solve, and maintain productivity in classroom and vocational settings. On job sites, he exhibited low stamina, difficulty managing frustration (yelling, growling, making faces), adapting vocalisations to the environment (volume and constant scripting) and compulsive behaviours (checking the time, rigid need for task completion, sensory issues, and picking of fingers and face).

### *Settings*

As part of their transition programme, Jack and John were placed at three different vocational sites each week for experiential (unpaid) employment skills training. At each site, they received job coach support and worked one-to-one with a job coach or with a maximum of two other students and one job coach. The sites were developed based on interest inventories, skill level and environmental preferences. At each location, the participants were expected to work for 4.0 hours, three days a week, with a 30-minute break for lunch. Data were collected at two job sites for each participant.

Jack's vocational placements (site 1 and site 2) were both in warehouse settings. Site 1 was a local non-profit food bank. At this site, Jack worked with two peers and a job coach. He was responsible for checking in with a supervisor, receiving instruction on the specific food to be packaged and gathering the necessary materials. Site 2 was a retail organisation that sold refurbished adaptive equipment. Jack was expected to follow the job coach's instruction and clean adaptive equipment using supplies provided by the employer and to the employer's specifications (communicated by the job coach).

John's vocational assignments included a non-profit organisation that refurbished computers for re-sale. John was required to input data on a computerised donor list using a specific software programme. He worked alongside one other peer and had the support of a job coach provided by the transition programme. His second site was in an education office of a local theatre. He was assigned the tasks of counting and labelling books used to teach classes; he also folded programmes and filed paperwork by name. He worked with one peer and a job coach.

### *Target behaviours*

After evaluating job site rubrics, five target behaviours were identified as having the most significant impact on Jack and John's ability to assimilate to the academic and vocational environments in the areas of social integration and work productivity. The job site rubrics were based on normative data collected on competitively employed, on-site workers. The five target behaviours were initially identified by the job coaches and employers and verified by rubric scores as the most significant behavioural concerns.

The first target behaviour was 'active engagement' or productive action directly related to an assigned task. The next behaviour identified was 'application of decision-making skills', which referred to a student's ability accurately to identify

a problem, find an appropriate solution, and apply the solution. The third behaviour identified was ‘appropriate interactions with others’ which included greeting and responding to others, using appropriate verbalisations when passing someone, making requests appropriately when someone is busy, and responding appropriately when given directions, requests or responses. Fourth, ‘proper hygiene’ was defined as keeping fingers out of the mouth and nose, and washing hands after picking, coughing or sneezing. Finally, ‘smooth transition’ referred to the ability to maintain productivity when shifting from task to task, stopping work to take assigned breaks, or ending a work shift in a timely manner with a positive attitude.

## **Procedure**

### *Baseline*

During this phase the job coach observed the participants during a randomly selected 15-minute period, broken into one-minute intervals, at a job site. The job coach used partial interval recording and marked whether a behaviour occurred at any point during interval. The participant was scored as ‘actively engaged’ if he worked on job-related tasks at any time during that interval. The participant received a mark if he engaged in any inappropriate job-related behaviours for the areas of decision-making, responding to others, hygiene and transitioning.

### *Intervention 1*

The purpose of the VFB + job coach evaluation phase was to determine whether there was a change in job-related behaviours as a result of the video camera. After baseline, the video recorder was set up in front of the participants and pointed directly at them at the job site. Participants were required to perform the target jobs during regularly scheduled work days. Upon return to the transition academy, the job coach and the participant viewed a randomly selected 15-minute segment of video in a quiet office space. During this time, the job coach completed the modified Behavioral Observation of Students in Schools (BOSS) (Shapiro, 1996). The BOSS is traditionally used to observe academic behaviours in classroom settings and is divided into 15-second intervals. For this research, it was used to observe behaviours in a job setting and it included one-minute intervals. The participants watched along with the job coach but did not evaluate themselves and the job coach did not say anything to the participants.

### *Intervention 2*

During the VFB + concurrent job coach and self-evaluation phase, participants were again videotaped at the job site. At the end of the day, the participant and the job coach watched a randomly selected 15-minute segment of video in a quiet office space at the transition academy. The job coach and participant concurrently



completed the modified BOSS form, but again, the job coaches did not say anything to the participants about their ratings.

### *Maintenance*

To assess maintenance effects of the intervention, the participants' job-related behaviours were evaluated one year later using the same rating sheet.

### *Training and inter-observer agreement*

The data were collected by certified special education teachers and job coaches hired by the transition academy. All participants had experience in the field of transition and vocational support and were required to participate in weekly training on assessment, data collection and positive behaviour support. Vocational data were collected daily as part of the standard programme protocol for all students. For the purpose of this study, a specific data collection rating sheet was developed.

The job coaches took part in three one-hour training sessions. First, the rating sheet and target behaviours were described. The researcher defined examples of specific behaviours. Next, job coaches watched videos of the student participants and practised identifying target behaviours using the rating sheet. This step was repeated with the specific data collection rating sheet (see Appendix) until an inter-rater reliability of 95% was achieved. Job coaches and teachers were asked to take anecdotal notes during the videotaping and video evaluations with regard to student reactions.

## **Measures**

### *Observation form*

Using a modified BOSS form broken into one-minute intervals, job coaches evaluated participants on job-related behaviours. The job coach used partial interval recording and participants received a check for active engagement if they worked on a job-related task at any time during an interval.

For the remaining behaviours, the job coach used partial interval recording and marked if the participant engaged in inappropriate behaviours during the one-minute interval. With regard to decision-making, when Jack or John failed to make a decision (identify a problem, determine an appropriate solution and request help or respond appropriately) or reacted negatively to a decision-making opportunity a score was tallied. With regard to responding to others, when Jack or John responded inappropriately to a co-worker, job coach or supervisor (failure to greet and respond to job coaches, co-workers and supervisors, using inappropriate

verbalisations when passing in front of someone, making requests inappropriately when someone is busy or talking to another person or on the phone, or responding inappropriately when given directions, requests or responses), a score was tallied. With regard to hygiene, when Jack or John demonstrated inappropriate hygiene required for the work environment (keeping fingers out of the mouth and nose, washing hands after picking, coughing or sneezing), a tally was recorded. With regard to transitioning, when Jack or John had difficulty maintaining productivity when shifting from task to task, stopping work to take assigned breaks, or ending a work shift in a timely manner with a positive attitude, a score was tallied.

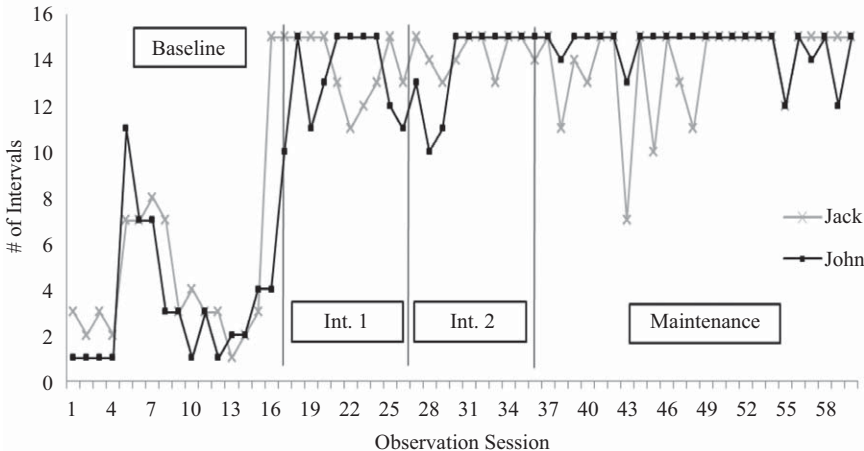
**Results**

*Active engagement*

During the baseline phase, Jack was actively engaged on average for 3.8 out of 15 minutes. During Intervention 1 (VFB + job coach evaluation), the average increased to 13.9 minutes. There was a statistically significant increase ( $t = -12.381, p = 0.000$ ) in professional behaviours with the introduction of videotaping. One year later, data obtained during the maintenance phase showed an active engagement average of 13.8 minutes, which was a statistically significant increase from baseline ( $t = 14.224, p = 0.000$ ) (see Figure 1).

Similar results were found for John’s participation. During the initial baseline phase, he was actively engaged for an average of 3.2 out of 15 minutes. His

**Figure 1: Active engagement**



average increased to 12.5 minutes. The impact of videotaping on John while working resulted in a statistically significant increase ( $t = -7.128, p = 000$ ) in his professional behaviours. John was actively engaged for an average of 14.6 minutes when data were obtained a year later. This was a significant increase from baseline ( $t = -18.031, p = 000$ ) (see Figure 1). These results indicate that greater amounts of time were spent on productive behaviours, thereby allowing participants to complete more job-related tasks.

As described above, the research involved a second intervention (VFB + concurrent job coach and self-evaluation). For almost all of the target behaviours there was not a statistically significant change from intervention 1 to intervention 2 or from intervention 2 to maintenance. Only the data that showed a statistically significant change from intervention 1 to intervention 2 or from intervention 2 to maintenance will be reported.

### *Decision making*

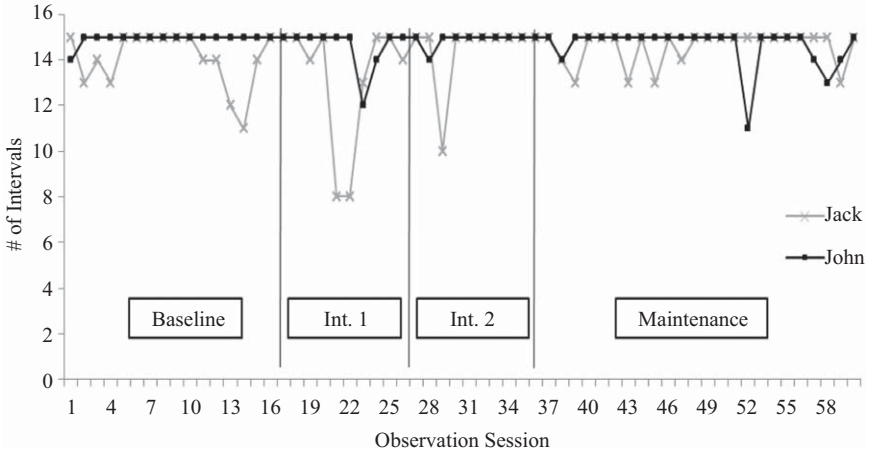
At baseline, Jack made appropriate decisions for an average of 14 out of 15 minutes. Jack's baseline average was near ceiling, so there was no statistically significant change ( $t = -1.887, p = 0.067$ ). John exhibited even less difficulty with decision-making as he averaged 14.9 minutes of appropriate decisions per 15 minutes at baseline. Like Jack, John's baseline average was near ceiling, so there was no statistically significant change ( $t = 1.217, p = 0.231$ ) (see Figure 2).

### *Response to others*

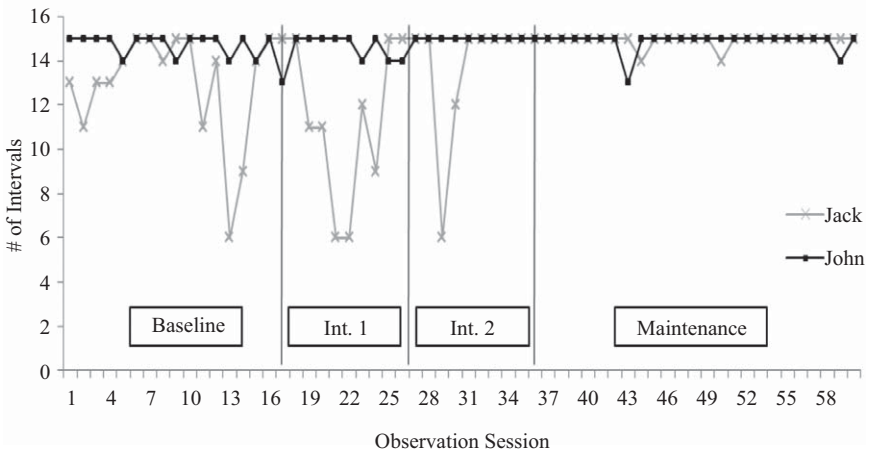
At baseline, Jack responded to others appropriately for an average of 12.8 minutes out of 15. During Interventions 1 and 2, he responded appropriately for 11.5 minutes. The introduction of the videotaping resulted in a slight decrease in his response to others, but this change was not statistically significant ( $t = 1.057, p = 0.302$ ). When data were obtained at maintenance, Jack responded appropriately for an average of 14.9 minutes out of 15. The increase in appropriate responses to others was statistically significant ( $t = -4.122, p = 0.000$ ) (see Figure 3) from baseline to maintenance. Appropriate responses to co-workers and colleagues are important in establishing a positive working environment.

John's average appropriate responses were higher than Jack's at baseline, with appropriate responses for 14.7 minutes per 15. John's baseline average was near ceiling, so there was no statistically significant change ( $t = -1.006, p = 0.321$ ) (see Figure 3).

**Figure 2: Decision-making**



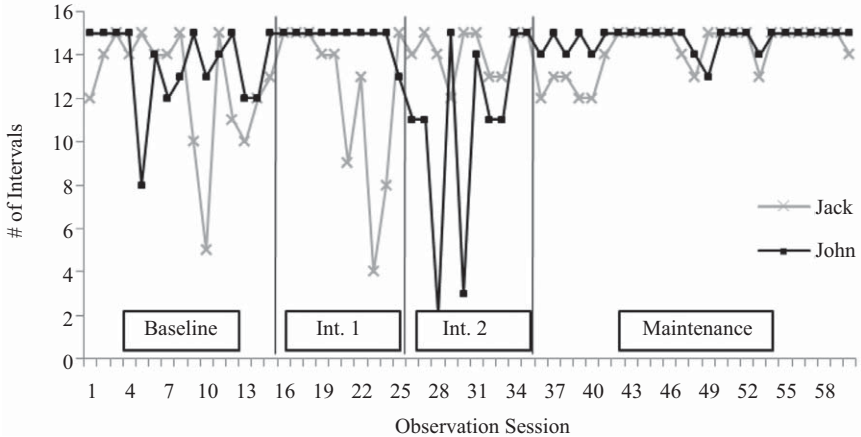
**Figure 3: Responding to others**



*Hygiene*

At baseline, Jack demonstrated appropriate hygiene for an average of 12.6 minutes out of 15. During Intervention 1, he demonstrated appropriate hygiene for 12.2 minutes out of 15. When scores were obtained at maintenance, Jack

**Figure 4: Hygiene**



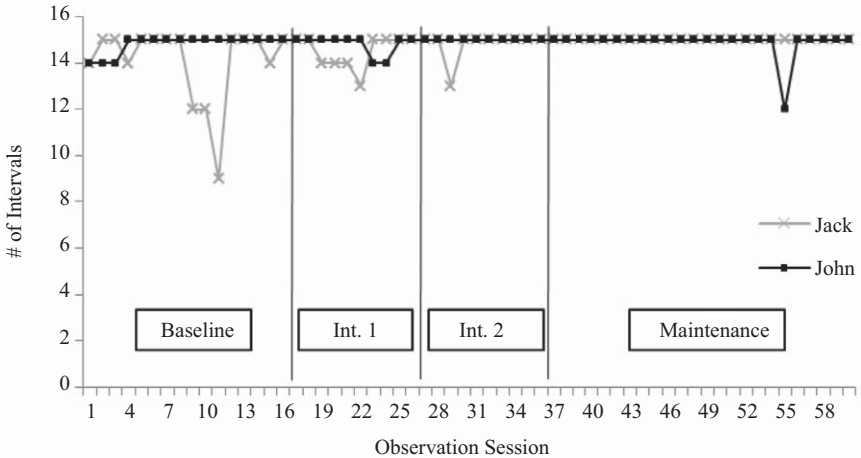
demonstrated appropriate hygiene for an average of 14.2 minutes out of 15. There was a statistically significant increase from baseline to maintenance ( $t = -2.593$ ,  $p = 0.01$ ) (see Figure 4).

At baseline, John used appropriate hygiene for 13.5 minutes per 15. During Intervention 1 he demonstrated appropriate hygiene for 14.8 minutes per 15. Intervention 2 saw a statistically significant decrease ( $t = 2.649$ ,  $p = 0.01$ ) in John’s appropriate hygiene with an average of 10.5 minutes out of 15. However, John’s average minutes of appropriate hygiene at maintenance were 14.7 minutes per 15. This represents a positive statistically significant change from baseline to maintenance ( $t = -2.873$ ,  $p = 0.00$ ) (see Figure 4).

*Transitioning*

At baseline, Jack made smooth transitions for an average of 14 minutes out of 15. During Interventions 1 and 2, he transitioned with ease for 14.5 minutes and for 14.8 minutes out of 15 respectively. When scores were obtained at maintenance, Jack demonstrated appropriate transitioning skills for an average of 15 out of 15 minutes. Jack’s increase in appropriate transitions from baseline to maintenance was statistically significant ( $t = -2.912$ ,  $p = 0.00$ ) (see Figure 5).

**Figure 5: Transitioning**



John transitioned smoothly for 14.8 minutes out of 15 at baseline. John’s baseline average was near ceiling, so the p-values revealed no statistically significant change ( $t = -0.454, p = 0.652$ ) (see Figure 5).

### Discussion

Active engagement, defined as productive action related to an assigned task, included inputting data, completing inventory tasks, cleaning equipment and packaging food. Both Jack and John demonstrated a statistically significant improvement in active engagement once videotaping was introduced and this remained one year later at maintenance. This finding is consistent with a previous study that found an increase in ‘on task’ behaviour after using VFB (Booth & Fairbank, 1983).

Decision-making in the vocational setting often involved the cognitive process of solving a problem and managing frustration. Improvements in decision-making represent pro-social behaviour and frustration management, and are consistent with previous findings (O’Reilly et al., 2005). Jack was near ceiling during baseline, but he still improved his decision-making from baseline to maintenance. Examples included making decisions about what to do with a broken stapler and choosing the best cleaning product for a specific task. John was also near ceiling at baseline. Examples of decision-making for John included choosing where to

put files when they blocked the aisle of a co-worker and selecting a work task based on the time remaining in his shift.

Response to others included greeting/responding to greeting of co-workers, saying 'Excuse me' when walking past or in front of co-workers, and answering direct questions. Both Jack and John demonstrated an increase in positive response to others from baseline to maintenance, with Jack demonstrating statistically significant growth. This improvement in social interactions with co-workers in the vocational setting is consistent with previous findings that found an increase in peer interactions and appropriate social behaviour with the use of VFB (Kern-Dunlap et al., 1992; Embregts, 2003).

Issues with hygiene that affected Jack and John in vocational settings were defined as picking fingers, skin or nose and then touching common objects in the setting or refusing to wash hands. Jack demonstrated a statistically significant increase in good hygiene from baseline to maintenance. John saw a spike in hygiene issues during Intervention 2, but those issues dissipated, as there was a statistically significant increase in positive hygiene from Intervention 2 to maintenance and from baseline to maintenance.

Transitions included returning to work in a timely manner after planned or spontaneous bathroom breaks, leaving unfinished work for planned or spontaneous breaks, and appropriate responses to requests for a change in job tasks. Both Jack and John demonstrated increased positive transitions from baseline to maintenance. Despite Jack and John both being near ceiling at baseline, Jack was able to demonstrate statistically significant growth to maintenance.

Vocational competency is integral for achieving maximum independence in adulthood (Shattuck et al., 2012). The participants' issues with social behaviour in vocational settings established at the baseline phase are consistent with characteristics of ASD (APA, 2013; Neisworth & Wolfe, 2005; Weiss & Harris, 2001). As a result of these social skill and communication deficits, the participants' vocational competency was compromised at the onset of this study.

Job coaches' anecdotal notes and researchers' recorded observations provide additional insight into the successes of the intervention. Coaches reported that Jack and John repeatedly asked if the camera was on during the taping sessions. When they received an affirmative answer, they would look up and smile at the camera, an uncharacteristic response to stimuli during work time. The coaches

noted an increase in self-corrected behaviours while Jack and John perceived the cameras were recording.

While Jack and John were sitting with the job coaches watching the daily video of their work performance, they sat up and faced forward. This behaviour was characteristic only when watching some type of audio/visual device. When not engaged with audio/visual equipment, both participants typically looked at the ground during any vocational or programme activity. However, they were both interested in the video and made many comments about what they were observing. Jack, in particular, was interested in the behaviours of the coach in the video. He made several comments about the coaches' reactions to his negative behaviour. During one session, he stated, *'Mike, you looked upset when I threw down my cloth. Were you upset at me Mike?'* During both phases of the intervention, Jack commented on the facial expressions and non-verbal language of the coaches.

During Intervention 2, Jack and John were asked to complete the modified BOSS along with the job coach. Jack and John always rated themselves as actively engaged for each of the one-minute intervals and they repeated this same positive self-assessment for each of the other behaviours observed. Each participant would ask their coaches why they had not rated them at the highest possible level for each interval. During this phase, Jack and John made comments about the coaches' reactions, facial expressions, tone of voice and other forms of body language they observed while watching the videos. Increases in awareness and interest in social interactions occurred concurrently with improvements in pro-social behaviour.

## **Conclusion**

An alarming percentage of individuals with developmental disabilities continue to be unemployed, with individuals with autism representing the largest disability category. Those individuals who are employed typically earn the lowest wages or work in segregated vocational settings. It is imperative that adolescents with autism develop appropriate job-related behaviours and become independent and contributing members of their community. The use of VFB is one way that job-related behaviours of adolescents with autism and other disabilities can be positively impacted. Preliminary evidence shows that VFB can increase engagement in the task at hand, improve communication skills with co-workers, and develop job-related social skills.



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## Appendix

Participant Name:

Observer Name:

Date:

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Time:

Interval	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
AE																
DM																
HY																
RTO																
TR																

AE	Actively engaged
DM	Decision making
HY	Hygiene
RTO	Responding to others
TR	Transition