Does Video Priming and Video Modelling help to reduce anxiety and increase social behaviours for adults who have a diagnosis of Autism Spectrum Disorder or Intellectual Disability when starting paid employment?

A thesis

submitted in fulfilment

of the requirements for the degree

of

Master of Applied Psychology in Behaviour Analysis

at

The University of Waikato

by

AMANDA HUMPHREY-RUSH

THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

2020

Abstract

Employment rates for adults with Autism Spectrum Disorder (ASD) and Intellectual Disability (ID) are much lower than the general population. Social skill difficulties and experiences with anxiety are thought to be contributing factors to this low employment rate. This study incorporated two Video-based Interventions (VBI's), Video Priming (VP) and Video Modelling (VM), to address anxiety and social skill difficulties for 2 adults with disabilities who were starting work in a supported employment service. Both participants were adult males, one of whom had an ASD diagnosis, and the other who had an ID diagnosis. VP was used to provide a preview of the expected events at the beginning of the first day at work, in an attempt to reduce anxiety associated with starting a new job. Anxiety levels of the participant who did receive VP were compared to those of the participant who did not receive VP. Results showed a decrease in anxiety for the participant who received the VP intervention and suggested that VP may improve experiences of anxiety for people with ID and ASD who are starting a new job. VM was implemented in this study to teach target social behaviours to participants, with an aim of increasing these behaviours. Results for each participant showed increases in many, but not all, of the target social behaviours, but these increases were not maintained over time and returned to baseline levels. Overall, this research provides support for VBI's as an intervention to reduce challenges such as anxiety and social skill deficits for adults with ASD and ID starting work. Recommendations have been made in regard to conducting further research to continue exploring the use of VP to reduce anxiety relating to starting as this is a developing area of information, and where adjustments can be made to the VM intervention to further evaluate the effectiveness of this.

Acknowledgements

Firstly, I would like to acknowledge and thank our participants, as well as the employment agency we worked alongside. Their willingness to participate and assist us with this research was vital and is very much appreciated.

I would like to thank my co-researcher, Gin, who has worked alongside me this year to implement this research. It may not have always been smooth sailing, but we got there in the end.

I would also like to thank my supervisor, Dr. Angelika Anderson, for your guidance and feedback throughout the year.

Lastly, I would also like to thank my partner, family, friends and work colleagues. Your love and support throughout this year has played a huge part in my success.

Table of Contents

List of Figures

List of Tables

Literature Review

Introduction

Autism Spectrum Disorder (ASD) and Intellectual Disability (ID) are two relatively common developmental disorders affecting a number of individuals worldwide. With growing awareness and understanding, difficulties faced by those with these diagnoses are becoming clearer. There is ample evidence of a lack of employment involvement for individuals who have disabilities such as ASD or ID. English and colleagues (2017) found indications that more than 50% of adults who have an Autism Spectrum Disorder (ASD) diagnosis are unemployed, while Holwerda and colleagues (2013a) suggested that those with an Intellectual Disability (ID) are 3-4 times less likely to be employed than their non-disabled peers. Considering the potential benefits associated with gaining employment, such as positive emotional and social outcomes, this is an area in which we would benefit from further research and a greater understanding of how to help those with disabilities to get into, and retain, meaningful employment.

Social difficulties are common for those with ASD and ID and may have a significant impact on employment rates as well as other aspects of life. Social deficits for people with ASD in particular have been identified in research as a barrier to them gaining employment (English et al., 2017), while difficulties in developing social skills have also been seen in individuals who have ID (O'Handley, Ford, Radley, Helbig, & Wimberly, 2016). Teaching social skills and appropriate social behaviours to those with ASD and ID may increase success within the workforce, as well as improving overall social engagement.

Research has also suggested that anxiety is a common challenge for people who have ASD and ID (Halim, Richdale, & Uljarević, 2018; Rzepecka, McKenzie, McClure, &

Murphy, 2011). With limited information available relating to anxiety for adults with disabilities, the impact of anxiety on employment is unclear. Research has shown, however, that anxiety can often be a barrier to participation in activities for this population (Hancock, 2018). Therefore, by reducing experiences of anxiety, those with ASD and ID might be more confident and able to access employment opportunities.

Many interventions currently used with those who have ASD and ID utilise technology such as videos which can be viewed on personal devices (Anderson et al., 2016; Moskowitz et al., 2017). Video based interventions (VBI's), including video modelling and video priming, have been used in a small number of studies increasing workplace success for adults with ASD. Despite the fact that these interventions are still in need of further research to be considered evidence based, current findings are promising (Anderson et al., 2016). There are a number of benefits for the use of VBI's, as they can be successfully implemented in a short timeframe, using minimal resources, and could easily be implemented by a variety of people across a several different environments and tasks (Zanolli, Daggett, & Adams, 1996). A greater understanding of the benefits and uses of video-based interventions may lead to improving the accessibility of employment opportunities for those with ASD and ID.

Autism Spectrum Disorder (ASD) and Intellectual Disability (ID)

Autism Spectrum Disorder (ASD) and Intellectual Disability (ID) are two of the most common developmental disorders, together affecting between 3% and 5% of the worlds' population (Srivastava & Schwartz, 2014) with diagnoses of these disorders, particularly ASD, increasing. In New Zealand, it is thought that one in 100 individuals are affected by ASD (Ministry of Health, 2017), while statistics in the USA suggests that one in every 68 children is being diagnosed with ASD (Wehman et al., 2016). Prevalence rates of ID globally are thought to be between 1% and 3% (Maulik, Mascarenhas, Mathers, Dua, & Saxena, 2011)

with approximately 2% of New Zealand's' population thought to have an Intellectual Disability (Statistics New Zealand, 2013). While the cause of both ASD and ID is largely unknown, both are thought to have genetic links and are present from birth, with environmental factors also thought to play a role in the development of both disorders (Srivastava & Schwartz, 2014).

Despite potential genetic similarities between the two, ASD and ID are two separate conditions with different diagnostic criteria. Intellectual Disability is characterised by the presence of significant limitations in both intellectual functioning and adaptive behaviour (American Association on Intellectual and Developmental Disabilities, 2019) and can also include additional impairments such as neurological deficits, seizures, and behavioural difficulties (Srivastava & Schwartz, 2014). Intellectual functioning is usually measured by an IQ test, with a score of under 70 indicating an intellectual disability (Srivastava & Schwartz, 2014). Adaptive behaviour covers three broad areas – conceptual skills which relates to language, literacy, number concepts and self-direction; social skills including interpersonal skills, social responsibility, naivety and the ability to follow social rules; and, practical skills such as daily living tasks, occupation, safety and use of money (American Association on Intellectual and Developmental Disabilities, 2019). Limitations in these areas can lead to challenges in many aspects of everyday living.

Autism Spectrum Disorder (ASD) is characterised by impairments in language and communication, dysfunctional reciprocal social abilities, restrictive and repetitive behaviours and/or limited areas of interest (Srivastava & Schwartz, 2014; Walton & Ingersoll, 2013; Wehman et al., 2016). Language and communication difficulties can include aspects of spoken language such as difficulty with back and forth conversation, as well as non-verbal communication such as abnormal use of body language, eye contact and facial expressions;

Dysfunctional social abilities can include difficulty developing and maintaining social relationships; Restricted and repetitive behaviours can appear as an insistence on sameness and strict adherence to routines (American Psychiatric Association, 2013). Limited areas of interest can mean that an individual with ASD might have intense, and at times all-consuming, interests, hobbies or areas of expertise (Cascio et al., 2014). Those with ASD can also experience difficulty with sensory hypo or hyperreactivity such as adverse responses to sounds or textures, or may have overly high or low pain tolerances (American Psychiatric Association, 2013). While someone with ASD will have challenges in all areas of language, social skills and restrictive or repetitive behaviours, the severity of each of these challenges is different for each individual (American Psychiatric Association, 2013; Ministry of Health, 2017).

Employment for individuals with ASD and ID

Employment has been defined as working "on an equal basis with others, which includes the right to the opportunity to gain a living by work freely chosen or accepted in a labour market and work environment that is open, inclusive and accessible to persons with disabilities" (McGlinchey, McCallion, Burke, Carroll, & McCarron, 2013, p. 336). There are a variety of employment types available to those with ASD, ID or other disabilities, including competitive employment, as outlined above, supported employment, or sheltered employment – all of which offer different levels of support and opportunities for those with disabilities. Supported employment combines an element of competitive employment with additional support from the employer or an external agency, while sheltered employment is long-term placement in a disability specific workshop type setting (Lorenz, Frischling, Cuadros, & Heinitz, 2016).

Accessing suitable, competitive employment can be difficult for individuals who have disabilities. Studies worldwide have indicated low levels of employment for those with ASD and ID compared to the general population. Statistics on employment rates vary. McGlinchy and colleagues (2013) reported that only 11% of those with an ID in the United Kingdom are employed, while other statistics from the UK suggest employment rates for those with learning disabilities are even lower at 5.9% (BASE, 2019). However, Australian statics suggest employment rates for those with an ID are closer to 54% (Autism in Australia, 2009). By comparison, research from the US suggest that only around 25% of those with ASD are employed (Bush & Tasse, 2017) and in Australia only about 34% of those with ASD are thought to be in employment (Autism in Australia, 2009). In New Zealand, 25.6% of those aged 18-65 with a disability, including intellectual, physical or mental health, are employed (Statistics New Zealand, 2013). This includes those with ASD or ID diagnoses. These statistics compare with approximately 68-83% of the general population who are employed (Autism in Australia, 2009; Bush & Tasse, 2017; Statistics New Zealand, 2013) showing that employment rates for those with ASD and ID are much lower than average.

For many with ASD and ID who are employed, underemployment is also a concern – this includes working fewer hours (Cheng et al., 2017), working in jobs that do not utilise an individuals' talents (Craven, 2017), and having less access to employee benefits (Blick, Litz, Thornhill, & Goreczny, 2016). In a study by Baldwin and colleagues (2014), it was found that approximately 45% of adults with ASD who did work, were working in jobs for which they were considered to be overqualified for. Similarly, Craven (2017) suggests that in New Zealand around 80,000 people who have ASD and could be working are either not working at all (unemployed), or aren't fully utilising their skills and abilities in their current employment (underemployed).

There are a variety of possible reasons for low employment rates for those with ASD and ID. External or environmental factors can play a role in employment accessibility. An employers' perception of hiring someone with ASD or ID, including the expected costs and adjustments that may be required in order to accommodate these workers, and lack of awareness of the benefits of employing someone with ASD or ID, are thought to impact an employers' decision to hire someone with a disability (Moore, McDonald, & Bartlett, 2017). Dreaver and colleagues (2019) found three important factors of employment success for those with ASD: 1) Employers having knowledge of and a positive attitude toward ASD; 2) Provision of a suitable work environment including support from line managers and, at times, external support agencies; and, 3) Suitable job match that meets the skills, interests and strengths of the individual. External support from family was also thought to be a factor in employment success for those with disabilities (Chiang, Cheung, Li, & Tsai, 2013). Without this additional support from family and employers, success finding and maintaining employment can be a challenge for many individuals with ASD and ID (Baldwin et al., 2014; Chiang et al., 2013)

Individual strengths and difficulties can also impact vocational success. Common challenges associated with ASD and ID are likely to influence an individuals' employment (American Psychiatric Association, 2013). Difficulties with time management, planning, ritualistic and repetitive behaviours, and behavioural inflexibility (English et al., 2017), getting used to a new environment, routine and procedures (Baldwin et al., 2014) and motivation to get a job (Trembath, Balandin, Stancliffe, & Togher, 2010) are just some factors that have been identified as barriers to employment for this population. Social difficulties such as responding appropriately to social cues, interacting with co-workers, as well as understanding and following instructions and social rules can be a challenge (Gal, Landes, & Katz, 2015; Grob, Lerman, Langlinais, & Villante, 2019). Low self-esteem and

confidence (Trembath et al., 2010) as well as experiences of anxiety (Brooke et al., 2018) have also been found to impact individuals success in employment.

Despite a variety of barriers to employment success for those with ASD and ID, many of these individuals want to work (Holwerda et al., 2013a). Countless people, including those with ASD and ID, define themselves through their work (Dotson, Richman, Abby, Thompson, & Plotner, 2013) and often view employment as an important goal (Chen, Sung, & Pi, 2015). Employment opportunities for those with disabilities can promote financial independence and independent living possibilities (Anderson et al., 2016; Holwerda et al., 2013a). For people with ASD and ID, being in employment can help to facilitate the development of new skills, as well as having social and psychological benefits (Cheng et al., 2017). Employment has been associated with greater life satisfaction and general wellbeing (Anderson et al., 2016) and a reduction in ASD related symptoms and maladaptive behaviours (Taylor et al., as cited in Anderson et al., 2016). Attending work also provides an opportunity for individuals to socialise with people other than the close friends and family (Holwerda, van der Klink, de Boer, Groothoff, & Brouwer, 2013b). Being employed means integrating into a social network, contributing to and being seen as part of society, and relying less on public funding (Chen et al., 2015). For those who desire employment, it is clear there are numerous benefits of achieving this goal.

Addressing barriers to employment for those with ASD and ID

In order to improve employment outcomes for those with ASD and ID, addressing some of the barriers is necessary. With general social skills identified as one of the most commonly experienced barriers to employment, interventions to develop these skills further may improve employment outcomes (Anderson et al., 2016; Capo, 2001; Dreaver et al., 2019; Gal et al., 2015; Trembath et al., 2010). Anxiety is also common for those with ASD

and ID, and while research is more limited in this area, this has also been identified as a barrier to accessing employment (Blick et al., 2016; Connor, Sung, Strain, Zeng, & Fabrizi, 2019; Spain et al., 2016).

Social skill difficulties for those with ASD and ID

There are a number of social difficulties experienced by those with ASD and ID, such as initiating and reciprocating conversation, maintaining eye contact, responding to social situations appropriately and social problem solving (Bellini, 2004; DiGennaro Reed, Hyman, & Hirst, 2011; Wilkins & Matson, 2009). An ability to infer the interests of others when they are not shared by the individual can also be a challenge (Bellini, 2004). Difficulties understanding facial expressions and tones of voice, an inability to or lack of understanding regarding seeking help when needed, handling job feedback, asking too many or inappropriate questions, and difficulties in understanding social rules are just some social challenges that have resulted in employment terminations for individuals with ASD (Walsh, Holloway, & Lydon, 2017). For some with ASD and ID, avoidance of social situations is also common (Wilkins & Matson, 2009). This can mean that those with social difficulties are not able to develop their social skills due to lack of opportunities where they are able to practise social behaviours. However, those who have more developed social skills tend to have a higher level of independence and greater employment opportunities (DiGennaro Reed et al., 2011). This suggests that improving social skills for those with ASD and ID may improve employment outcomes.

Increasing social skills – interventions that are commonly used

Much of the interventions in literature to develop social skills for those with ASD and ID involve children and are not employment specific (Cotugno, 2009; DiGennaro Reed et al., 2011; Kamps et al., 1992; Ogilvie, 201). However, there are some studies that have

researched social skill interventions for adults in employment. Dreaver and colleagues (2019) found that teaching social skills through providing training and feedback regarding conversations with co-workers and modelling of appropriate social behaviours can improve employment success. While this shows promise for development of social skills, their research was qualitative, with information being gathered by interviewing adults with ASD who were employed (Dreaver et al., 2019) so does not address specific social skill interventions. However, their findings do suggest that social training and modelling of social behaviours is likely to improve social outcomes for individuals with disabilities in the workplace.

Sung and colleagues (2019) used the Assistive Soft Skills and Employment Training (ASSET) programme to teach employment related social skills to young adults with ASD. This was an 8-week group social skills programme and resulted in significant improvements for participants in social skills such as knowledge of work-related social interactions, general social functioning, and social empathy and self-efficacy (Sung et al., 2019). Connor and colleagues (2019) also used this programme to teach employment related social skills to young adults with ASD, with similar positive results. While both studies showed improvements in social skills, and the ASSET programme shows promise for becoming evidence based in the future (Connor et al., 2019; Sung et al., 2019), the programme could be considered quite long and time consuming for participants as well as researchers as it requires weekly 90-minute sessions across a period of 8 weeks. Scheduling conflicts was identified as a barrier to participant completion of this programme (Connor et al., 2019) further supporting the possibility that the time needed to complete this intervention may limit its suitability.

Another method of teaching work related social skills is the Walker Social Skills Curriculum: The ACCESS Programme, which was used by Walsh and colleagues (2017) to

teach a number of social skills to a group of young adults with ASD. The ACCESS programme contains skill lessons for 31 different social behaviours, and included homework and behaviour management procedures (Walsh et al., 2017). Participants were asked to attend twice weekly sessions for a total of 20 weeks (Walsh et al., 2017). This intervention showed an increase in the target social skills, which were also found to generalise across settings and be maintained over time (Walsh et al., 2017). However, the time required from participants was even more substantial than the ASSET programme, and may prove difficult for individuals who are also in the workforce and working regular hours. In addition, this method could be expensive to implement due to the time required from experienced trainers who are required to run the sessions. Similarly, the group environment may discourage some from attending, as avoidance behaviours are common for those with ASD and ID who find social situations difficult (Bejerot, Eriksson, & Mortberg, 2014).

Experiences of anxiety for those with ASD and ID

Anxiety is a multi-component construct involving affective states such as subjective fear; cognitions such as thoughts and beliefs; behaviours such as avoidance; and psychological arousal such as increased heart rate (Moskowitz et al., 2017). While experiences with anxiety where there is a known cause are a normal part of life for everyone, abnormal anxiety is different in that it is vague and triggered in response to a non-threatening situation (Gentile & Gillig, 2012). Anxiety, particularly around social situations, is commonly linked to ASD and ID (Bejerot et al., 2014; Bellini, 2004; Matson & Cervantes, 2013) and can also be associated with avoidance of certain environments or situations (Moskowitz et al., 2017). Atypical anxiety is often experienced across a number of settings, such as home, school, work and social environments, and is seen to occur even when individuals are enjoying themselves which may create barriers to participation in a variety of

activities (Hancock, 2018). While research in this area is more limited than social skill development, this may be an important area of future research to benefit those who experience high levels of anxiety.

Recognising comorbid conditions like anxiety can be difficult. This is due to the fact that those with ASD and ID often have impairments in processing, talking about oneself and describing ones' own feelings and emotions, and also because symptoms of anxiety may often be masked by the typical ASD or ID symptoms (Mazzone, 2012). However, it is estimated that between 40-50% of those with ASD and ID meet diagnostic criteria for anxiety (Eussen et al., 2012; Ezell et al., 2019), while some studies have found evidence that up to 70% of this population experience co-occurring mental health difficulties such as anxiety (Lei, Calley, Brosnan, Ashwin, & Russell, 2018). This shows the importance of considering an individual's experience with anxiety and ways to improve this.

Reducing anxiety – interventions that are commonly used

Research in the area of comorbid anxiety for those with ASD or ID is growing (Gentile & Gillig, 2012; Mazzone, 2012; Spain, Sin, Linder, McMahon, & Happé, 2018) with much of this research relating to anxiety in children (Chalfant, Rapee, & Carroll, 2007; Factor, Ryan, Farley, Ollendick, & Scarpa, 2017; Kreiser & White, 2014; White, Oswald, Ollendick, & Scahill, 2009; Williams, Leader, Mannion, & Chen, 2015). However, there is increasing evidence suggesting adults with ASD and ID also experience abnormal levels of anxiety (Bejerot et al., 2014; Ezell et al., 2019; Hassiotis et al., 2013). Research is emerging regarding interventions to reduce anxiety for those with ASD and ID, however this remains largely focused on a younger population.

Chalfant and colleagues (2007) used a family based Cognitive Behavioural Therapy (CBT) method to treat anxiety symptoms in 47 children who were also diagnosed with ASD.

The children were seen weekly by a therapist for 2 hours to complete a modified version of the Cool Kids program, which included strategies such as role playing, anxiety management techniques and practise, visual aids and concrete exercise skills (Chalfant et al., 2007). At the end of the 12-week programme, results were positive. Approximately 71% of the participants in this study no longer fulfilled diagnostic criteria for an anxiety condition, and also reported (either through self-report or parental report) a reduction in anxiety symptoms (Chalfant et al., 2007). While this study showed positive results, family-based therapy options such as this are unlikely to be suitable for adults with ASD or ID as they are less likely to have the same day to day family involvement at this later life stage.

Another study completed by Moskowitz and colleagues (2017) also used CBT but combined it with Positive Behaviour Support (PBS) strategies. Their multiple baseline design study was used to evaluate the effectiveness of the combination of CBT and PBS strategies. Tactics such as graduated exposure to anxiety provoking stimuli, positive reinforcement for desired behaviours, use of YouTube for Video Priming and visual schedules were combined (Moskowitz et al., 2017). Children in this study, who had both ASD and ID diagnoses, reported a reduction in feelings of anxiety, while researchers observed less anxiety symptoms and a reduction in problem behaviour after the intervention was completed (Moskowitz et al., 2017). Again, this type of intervention may not be so useful for adults who are entering employment due to the time taken to implement these interventions. It would also be unlikely to reduce anxiety associated with starting a new job unless the programme was specifically tailored for employment related anxiety and concluded around the time participants were starting a new job – something that would be difficult to arrange in a group environment.

Though much of the research on anxiety relates to children, Spain and colleagues (2017) conducted a combined social skills and anxiety management intervention for adults with ASD. Their intervention involved an 11-week group based anxiety and social skills

intervention formed within a CBT framework (Spain et al., 2017). Results from this study did not show improvement in overall mood or general anxiety, however social anxiety and social avoidance were both improved at the end of this intervention (Spain et al., 2017). Like many CBT-based options, participants involved in this study were asked to commit for the full 11 weeks. For someone who is entering employment and feeling anxious about that, this type of intervention may not be suitable as it is unlikely there would be this length of time between when the individual was offered the role and when they began work.

It is clear that interventions to reduce anxiety for those with ASD and ID are less common with adults than similar research with children of this population. However, these research findings suggest that modifications can be made to current anxiety treatment options to make them more suitable for those with ASD and ID. Much of the research that is currently available focuses on long-term, generalised anxiety and does not focus on potential interventions relating to anxiety regarding a particular event, such as entering a new environment or starting work for the first time. Managing short-term anxiety experiences requires further research in order to develop a greater understanding of how to support these events.

Video Based Interventions to improve employment

Many of the current interventions for those with ASD and ID to develop a variety of skills share a number of common elements, such as the use of technology, modelling, and priming (Anderson et al., 2016; Cannella-Malone & Tullis, 2010; Kabashi & Kaczmarek, 2016; Moskowitz et al., 2017; Rayner, Denholm, & Sigafoos, 2009). Video based interventions (VBI's) are a compilation of strategies that use video and technology, and are based on the principles of Applied Behaviour Analysis (Kabashi & Kaczmarek, 2016; Rausa, Moore, & Anderson, 2016). In many cases, learning through VBI's involves observation and

imitation (Rayner et al., 2009). While there is no definitive evidence of who would or would not benefit from VBI's, studies have shown that VBI's can be effective interventions for individuals with developmental disabilities (Bennett, Aljehany, & Altaf, 2017; Rayner et al., 2009). For those with ASD and ID, who may show selective attention, repetitive behaviours and an interest in technology, VBI's have been suggested as the best way to present stimuli (Wilczynski, Trammell, & Clarke, 2013). While findings for these interventions are promising, information is still considered to be in need of further research (Anderson et al., 2016). The use of VBI's in employment settings is even less developed, but still showing promising early results (Wilczynski et al., 2013).

While there are a variety of studies and interventions that have been effective to increase social skills and reduce anxiety for those with ASD and ID, VBI's offer an alternative that may be more effective in the context of starting employment. Where previous studies have required participants to attend regular sessions which can be time consuming and costly, VBI's can be successfully implemented in a short timeframe with minimal resources needed to create and show the videos (Rayner et al., 2009; Zanolli et al., 1996). Viewers can also watch VBI's using a device that suits them best, from a location of their choosing. Unlike other studies which require trained professionals to facilitate interventions such as specific social skills programmes or CBT therapy, VBI's are less labour intensive and can be implemented by almost anyone (Zanolli et al., 1996). The person implementing the VBI does not need to be highly trained. Once the individual has been provided with their video, the need for instructor involvement is minimal, allowing the learner increased independence and also removing any stigma that in-vivo or live instruction may create in the presence of peers or co-workers (Kabashi & Kaczmarek, 2016). For those with ASD or ID starting work, this can mean greater opportunities for autonomous learning.

Not only can VBI's increase independent instruction, they can also help to ensure learning remains consistent. Because a video is the same each time it is viewed, this produces accuracy across instructions and allows the individual to re-watch the video as needed without subtle changes or the need for additional support from others to re-model or explain the behaviour or setting (Rayner et al., 2009; Wilczynski et al., 2013). This is unlike facilitated interventions which may differ slightly each time they are repeated. Similarly, by videoing a target behaviour or environment, this allows for control of what is included in the video, helping the viewer focus on what is being demonstrated rather than being distracted by additional sights or sounds which may occur in a live environment (McCoy & Hermansen, 2007).

Much of the research regarding interventions for those with ASD and ID include visual learning supports. This is automatic with VBI's, allowing learners to learn through visual means, which is typically an area of strength for those with ASD and ID (Kabashi & Kaczmarek, 2016; Walton & Ingersoll, 2013). Because many people enjoy watching a video, VBI's may also be naturally a reinforcing activity (Menon, 2014). However, VBI's have also been effective in interventions for those who are not reported to enjoy watching videos (Schreibman, Whalen, & Stahmer, 2000). This suggests that VBI's may be a beneficial learning tool for those with ASD or ID, regardless of their interests, because of the visual nature of this intervention.

Video Modelling to teach social skills for employment

Video modelling (VM) is one type of VBI that can be used to teach social skills, and is one of the most common strategies for incorporating video into a behavioural intervention (Leblanc, 2010). VM is considered an evidence based practise, with literature supporting its effectiveness for those with ASD and ID (Avcioglu, 2013; Bross, Zane, & Kellems, 2018;

McCoy & Hermansen, 2007; Sancho, Sidener, Reeve, & Sidener, 2010; Spivey & Mechling, 2016). There are a variety of studies available where VM has been used to teach a number of skills, including social skills, to those with ASD and ID (Avcioglu, 2013; Bross, Travers, Munandar, & Morningstar, 2018; Halle, Ninness, Ninness, & Lawson, 2016; Christos K. Nikopoulos & Keenan, 2003; C. K. Nikopoulos & Keenan, 2007). In a review of 26 studies which used Video Modelling to teach a target social behaviour, Cannella-Malone and Tullis (2010) concluded that there is evidence to support the use of VM as an intervention to increase the social and communication skills for those with ASD. Suggestions such as ensuring video length remains under 5 minutes, inclusion of prompts and reinforcement, and evaluating the individuals ability to attend to the video prior to implementation were important considerations for effectiveness (Cannella-Malone & Tullis, 2010).

Imitation is considered one of the most basic processes of learning, but is often something that those with ASD and ID have difficulty with in everyday life (Sancho et al., 2010). VM utilises imitation as a way to learn, incorporating this with video technology. Video modelling involves watching a video of an adult, peer or oneself performing a target behaviour in the desired way, with the intention that the individual watching the video will learn through observation and will begin to perform the behaviour once they have seen the video (Walton & Ingersoll, 2013). VM provides a concrete demonstration the behaviour to be learned, and how it should be performed (Sng, Carter, & Stephenson, 2013). This encourages the learner to develop this skill as accurately as possible.

Video modelling in employment settings has primarily been utilized to increase job production and general employment skills (Alexander, Ayres, Smith, Shepley, & Mataras, 2013; Collins & Collet-Klingenberg, 2018; Kellems & Morningstar, 2012). However, studies which use VM to teach social skills to adults with ASD and ID in employment settings are

emerging. Results so far suggest that VM may be an effective and useful workplace support teaching interpersonal and social skills, which are a requirement of almost every profession (Bross, Zane, et al., 2018).

One such study by Bross and colleagues (2018) used VM to teach customer service related social skills to an adult with ASD who was working in a retail store. The participant in this study was considered to be quiet and not engaging with customers during baseline data collection, but was receptive to the videos and immediately started using the target phrases that were portrayed in the modelling videos while interacting with customers (Bross, Travers, et al., 2018). Phrases modelled were those considered useful in the cashier setting in which he was working, such as asking how the customers day was going. The use of VM to teach these phrases lead to a significant improvement in the quality of the employee's interactions with his customers, and frequently lead to non-scripted conversations suggesting that the skills were generalising to other customer service related social behaviours (Bross, Travers, et al., 2018). However, the findings of the study did report that the skills taught through VM did not resolve all social skill challenges that the employee experienced at work, as social interaction with co-workers was still considered to be an area where the participant struggled (Bross, Travers, et al., 2018). Overall, the use of VM to teach customer service-related social skills was successful in teaching the skills it aimed to, with limitations able to be addressed in future research.

Studies which have used VM to teach social skills in an employment setting have usually included social interactions which are relevant to the particular workplace. Bross and colleagues (2018) used VM in a customer service setting, so included a greeting phrase such as "How are you?," a service phrase such as "Do you want a receipt?," and a closing phrase such as "Have a good day" as these were deemed suitable for their setting. Other studies have included VM interventions for interactions such as taking complaints, listening, actioning

orders and the use of professional speech when interacting with customers (Rausa et al., 2016). These behaviours are similar to VM interventions which have taught social skills in non-employment settings, and included social behaviours such as greeting others, initiating and responding, and simple conversation (Avcioglu, 2013; Sng et al., 2013). Despite some similarities in skills that are considered important for those with ASD and ID, studies that have included social skills in employment settings tend to relate to customer service focused interactions rather than co-worker interactions (Bross, Travers, et al., 2018; Rausa et al., 2016). This is an area which would benefit from further research, something that was supported by the findings of Bross and colleagues (2018) in their recent study.

Video Priming to reduce anxiety associated with starting work

While CBT is considered an effective treatment for anxiety and has been used in several of the currently available studies relating to anxiety treatments for those with ASD and ID, it may not be the most suitable option for those with impaired functioning. Using this method with adults who have intellectual difficulties may impact the success due to possible cognitive limitations and lack of ability to differentiate between thoughts, feelings and behaviour (Hassiotis et al., 2013). Instead, Video Priming (VP) is a type of VBI that is being suggested as a possible alternative intervention to help in reducing anxiety for those with ASD and ID when entering new environments, such as an individuals' first day of work.

Priming allows for a preview of an upcoming event, situation or environment. VP allows individuals to watch a video which shows them an upcoming, unfamiliar situation, making it more predictable and allowing them to prepare for what is to be expected before it occurs (Bainbridge & Myles, 1999; Hume, Sreckovic, Snyder, & Carnahan, 2014). Viewers can then see the new situation or environment before actually experiencing it in person. Video Priming has the potential to be implemented by a variety of people, including

professionals and parents, to benefit individuals who have a different abilities, and has been used in a number of studies with ASD or ID populations (Bainbridge & Myles, 1999; Gengoux, 2014; Zanolli et al., 1996).

There are a number of benefits associated with the use of Video Priming for individuals with ASD and ID, including the potential to prepare for a new experience before it occurs. VP allows viewers to see the 'whole picture' of a new environment (Gardner & Wolfe, 2018). This gives learners the opportunity to know what is going to happen prior to experiencing it, potentially reducing anxiety related to these experiences and reducing uncertainties. When using VP, viewers are able to watch and gain information about a new environment they may be entering, including possible sights, sounds and movements which are unable to be provided through other visual or verbal explanations (Schreibman et al., 2000).

Research has suggested that children with special education needs experience high levels of anxiety around transitions between school environments – this is thought to be a result of fear and uncertainty around the unknown (Hughes, Banks, & Terras, 2013; Makin, Hill, & Pellicano, 2017; Schreibman et al., 2000). Relationships between high levels of anxiety and challenging behaviour, decreased social reciprocity and peer rejection have also been found (Factor et al., 2017). Koegel and colleagues (2003) found that providing VP that showed upcoming classroom activities and assignments led to a reduction in problem behaviour in the classroom and increased academic responding for students with ASD. Evidence is growing for the use of VP as an intervention to prepare individuals, largely children, with ASD and ID for new settings with reduced anxiety commonly being seen as a result (Bainbridge & Myles, 1999; Cuvo, Godard, Huckfeldt, & DeMattei, 2010; Schreibman et al., 2000). While research in this area largely relates to children, it is possible that VP

could also be used to prepare adults with ASD and ID for their first day at work. This method could lead to deceased anxiety as well as improved responding while at work.

Conclusion

A review of the literature has consolidated our understanding of what is still needed to provide support to those with ASD and ID, particularly around increasing employment opportunities and success.

Employment is a significant consideration for many with ASD and ID as they enter into adulthood. Current research has shown that individuals with ASD and ID are significantly underrepresented in the workplace despite a willingness and desire to work, and with many individuals having important skills that could be of benefit to employers. The benefits of employment are significant and varied, so understanding how those with ASD and ID can be more proportionately represented in the workforce is important.

The literature has suggested that limitations in social skill development may have an impact on some areas of employment success for those with ASD and ID. Through developing social skills related to an individual's workplace, such as following instructions, asking for help and maintaining conversations with co-workers, employment success may increase. Previous studies have shown success in the use of video modelling to teach social and vocational skills, suggesting that additional research in this area might further benefit this population.

It has also become clear that those with ASD and ID experience anxiety at higher levels than the general population, and that this can have significant impacts on individuals' lives. Through reviewing the literature available, a relationship between transitioning to unfamiliar environments and increased anxiety for those with ASD and ID has been

suggested. Through the use of video priming, individuals can experience a new environment before being exposed to it, increasing predictability and potentially reducing related anxiety. While research in the area of VP to reduce anxiety in employment situations is not accessible, there is limited but promising research available to support the notion that VP could reduce anxiety related to transitioning to a new environment. It is possible that this could be an up and coming area of research which may benefit those with ASD and ID who are experiencing anxiety related to new situations such as their first day at work.

As there has been a link between social skill development and reduced anxiety identified in the research, jointly addressing social skills and anxiety in this study may provide the most benefit to those involved.

Introduction

Employment for those with Autism Spectrum Disorder and Intellectual Disability

Employment rates for those with disabilities such as ASD and ID in New Zealand, and around the world, are low. It has been reported that just 25.6% of those aged 18-65 with a disability, including intellectual, physical or mental health, are employed in New Zealand (Statistics New Zealand, 2013). This includes those with ID or ASD diagnoses. A recent, similar, study in Australia found that only 31.6% of those with ASD were employed (Amaze, 2019) while 32% of Australians with ID are thought to be employed (IHC, 2017). It is possible that we have similar employment rates for these populations as our Australian neighbours. These statistics compare with between 68-83% of the general population who are thought to be employed (Autism in Australia, 2009; Bush & Tasse, 2017; Statistics New Zealand, 2013). This shows that employment rates for those with ASD and ID are much lower than the average population. Of those with ASD and ID who are employed, many are employed only part-time, despite wanting more hours, or are in roles that do not challenge them or meet their skill levels (Amaze, 2019; Craven, 2017; IHC, 2017).

Despite low employment rates for those with ASD and ID, many of these individuals want to work. Access to employment promotes financial independence (Holwerda et al., 2013a). However, employment is not just a nine-to-five role that provides a regular income – it also gives meaning to individuals' lives and helps them to cope better with their disabilities (Dow, 2019). Many individuals with and without disabilities define themselves through their work and view gaining employment as an important goal (Chen et al., 2015; Dotson et al., 2013). In New Zealand there are a variety of individuals who want to work in many areas such as accounting and trades, and who have qualifications and skills to match their goals,

but who struggle to get into permanent, long-term employment (Dow, 2019; IHC, 2017; Mandow, 2019). A greater understanding of how to reduce barriers and assist these individuals into employment is needed in order to provide a greater employment outcomes for those with ASD and ID who want to work.

Video Based Interventions

The use of technology is common in current interventions to develop a variety of skills for those with ASD and ID (Anderson et al., 2016; Moskowitz et al., 2017). Video based interventions (VBI's), including video modelling and video priming, have been utilised in a small number of studies increasing workplace skills for adults with ASD. While findings for these interventions are promising, information is still considered to be limited and in need of further research (Anderson et al., 2016). However there are a number of benefits to using VBI's, as they can be successfully implemented in a short timeframe, using minimal resources to create and show the videos, which suggests they could easily be used by professionals and parents across a variety of environments and tasks (Zanolli et al., 1996). A greater understanding of the benefits of video-based interventions may lead to improving the accessibility of employment opportunities for those with ASD and ID.

Social skill difficulties and interventions to increase social behaviours

Social deficits for people with ASD in particular have been identified in research as a barrier to them gaining employment (English et al., 2017), while difficulties in developing social skills have also been seen in individuals who have ID (O'Handley et al., 2016). In the workplace, difficulties understanding facial expressions and tones of voice, not seeking help when needed, handling job feedback, asking too many questions, and difficulties in understanding social rules are social difficulties that have resulted in employment problems and even terminations for individuals with disabilities (Walsh et al., 2017). Difficulties with

job interviews, such as inappropriate eye contact, and an inability to 'think on your feet' are commonly seen (Baldwin et al., 2014). Individuals saying the 'wrong thing' at an interview, such as Jackson who told a prospective employer that he would rather be at home playing video games than be at work, is common and negatively impacts employment opportunities (Mandow, 2019). However, despite the many social challenges associated with work, employment provides those with ASD and ID an opportunity to socialise with new people and integrate into a new social network where they can develop their social skills further (Chen et al., 2015; Holwerda et al., 2013b).

Previous studies that have addressed social skills for those with ASD and ID in employment have taught interactions such as discussing hobbies or topics of interest, commenting on given tasks, and asking for help with performing a task (Gilson & Carter, 2016). Shukla-Menta and colleagues (2009) reviewed a number of social skill related studies and found common areas of learning involved initiation of social conversations and increasing conversational skills. Scott Carey (2016), a New Zealander who was working in retail when interviewed, identified socialisation as one of his biggest challenges at work, with communication, responding in social situations, interpreting speech and remembering instructions some of the greater difficulties he faced. Teaching some of these skills may improve social outcomes for individuals in employment.

One way in which this has been done in recent research is through Video Modelling (VM). VM is a common strategy for incorporating video into a behavioural intervention as it provides an accurate demonstration of the target behaviour and the way in which it should be completed (Leblanc, 2010; Sng et al., 2013). VM involves watching a video of another individual or oneself performing a particular behaviour accurately, followed by an opportunity to practise the observed behaviour and perform it in the same way as was modelled (Walton & Ingersoll, 2013). VM has been used to teach social skills, such as

greeting others and conversational skills, to those with ASD and ID in a variety of studies (Avcioglu, 2013; Bross, Travers, et al., 2018; Plavnick & Duenas, 2018; Plavnick, Kaid, & MacFarland, 2015; Spivey & Mechling, 2016). However, research relating to the use of VM in teaching social skills to those with ASD and ID within employment situations is limited and in need of further investigation.

Experiences of anxiety and interventions to reduce it

Anxiety, both in social situations as well as general anxiety, has also been found to impact a large number of those with ASD and ID (Bejerot et al., 2014; Bellini, 2004; Cervantes & Matson, 2015; Halim et al., 2018). Carey (2016) explained that when social situations occurred in which he was unsure how to respond, he then struggled with anxiety. Experiences with anxiety is often associated with isolation and impaired functioning in daily living (Bellini, 2004; Halim et al., 2018). Research has shown that those who experience high levels of anxiety tend to have reduced employment participation, with difficulties including entering, retaining and succeeding in employment (Matthews, Harris, Jaworski, Alam, & Bozdag, 2014; Waghorn, 2005). Even attending what might seem like a simple job interview can be highly anxiety provoking for many with ASD and ID (Mandow, 2019). Therefore, reducing anxiety for those who experience it may increase employment opportunities.

Research has suggested that transitions between environments and the uncertainty associated with this may impact experiences of anxiety for those with disabilities (Bainbridge & Myles, 1999; Schreibman et al., 2000; Sevin, Rieske, & Matson, 2015). The idea that previewing an upcoming situation or activity through Video Priming (VP) might make the new event more predictable, and therefore less anxiety provoking, has been considered (Hume et al., 2014). VP provides a video showing a new environment or situation before the individual experiences it in reality, and allowing them to prepare for what might happen

before it occurs (Bainbridge & Myles, 1999; Hume et al., 2014). This allows those who might experience anxiety in new situations, such as going to a job interview or beginning at a new job, to be better able to predict and prepare for what will occur before they are required to engage in this experience (Bainbridge & Myles, 1999). Preparation and knowledge of a new situation before entering it may help to reduce anxiety associated with this change.

Addressing social skills and anxiety collectively to improve employment

It is possible that there is a relationship between social skill abilities and experiences of anxiety for those with ASD and ID, both of which can negatively impact access to and success in employment. Bellini (2004) found a negative correlation between assertive social skills and experiences of anxiety for those with disabilities. As social skill levels decrease, anxiety is likely to increase for this population. Those who become anxious in social situations may be less likely to initiate social interactions, which can mean fewer social experiences and limited opportunities to develop much needed social skills (Bellini, 2004; Connor et al., 2019). Ratcliffe and colleagues (2015) suggested that difficulties with social situations can have a negative impact on mental health such as increased anxiety for those with ASD and ID. As a result, it has been suggested that interventions which are aimed at reducing anxiety for this population, also consider the development of social skills (Eussen et al., 2012). By combining interventions for social skills and anxiety, this study will add to the small but growing area of research which may develop better employment opportunities for adults with ASD and ID.

Research Aims

This study had two aims:

1) To use Video Priming to provide information about the new work environment to those with ASD and ID, with the aim to reduce anxiety associated with starting work.

2) To teach social skills via Video Modelling to adults who have ASD or ID and are starting employment, with an intention that the targeted social behaviours will increase as a result.

Method

Participant recruitment

Participants were adults over the age of 18 who had a diagnosis of Autism Spectrum Disorder (ASD) and/or Intellectual Disability (ID) and who were about to start employment in a local supported employment programme. This programme is designed for adults with intellectual and/or mental health disabilities.

In addition to having an ID or ASD diagnosis, inclusion criteria for the study required participants to have sufficient receptive and expressive communication skills in order to complete the anxiety measure and engage in social skills training. This was discussed with the employment agency we were working with, so that they would only refer people who they expected would meet these criteria. Potential participants' receptive and expressive communication was assessed through a conversation with one of the researchers during the initial meeting, who asked participants some questions about their new job in order to get an understanding of their social abilities and understanding. A copy of the question's each

potential participant was asked can be found in Appendix A. Participants' answers to these questions were expected to be relevant to the questions, e.g. "I am looking forward to getting paid" would be considered an appropriate answer to the question 'Tell me one thing you are looking forward to in your new job?' Each response was required to be 2 or more words long.

Potential participants were recruited by the service lead of the employment programme, who was in charge of hiring employees for the programme. All individuals that met the selection criteria and who were starting work in September or October 2019, were invited to participate in our research. These likely participants were provided with verbal information about the research by the employment service lead, as well as a flyer outlining the study visually if deemed applicable by the employer. Contact information, usually a cell phone number, of those who expressed an interest in learning more about the study was then passed on to the researchers for further follow up.

An initial meeting was organised between the new employees who expressed an interest in being involved in the research and a researcher to discuss the study further, ensure they would be suitable and met inclusion criteria, and to gain consent from those who wanted to proceed. Informed consent was gained through the provision of a consent form. This form outlined information about the research, what would be required of participants, how to get further information, and how to withdraw if they wanted to. A copy of the information and consent form can be found in Appendix B. Information on the consent form was also verbally explained to each participant. Participants were asked verbally whether they understood and wanted to be included in the study. Those who wanted to proceed, and who confirmed verbally that they understood the information in the consent form, were then asked to sign this to provide their consent.

Participants

There were two participants in this study. To protect their privacy, pseudonyms have been used to identify them.

Shane was a 20-year-old male who had a diagnosis of Autism Spectrum Disorder (ASD). He had a history of anxiety but reported that he did not feel he experienced anxiety as much now as he had learned ways to manage this well. Shane had previously been employed but had not worked in the past 10 months. His previous job had been obtained through a supported employment service and had ceased as a result of no work being available.

Brent was a 49-year-old male who had recently moved to the area. He had a diagnosis of Intellectual Disability (ID). Prior to moving, Brent had previously been employed in a variety of part-time labouring jobs such as picking fruit, and had also spent much of his life delivering newspapers. It was unclear whether he had been involved in supported employment programmes, or whether his previous employment had been independently sourced. Since moving to the area, Brent had started work delivering newspapers, and had then joined the employment service involved with this research.

Setting

The employment service was run as part of a wider organisation providing a variety of supports to individuals with varying abilities and challenges. The programme that participants were involved in was a facilitated employment situation, where individuals with intellectual, developmental or mental health diagnoses were employed and taught skills that are required for a competitive employment situation, such as arriving at work on time, following instructions and developing skills related to completing their work. Employees were hired initially as volunteers, with a requirement that they needed to complete a set number of hours

and show they could develop the necessary skills. After this had been completed the employees would be hired as casual, paid employees for up to 12-months. Individuals were employed as labourers, completing a variety of activities such as gardening and lawn mowing, cleaning, event preparation and set up etc. Day to day work would depend on the need that day. Each employee had an opportunity to work a maximum of two days per week, however both participants in this study were working one day per week.

The employment office was located about 20-minutes' drive outside a main city. Employees who lived in the city were collected each morning by the employment van, who would meet them at a predetermined location at an agreed time. Employees would then be taken to the employment office, where they would meet with their team leader and other co-workers. They would wait at the office until it was time to go to work.

Due to health and safety restrictions, the researchers in this study could not accompany or observe employees while they were working. Therefore, behaviour observations were conducted primarily in the employment office in the mornings, where employees (both those involved and those not involved in the study) would wait in the staff room until it was time to go to work. This allowed a timeframe of between 10-40 minutes each morning where observations of social interactions between participants and their co-workers could be completed. At the end of this waiting time, employees, including the participants of this study, would go off in the work van to their job for the day.

Materials and equipment

Participants' anxiety was assessed using self-report measures: i) using an anxiety measure (DASS-21), ii) a semi structured interview, and iii) a self-reported level of anxiety on a numerical scale.

The DASS-21 is the shortened version of the Depression Anxiety Stress Scales (DASS) created by Lovibond and Lovibond (1995). It is designed to measure anxiety, stress and depression. The DASS-21 is thought to have similar psychometric properties to its' original, the DASS, which is considered to have good reliability and validity, but is shorter and more time efficient (Nah, Brewer, Young, & Flower, 2018). It has also been used in a limited number of studies to assess comorbid conditions such as anxiety in adults who have ASD and is thought to be a valuable rapid screening tool to assess anxiety in this population (Nah et al., 2018).

The semi-structured interview was created by the researchers and was intended to gain additional information from participants regarding specific things they may be feeling anxious about prior to starting work. A copy of the semi-structured interview questions can be found in Appendix C.

The self-reported numerical scale asked participants to rate their anxiety from 1 (not anxious at all) to 5 (very, very anxious). This was intended to gain a basic understanding of participants' anxiety levels and was a straightforward way to compare anxiety levels at each assessment.

During behaviour observations of both participants, the timer on researchers' personal cell phones was used to monitor the time in each observation session. Behaviour observation was broken down into 2-minute intervals for ease of ensuring interobserver agreement and monitoring behaviours but was reported as a whole session in the results.

The researchers' personal cell phones were also used to film all videos used in this study. Once filmed, videos were edited using freely available software on researchers' laptops to meet the needs of each video that was used. In total, there were 4 videos created and used – one VP video for Brent, and three VM videos which were provided to both

participants. Each video was transferred using USB or Bluetooth to the participants' preferred personal device – Brent preferred videos to be transferred to his cell phone, while Shane preferred videos to be on his laptop.

The priming video showed two parts of participants' first morning of work. The arrival at the pick-up location where participants would be collected for work by the employment programme's van and driver was the first aspect of the VP video. Approaching and getting into the van was the other aspect included in this video. The video identified the driver and showed that there would be some co-workers who were also travelling in the van, although co-workers' faces were not shown for privacy reasons.

Modelling videos were also created by the researchers, with researchers acting as models in all videos. Specific social behaviours were identified through behaviours taught in similar, prior research and also in collaboration with the employment agency. These involved social skills relevant to the situation of traveling to work in a van or waiting with other co-workers to start work.

Ethics approval

Ethics approval for this research was obtained from the School of Psychology Research Committee at the University of Waikato (HREC(Health)2019#44) prior to beginning this research.

Independent variables

There were two independent variables: 1. Video priming, and 2. Video modelling.

Video priming (VP)

The participant who was randomly selected to receive VP, Brent, was given a copy of this video and was assisted where needed to transfer this information to his preferred device. He watched the video twice with the researcher at this time. Brent was then asked to view the video on his device on the days leading up to his first day at work.

Video Priming (VP) allows viewers to preview an upcoming, unknown situation through watching a video (Hume et al., 2014). This provides an alternative to experiencing the situation for the first time when entering it. VP allows preparation of what might happen or what might be expected before having to experience a situation (Bainbridge & Myles, 1999). This study used VP to show new employees the situation of being picked by the work van, along with co-workers, and taken to work.

Video modelling (VM)

Both participants were given a copy of three VM video's, one at a time, and were assisted where needed to transfer this information to their device. Videos were provided at least 4 days prior to attending work that week. Participants were then asked to view the video daily on their own device during the intervention phases of data collection.

Video Modelling involves the learner watching a video of themselves or another person performing a particular behaviour accurately, followed by an opportunity to practise this behaviour (Walton & Ingersoll, 2013). VM allows for consistency in the performance of the modelled behaviour (Avcioglu, 2013) as well as a reduction of environmental distractions such as noise and other people (McCoy & Hermansen, 2007). This study used VM to model social behaviours, with participants utilising the time before starting work in the morning as the opportunity to practise these behaviours with co-workers.

Dependent variables

There were two dependent variables: 1. Anxiety, and 2. Social Skills.

Anxiety

Anxiety is a multi-component construct involving affective states, such as subjective fear; cognitions, e.g. thoughts and beliefs; behavioural patterns, like avoidance of certain environments or situations; and psychological arousal, such as increased heart rate (Moskowitz et al., 2017). The DSM-5 considers anxiety as excessive worry or apprehensive expectation regarding a number of events and activities, which is difficult to control and causes clinically significant distress or impairment in social, occupational or other important areas of functioning (American Psychiatric Association, 2013). In addition to thoughts and worry, anxiety can also have a physical response, including restlessness or feelings of being on edge, being easily fatigued and experiencing sleep disturbances, difficulty concentrating, irritability and muscle tension (American Psychiatric Association, 2013).

Social Skills

Repeated measures of targeted social behaviours (event recording of specific behaviours) were taken throughout the study, during baseline and intervention phases of the multiple probe design.

Social behaviours that were measured during observations included:

Greeting others

Seen through the participant saying ‘hi’, ‘hello’, ‘good morning’ or similar, or waving a hand with their palm facing the person when someone new enters the room and/or walks

past them within 2 metres. Or responding as described when someone greets them with the same behaviours.

A missed opportunity to greet is considered when the participant does not complete the above greeting behaviour if someone walks into the room and/or within 2 meters from them. It is not considered a missed opportunity if the participant has already been observed greeting this person previously in the same observation session.

Introducing oneself

Saying ‘My name is [name]’ or ‘I’m [name]’ when speaking with another person.

A missed opportunity to introduce oneself would occur if someone asks the participant ‘who are you?’ or ‘what’s your name?’

Asking about others’ interests

Speaking with another person about a particular topic using questions starting with ‘who’, ‘what’, ‘where’, ‘when’, or ‘how’ and that require a response from the listener. Questions are related to interests if the listeners answer provides information about the persons likes and/or dislikes.

Initiating conversation (unrelated to other categories)

Participant starts a conversation with someone when there has been a lapse in conversation for 30 seconds or longer, or the conversation topic was different from the previous topic.

A missed opportunity would occur if no initiation or conversation between the participant and another person within a 2-minute observation period.

Responding to others when spoken to

Vocal response in relation to conversation within a group setting or when conversation is directed toward the participant by another person.

A missed opportunity would occur when there has been no response from the participant in a group conversation during the 2-minute observation timeframe, or if the participant does not respond within 30 seconds of conversation being directed toward them.

Asking 'how are you?'

Participants ask 'how are you?' or 'how have you been?' to another person.

Asking for help with a task

Participant would ask another person to assist/help them with a task, enquire about the location of something or asking for an answer to unknown information. The response from another person, either verbal or physical, would provide the participant with the information they do not currently have and will relate to the initial question.

Experimental Design

There were two aspects to the experimental design of this research. We included a mixed-methods, between groups design for the anxiety aspect, incorporating a within subject, multiple probe design for the social skills aspect, with pre and post measures.

Participants were randomly assigned to either the VM + VP or VM only group.

The VM + VP participant was provided with a VP video in the week leading up to his first day at work. Both participants completed anxiety assessments approximately 1 week before starting work, regardless of whether they received the VP intervention or not, and

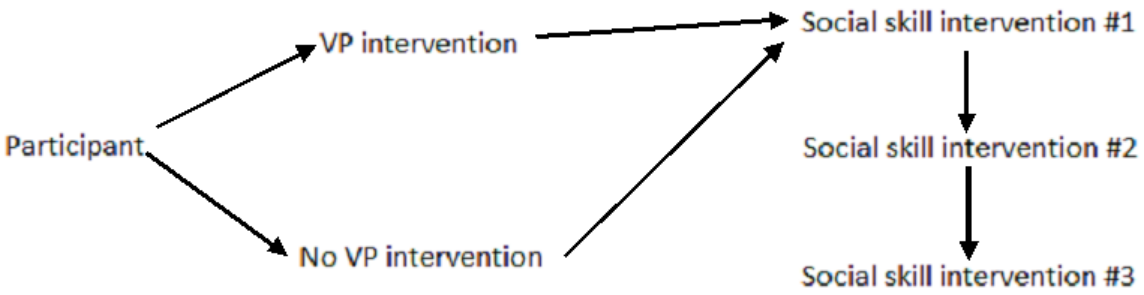
again on the morning of starting work. For the participant who did receive VP, he completed the initial anxiety assessment prior to receiving the VP video.

Participants in both groups were provided with copies of the VM videos after baseline data had been collected for each behaviour.

Figure 1 shows how participants were assigned to the VP and VM interventions in this study.

Figure 1

How participants were assigned to interventions



Video Priming for Anxiety

This was a between subjects' design intervention, so that comparison could be made between the anxiety levels of the participant that did receive the VP intervention, and the participant who did not. A similar comparison was made by Chalfant and colleagues (2007) who compared their CBT intervention aimed at reducing anxiety in children with ASD with a control group who were waitlisted for the treatment post-study. However, because the first

day of work is something that cannot be replicated or repeated, we were unable to have a waitlisted control group like Chalfant and colleagues (2007) study, and could not provide VP to reduce anxiety for the participant who did not receive the intervention initially. By allowing comparison of intervention with no intervention, this provided more information regarding possible effectiveness of the VP, so that researchers are able to gain a better understanding of whether the VP may have impacted participants' anxiety.

Video Modelling for Social Skills

This aspect of the research involved a within subject multiple probe design. All participants received the VM interventions one at a time and were monitored for behaviour changes as a result.

The VM part of the research was conducted as a within subject design so that all participants were able to receive the same VM intervention, with an aim to increase social behaviours for all involved. As social skills may be an important factor in employment success, it did not seem ethical or fair to provide only one participant with the intervention, as with the VP aspect of the research, when there was a suitable alternative that allowed us to provide VM for both participants. Because of this, we chose not to use the same between groups design for the VM intervention that was used in the VP intervention.

The multiple probe design aspect of this intervention meant that intermittent probes to document the participants performance could be taken, making data collection simpler (Byiers et al., 2012). This method was similar to that of Walsh, Holloway and Lydon (2017) who used a multiple probe design with pre and post measures to assess employment related social skill outcomes for adults with ASD and found this to be a suitable way to measure the effectiveness of their intervention.

Procedures

Anxiety procedure

Both participants had their anxiety levels measured at two stages. One of the researchers met with participants approximately a week before their first day of work to complete the initial anxiety assessment and, where applicable, provide the intervention. In the meeting the week before starting work, the researcher completed the initial semi-structured interview for the first anxiety assessment (see Appendix C) with participants and asked them to score their level of anxiety on a numerical scale between 1 (not at all anxious) and 5 (very, very anxious). Participants were then asked to complete the DASS-21, with the researcher asking the questions from this. The participant who received the VP was then provided with the video and watched this through twice with the researcher. The participant who received the VP intervention was asked to watch this daily in the lead up to starting work.

The same researcher met with participants again on the morning of starting work to assess their anxiety for a second time. This was completed for all participants, irrespective of whether they had received the VP intervention or not. Participants were asked the questions from the semi-structured interview for the second anxiety assessment (see Appendix C). Again, participants were asked to provide a number between 1 (not at all anxious) and 5 (very, very anxious) of the level of anxiety relating to starting work that they were experiencing at that time. They were then asked to complete the DASS-21 a second time. Results of the two anxiety assessments were then compared to see whether each participants anxiety had changed between assessments.

Social Skills procedure

All participants in the study received social skills training in the form of video modelling.

Social behaviours were assessed through observations by the researchers. A copy of the behaviour observation data collection form can be found in Appendix D.

Observations were conducted by one, or both, of the researchers during baseline and intervention phases. A minimum of two baseline observations were completed for each participant before the first VM intervention was provided. A single observation was conducted to assess the impact of this video, before the second VM video was provided. Again, a single observation was completed before the third VM video was provided. Due to time restraints, a maintenance observation session was unable to be completed.

During baseline, both participants were observed for occasions of greeting others, introducing self, asking about others' interests, initiation conversation, responding to others, asking 'how are you' and asking for help. Occurrences of each of these social behaviours, as well as missed opportunities to engage in these behaviours, directed the researchers' decisions for which social behaviours would receive interventions.

Because both participants were considered to require the same intervention videos, these were provided in the same order for both participants. Interventions can be seen in Table 1.

Table 1

Social skill interventions for both participants

Intervention 1	Intervention 2	Intervention 3
Asking about others' Interests	Greeting others	Asking 'how are you?'

Results

Video Priming results

The aim for this aspect of the research was to use Video Priming (VP) to provide information about participants' new work environment in order to assess whether VP would help to reduce anxiety associated with starting work.

The participant who received the VP intervention showed a reduction in anxiety, while the participant who did not receive VP showed an increase in anxiety. This suggests that VP may have provided a reduction in anxiety for the participant who received this intervention.

Anxiety levels for participants were measured using the DASS-21, semi-structured interview questions, and through self-reported anxiety levels on a numerical scale.

DASS-21

Table 2 shows the DASS-21 results for both participants for each of the depression, anxiety and stress subscales. Table 3 shows how scores for each aspect of the DASS should be interpreted.

Table 2

DASS-21 scores for both participants

Participant	VP given	First DASS-21 score			Second DASS-21 score			Increase or decrease		
		D	A	S	D	A	S	D	A	S
Brent	Yes	0	2	4	0	0	2	N/C	Decrease	Decrease
Shane	No	4	0	4	2	2	2	Decrease	Increase	Decrease

Note. D = Depression, A = Anxiety, S = Stress. N/C = no change

Table 3

Interpretation of DASS scores

Meaning	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Note. Table adapted from https://www.psytoolkit.org/survey-library/depression-anxiety-stress-dass.html. Copyright (2018) by PsyToolkit.

Results, as seen in Tables 2 and 3, show that the DASS scores for depression, anxiety and stress are within normal levels for both Brent and Shane during both DASS-21 assessments (Psychology Foundation of Australia, 2018; PsyToolkit, 2018). This indicates that neither participant had clinically significant levels of anxiety, depression or stress at the time of testing.

The results do show a slight reduction in anxiety at the second DASS-21 assessment for Brent, the participant who did receive the VP intervention, with his anxiety score dropping from 2 to 0, and his stress score dropping from 4 to 2. Shane, who did not receive the VP intervention, did show a small increase in anxiety from a score of 2 on the morning of starting work compared to the initial assessment a week prior where his score was 0.

Total DASS scores were not able to be measured, as this requires normative data. This data is available in the DASS manual (Psychology Foundation of Australia, 2018), however we did not have access to this during this research.

Semi-structured interviews

Both participants were asked a series of questions as part of the semi-structured interview. A copy of the semi-structured interview can be found in Appendix C. Interview responses to from both participants are as follows:

Brent

In his initial interview, approximately 1 week prior to starting work, Brent indicated that he felt nervous and excited to start work and reported feeling 'keen to get started'. He informed the researcher that he was anxious as he did not know where he would be going for work and did not know where to go on his first day.

When asked how being anxious made him feel, Brent reported that it made him cross and angry. His tools for reducing anxiety were to go for a walk, which he said helped him to feel better.

During the second interview with Brent, on the morning of starting work, he reported that watching the priming video the researchers provided to him did help him to feel less anxious. He indicated that this was because he now knew where to get picked up from for work. He also reported wanting to 'just get started' at work and was 'ready to go'.

Brent's responses indicated that he was anxious about not knowing where he would be working or where to go on the morning of his first . However, through the VP intervention, he was provided with information about where to go to meet the van on the morning of starting work. Brent verbalised to the researchers that the video he had watched

had helped relieve some of the anxiety he was feeling about starting work because it showed him where to go.

Shane

Shane did not report feeling anxious about starting work during his initial interview. He advised the researcher that he could not think of anything specific to report feeling anxious or nervous about in relation to starting work.

When asked how being anxious made him feel, Shane reported that anxiety made him tense in his body, his mind became busy and his heart would race.

When completing the second anxiety assessment on the morning of starting work, Shane was again asked whether he felt anxious. He reported feeling nervous and anxious now and indicated that this was related to uncertainty of how well he would do at work, despite thinking that it was unlikely to be too difficult. He also reported that he wasn't sure what to expect, who his supervisor or workmates would be and that this was also contributing to his feelings of anxiety.

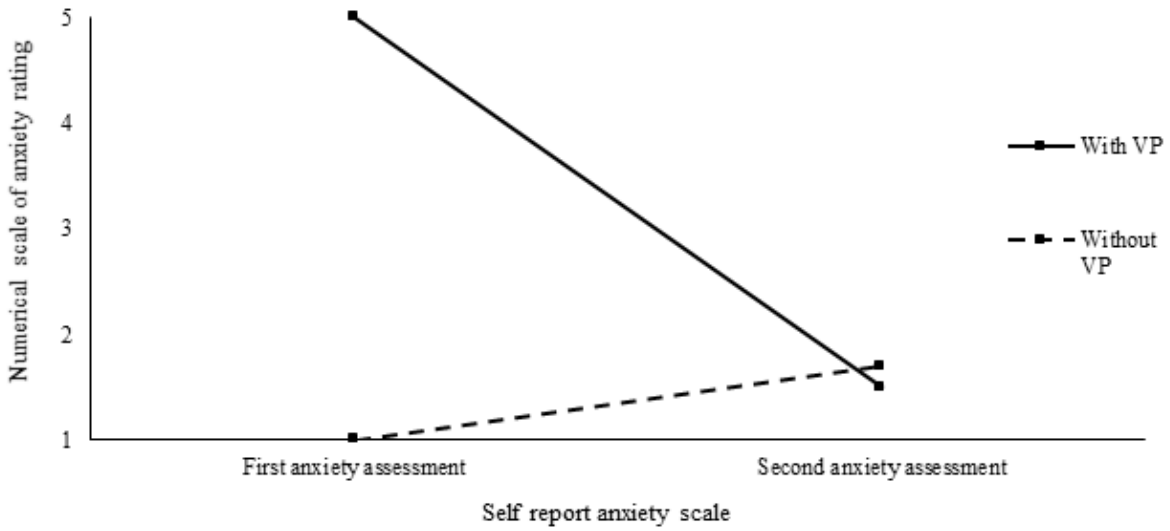
The responses from Shane indicated that he was feeling more anxious on the morning of starting work than he was the previous meeting. He provided explanations of things that he was uncertain about which were causing some feelings of anxiety. This was something he had not done during the initial anxiety assessment, suggesting an increase in anxiety on his first day of work.

Numerical scale

Both participants were asked to rate their level of anxiety on a numerical scale at the time of the first anxiety assessment, and again on the morning of starting work during the second anxiety assessment.

Figure 2 shows the comparison of self-reported anxiety levels for Shane, who did not receive VP intervention (without VP), compared to Brent, who did receive VP (with VP). Shane's anxiety was initially low but increased slightly on the morning he was starting work. However, Brent's anxiety was initially very high, but decreased significantly at the second assessment on the morning he started work. These results suggest that VP may have played a role in reducing feelings of anxiety for individuals starting work. In addition, Brent was asked whether the VP video impacted his anxiety about starting work. He indicated that it did help to reduce his anxiety about starting work.

Figure 2. Comparison of self-reported anxiety for those with VP and those without VP



Summary

Overall, the combined results from the DASS-21, semi-structured interviews and self-reported anxiety on a numerical scale provide information about anxiety levels for both participants. Results show a reduction in anxiety for Brent, who did receive the VP

intervention, and an increase in anxiety for Shane, who did not receive VP. These results suggest that VP may improve experiences of anxiety in the context of the first day of work.

Video Modelling results

The aim for the Video Modelling (VM) aspect of the research was to teach social skills via VM to adults who have ASD or ID and who were starting employment in order to increase their social behaviours with co-workers and others while waiting to start work in the morning.

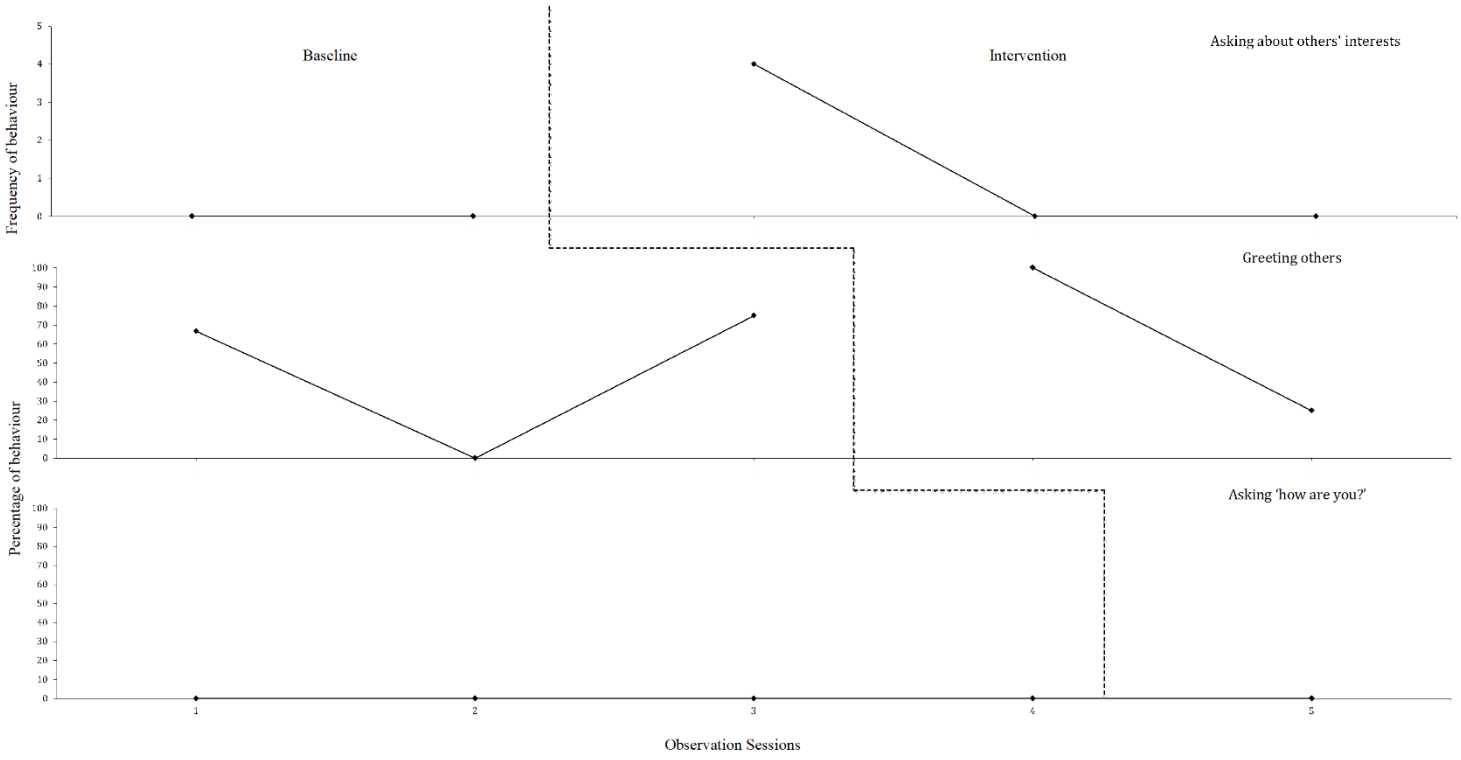
There were mixed results from this intervention. Results showed some improvement in target social behaviours in the observations immediately after the provision of the VM interventions for both participants. However, results did not appear to be maintained past the initial observation for each modelling video that was provided, with behaviours returning to baseline levels in most instances at the following observation.

We used a within subject multiple probe design for the VM interventions.

Brent

Figure 3 shows observation data for Brent across baseline and intervention for the social skills training he received, which included ‘Asking about others’ interests,’ ‘Greeting others,’ and ‘Asking ‘how are you?’’. Table 4 and Table 5 provide additional information regarding opportunities to engage in ‘Greeting others,’ and ‘Asking ‘how are you?’’ behaviours.

Figure 3. *Baseline and Intervention social behaviour observations for Brent*



Asking about others' interests

During baseline observations for the first behaviour, 'Asking about others' interests,' Brent showed no occurrences of this behaviour. This is shown in Figure 3. Once he received the VM intervention for this behaviour, the rates of 'Asking about others' interests' increased during the observation session immediately after he had received the video. However, during observations 4 and 5 this was not maintained and responding returned to baseline levels.

Greeting others

The second modelling video that Brent received related to the behaviour of 'Greeting others.' During baseline observations Brent showed mixed rates of greeting others. Figure 3 shows the percentage of responding, which varied between 0% and 70% during baseline, with an average greeting response rate of 46.7%. Table 4 shows the number of opportunities

Brent had to greet people, which was between 3 and 8 during each of the baseline observation sessions for this behaviour. After the intervention, responses varied between 20-100%, with an average of 60% of the opportunities to greet resulting in Brent greeting others. During intervention phases Brent had between 4 and 12 opportunities to greet. While there was an overall increase in occurrences of this behaviour, results in Figure 3 shows that occurrences of 'Greeting others' was higher (100%) during the initial observation after Brent received the modelling video for this behaviour and reduced significantly (20%) in the final observation. It is possible that this behaviour was also returning to baseline levels, as did the previous behaviour of 'Asking about others' interests.'

Table 4

Opportunities for Brent to greet others during behaviour observations

Sessions	Opportunities to greet
Baseline 1	6
Baseline 2	3
Baseline 3	8
Intervention 2 phase	4
Intervention 3 phase	12

Asking 'how are you?'

Figure 3 shows that the level of responding during the third behaviour, asking 'how are you?' remained at 0% during the baseline and intervention observations, despite a number

of opportunities to ask being observed by the researchers. Opportunities for Brent to ask ‘how are you?’ are shown in Table 5 and indicates that Brent had between 3 and 12 opportunities to ask others ‘how are you?’ during each observation session.

Table 5

Opportunities for Brent to ask ‘How are you?’ during behaviour observations

Sessions	Opportunities to greet
Baseline 1	6
Baseline 2	3
Baseline 3	8
Baseline 4	4
Intervention 3 phase	12

Overall results for Brent

Overall, there was some initial improvement in asking about others’ interests and greeting others. However, occurrences of both behaviours were not maintained and appeared to return to baseline levels. There was no change in asking ‘how are you?’ for Brent during any of the observation sessions which remained at no occurrences during all observation sessions.

Shane

Observation data for Shane can be seen in Figure 4, with additional information in Table 6.

Figure 4. *Baseline and Intervention social behaviour observations for Shane*

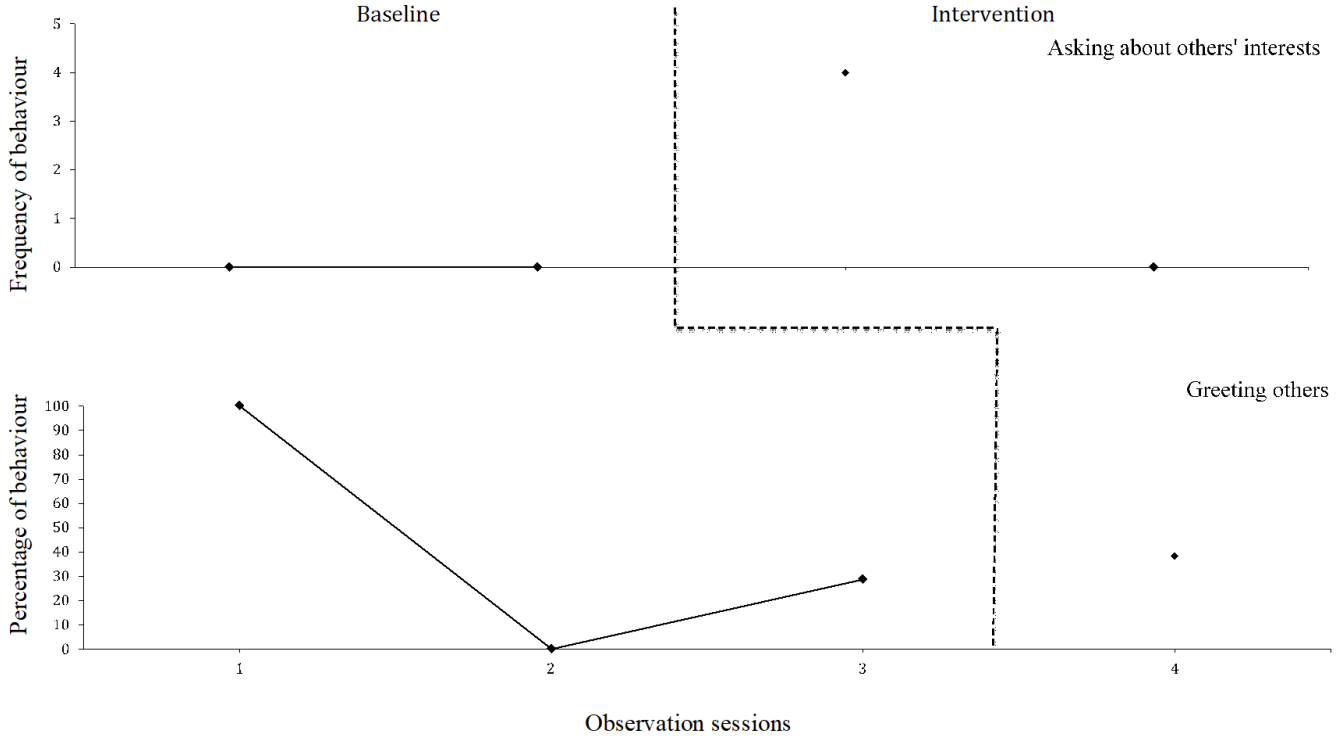


Figure 4 shows observation data for Shane across baseline and intervention for the social skills training he received, which included 'Asking about others' interests,' and 'Greeting others.' Table 6 provides additional information regarding opportunities that the researchers observed where Shane could engage in 'Greeting others' behaviours.

Asking about others' interests

Shane did not engage in behaviours relating to 'Asking about others' interest during baseline observations for this behaviour, as shown in Figure 4. In the initial observation during intervention data collection, this behaviour increased, however this returned to baseline levels during the final observation.

Greeting others

Figure 4 shows the percentage of occurrences of 'Greeting others' during observations of this behaviour. Shane showed mixed rates of greeting others during baseline, ranging from none, through to 100% of opportunities. Table 6 shows that Shane had between 3 and 7 opportunities to greet people during the baseline data collection phase. During the intervention observation, Shane had 13 opportunities to greet others, but only engaged in 40% of these opportunities. These results show that the VM intervention for this behaviour did not increase Shane's occurrences of 'greeting others.'

Table 6

Opportunities for Shane to greet others during behaviour observations

Sessions	Opportunities to greet
Baseline 1	3
Baseline 2	2
Baseline 3	7
Intervention	13

Overall results for Shane

Overall, there was some improvement for Shane in the behaviour of ‘asking about others’ interests’ during intervention, but no improvement in ‘greeting others.’

Baseline observation data was also collected for Shane for the third behaviour, ‘Asking ‘how are you?’’ However, due to time restraints and a number of personal circumstances during the observation period which meant Shane was unable to attend work as regularly as expected, we were unable to provide the intervention or complete post-intervention observations for the final behaviour, ‘asking ‘how are you?’’ Because of this, the data we collected for ‘asking ‘how are you?’’ was not included in the results.

Summary

The results of the VM intervention showed some increase in behaviours of ‘Asking about others’ interests’ and ‘greeting others’ for both participants. However, while both participants showed increases in responding in these social behaviours immediately after receiving the VM intervention for the particular behaviour, responses returned to baseline, or near baseline, in all situations at the following observation. There was one instance where there was no increase in responding, which occurred during observations of Brent, whose responses of ‘Asking ‘how are you?’’ did not change as a result of the intervention.

Overall, results show mixed outcomes for the VM intervention to increase target social behaviours.

Inter-observer agreement

Interobserver agreement was obtained for 30% of the behaviour observation sessions across baseline and intervention sessions. Inter-observer agreement was 100% for the sessions that both researchers observed together.

Discussion

This study had two aims:

1) To use Video Priming to provide information about the new work environment to those with ASD and ID, with the aim to reduce anxiety associated with starting work.

2) To teach social skills via Video Modelling to adults who have ASD or ID and are starting employment, with an intention that the targeted social behaviours will increase as a result.

The participant who received Video Priming (VP) showed a reduction in anxiety levels between the first and second anxiety measures. He also reported that the video he was provided was useful in helping him feel less anxious. The participant who did not receive VP showed a slight increase in anxiety on the morning of starting work and reported more anxiety on the morning of starting work compared to the initial assessment. This suggests that VP to show the new scenario of being picked up for work by the van and driver may be effective to reduce anxiety when starting new employment.

Both participants showed some increase in observed social behaviours after watching the Video Modelling (VM) videos which modelled examples of these social behaviours. However, in most cases this increase was not maintained after the initial observation. Further research to consider the effectiveness of this method to teach social skills in an employment environment would be beneficial in order to consider the effectiveness of this intervention.

Overall considerations

Both VM and VP are video-based interventions (VBI's). VBI's are reported in literature to require minimal resources to create and show the videos, and be quick to

implement (Rayner et al., 2009; Zanolli et al., 1996). In this instance, both the VM and VP interventions were easily videoed using researchers' personal cell phones and edited using their personal laptops. The creation of the videos did not require specific knowledge of video editing. Once videos were made, they were also quickly and easily transferred to participants chosen devices, in this case a cell phone and laptop, and were available for participants to view as soon as they were transferred. This made the process simple for both the researchers and participants. Videos could also have been provided to participants by another party if needed. This supports the suggestion that VBI's can be easily implemented by almost anyone, including professionals and parents (Zanolli et al., 1996). While research regarding the use of VBI's in employment settings is limited (Wilczynski et al., 2013) this study supports the promising results of previous studies in the use of VBI's in this type of setting.

One limitation of the use of VBI's in this setting was ensuring the treatment integrity of the interventions. It was difficult to ensure participants are actually watching the video. When providing the videos to participants for both the VP and VM interventions, the researchers ensured that participants watched the video at least once, but usually twice, during the meeting. However, it was uncertain whether participants watched the videos in their own time, which may have impacted results for both interventions. Mixed responses, both affirmative and negative, were received from both participants when asked if they had watched a particular video. One way to increase certainty around ensuring participants were watching the video would be to send a text message, or similar, to participants each day at a prearranged time, as a reminder to watch the video(s). Another alternative would be to organise more regular meetings with participants, in between behaviour observations, to watch the video together. While this would reduce the time efficiency of the VBI, this could increase the treatment integrity and ensure participants are receiving the desired intervention.

When this research was first being considered, the employment programme in which we were working alongside was much larger, with new employees being hired on a fortnightly basis. The programme had a large number of employees with intellectual and/or mental health disabilities were employed in a variety of roles, with employment being primarily through one particular factory. Due to the contract between this factory and the employment programme being discontinued during the year, something that was outside of the programmes and researchers' control, the pool of potential participants and number of opportunities for data collection was significantly reduced. Ideally, the research would have been conducted with a larger number of participants, however as this was no longer possible, a decision was made to continue with data collection in order to gain some understanding of whether VP to reduce anxiety and VM to teach social skills were viable interventions in this environment.

Strengths of the video priming intervention

Social validity was considered as part of the VP intervention. The participant who received the VP, Brent, reported to researchers that the video helped him to feel less anxious about work. The concerns he initially had about starting work included not knowing where to go for pick up, something which he reported prior to knowing what was involved in the VP intervention. This concern was similarly expressed by Shane, who did not receive the intervention. He verbalised to researchers on the morning of starting work that his anxiety and nervousness that morning related in part due to not knowing what to expect or who he would be working with. While some of the concerns that were raised were included in the VP that was provided in this research, gaining a better understanding of what aspects of starting work new employees were anxious about, and possible inclusion of these concerns in future VP interventions, could provide additional benefit to participants in this instance.

There is limited research regarding simple, effective interventions that reduce anxiety for individuals with ASD and ID, especially when starting work. Interventions that have been regularly used to reduce anxiety often involve CBT based, group therapy options that are run over the course of several weeks (Chalfant et al., 2007; Moskowitz et al., 2017). The results of this research suggest that VP to reduce anxiety in regard to starting a new job may be an effective tool that does not require the same time commitments and cost of programmes as some other anxiety reduction interventions. VP in this instance also targets specific areas of anxiety, related to uncertainties around what to expect on the morning of work, and provides information about these. This may be more relevant to this type of situation that a long-term, CBT or similar workshop designed to treat generalised anxiety.

Limitations of the video priming intervention

While the semi-structured interview and self-reported numerical scale were easily implemented for measuring participants anxiety in this study, more robust measures of anxiety may have been more useful. Future research could consider behaviours associated with anxiety and implement behavioural observation as an additional anxiety measure. Alternatively, considering a physical assessment of anxiety, such as skin conductance or heart rate monitoring (Moskowitz et al., 2017), might also be beneficial if resources for this were available. These additional methods may provide further information regarding participants anxiety, as it is considered that many with ASD and ID can find it difficult to process and verbally express their thoughts and feeling (Mazzone, 2012).

While the DASS-21 provided useful information and was easily implemented and scored, it may not have been the most suitable measurement tool for this setting. Further research on the DASS-21 has suggested that it is not an ideal measure for ‘right now’ anxiety, and is more suitable for long-term experiences (Psychology Foundation of Australia, 2018).

Some possible alternative options that could have been used to measure participants current anxiety instead were the Profile of Mood States (POMS), the Multiple Affect Adjective Checklist (MAACL) (Psychology Foundation of Australia, 2018) or the State-Trait Anxiety Inventory. Methods that assess anxiety in the moment, not overall co-morbid anxiety, would likely be more suitable.

A limitation of VP overall is the difficulty in replicating the intervention for consistency. The aim of VP is to prepare an individual for a new, upcoming environment or activity (Cuvo et al., 2010; Schreibman et al., 2000). However, once the novel environment has been experienced, it is impossible to replicate the findings again for that person in the setting of starting a new job. Finding alternative new environments, either in a different type of setting or by introducing them to new work environments regularly, could further measure the effectiveness of VP to reduce anxiety in new situations. In terms of the first day of work, findings could be expanded using a much larger population in order gain greater experimental control and further understand whether VP helps to reduce anxiety related to the first day of a new job.

Strengths of the video modelling intervention

One strength of the use of VM to teach social skills is that the desired behaviours can be taught systematically. We implemented a video showing one behaviour at a time, with one or two demonstrations of the behaviour included as part of the video. This meant the videos were short, as recommended by Cannella-Malone and Tullis (2010) who suggested videos should be under 5 minutes in length for maximum effectiveness. Participants received one video per week, at least 4 days prior to work that day. This allowed them to focus on learning, and then practising at work, a single behaviour at a time. They did not need to learn and practise multiple different behaviours simultaneously. It was decided that learning one

behaviour at a time was a simpler way for participants to pick up these behaviours, with results showing increases in the target behaviours immediately after participants received the intervention in most cases.

In addition, the behaviours that are to be taught can be flexible based on individual need. As a result of reviewing research and consulting with the employment programme on their perceived needs, the chosen behaviours were largely greeting and conversation related. However, depending on the requirements of the individual and the setting, VM could be used for a much larger variety of social behaviours as needed by the individual or programme they are involved in, allowing for flexibility and individualised.

Limitations of the video modelling intervention

Data collection during baseline and intervention behaviour observations in this study were not as long or in depth as would have been ideal. As a result of time constraints, with a limited timeframe available to complete data collection, as well as participants only working one day a week, observations could not be completed as often as would have been preferred. This also limited opportunities for participants to learn and practise the target behaviours. Ideally, we would have collected much more observation data at baseline and during interventions in order to provide a more thorough intervention for participants. In addition, we would also have liked to implement a maintenance phase at the end of the behaviour observation to further understand how the participants had been impacted as a result of the intervention. Future research could consider this and ensure that they have a more suitable amount of time to implement an intervention and collect substantial observation data.

Implementing social skills training in a workshop or laboratory setting would have been a simpler option and would have provided more opportunities for participants to learn these behaviours. Workshop environments tend to have consistent hours and long term

stability (Blick et al., 2016) something which this study did not have as participants were only working one day a week, with additional difficulties such as work being unavailable for participants on some weeks during the observation period. Workshops could be run more frequently than participants were able to work during our data collection phase and would provide further certainty of participants following interventions. However, by implementing social skills interventions in a workshop or laboratory setting, behaviours may not have generalised to the participants actual work environment and may not have provided a realistic setting for learning these skills.

Interventions were implemented based on baseline observation data, which showed behaviours that were either not being observed consistently or at all. However, one participant, Shane, questioned why he received the 'greeting' intervention and expressed that he did not think he needed this as he already knew how to greet people. It is possible that this impacted his results, as these did not increase as a result of the intervention. This provided some insight to the importance that the social behaviours which are being taught are accepted by the participants. One possible way to ensure that participants 'buy in' to the learning would be to include them in the decisions around which behaviours are taught at which time. Alternatively, explaining to participants why they are learning a particular behaviour might provide more certainty for participants that the intervention is ensuring they benefit from their involvement. Not only does this provide a personal perspective on learning social behaviours that are important to the individual, it also ensures that participants will see the importance in the learning they are involved in.

Participants were expected to continue watching each VM video throughout the intervention phases. This means that at intervention #1 participants were only expected to watch a single video, but at intervention 2 were expected to watch both video #1 and video #2, with the addition of video #3 at intervention 3. However, it was discovered toward the

end of the observations that it was not made clear to participants that they should continue watching all of the videos even as they received new ones. It is believed that both participants stopped watching the previous video when they received a new one. This may account for the regression that was seen for both participants where behaviours returned to baseline levels immediately after receiving a new intervention. It is possible that, had the participants been clearly asked to continue watching all videos, the increases seen immediately after most interventions may have been maintained throughout the observations. In addition to clearly explaining this to participants, one way to ensure this was done would be to provide a video at intervention 2 which contains both intervention 1 and 2 behaviours, and intervention 1, 2 and 3 behaviours when providing the third VM video.

Future research

This study has combined social skills and anxiety management, something in which links have been made in research previously, but still requires further study (Bellini, 2004; Connor et al., 2019). Because the results of this study suggested that VP may help to reduce anxiety, and VM may increase social behaviours, further research in this area would be beneficial. Having a larger sample size for both interventions and more time available to implement the VM intervention would improve the validity of this study and provide more promising results.

Conclusion

There are a number of studies supporting the use of Video Modelling to teach social skills to adults with Autism Spectrum Disorder and Intellectual Disability. The results of this study provide additional information to support this method, although results were mixed in this instance. However, there are a number of reflections which could improve the validity these findings. Considerations for further research of the use of VM in employment settings

could ensure that participants are definitely watching the VM videos on a regular basis, and that social behaviours are relevant to not only the employment setting, but also to the day to day lives of participants who are learning these behaviours.

Video Priming remains limited in its research for adults with ASD and ID in an employment setting. However, with results in this study suggesting that this method may help to reduce anxiety for individuals on their first day of work, there is scope for further research in this area to better understand the impact of VP to reduce anxiety for individuals with disabilities who are starting a new job.

Overall, the findings of this research have contributed to the growing research in the area of improving employment opportunities for adults with disabilities such as ASD and ID. This is a worthwhile area of study, with results indicating these methods provided some benefit to the participants involved.

References

Alexander, J. L., Ayres, K. M., Smith, K. A., Shepley, S. B., & Mataras, T. K. (2013). Using video modeling on an iPad to teach generalized matching on a sorting mail task to adolescents with autism. *Research in Autism Spectrum Disorders, 7*(11), 1346-1357. doi:10.1016/j.rasd.2013.07.021

Amaze. (2019). Autism and employment in Australia. Retrieved from https://www.amaze.org.au/creating-change/research/employment/

American Association on Intellectual and Developmental Disabilities. (2019). Intellectual Disability. Retrieved from http://www.aamr.org/content_100.cfm%3FnavID=21

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders : DSM-5* (5th ed.). Arlington, Va: American Psychiatric Association.

Anderson, A., Moore, D. W., Rausa, V. C., Finkelstein, S., Pearl, S., & Stevenson, M. (2016). A Systematic Review of Interventions for Adults with Autism Spectrum Disorder to Promote Employment. *Review Journal of Autism and Developmental Disorders, 4*(1), 26-38. doi:doi:10.1007/s40489-016-0094-9

Autism in Australia. (2009). Labour Force Participation. Retrieved from https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4428.0main+features72009

Avcioglu, H. (2013). Effectiveness of Video Modelling in Training Students with Intellectual Disabilities to Greet People When They Meet. *Educational Sciences: Theory and Practice, 13*(1), 466-477.

Bainbridge, N., & Myles, B. S. (1999). The Use of Priming To Introduce Toilet Training to a Child with Autism. *Focus on Autism and Other Developmental Disabilities, 14*(2), 106-109.

Baldwin, S., Costley, D., & Warren, A. (2014). Employment activities and experiences of adults with high-functioning autism and Asperger's Disorder. *Journal of Autism and Developmental Disorders, 44*(10), 2440-2449. doi:10.1007/s10803-014-2112-z

BASE. (2019). Employment Rates for People with Disabilities 2018/9. Retrieved from https://www.base-uk.org/employment-rates-people-disabilities-20189

Bejerot, S., Eriksson, J. M., & Mortberg, E. (2014). Social anxiety in adult autism spectrum disorder. *Psychiatry Research, 220*(1-2), 705-707. doi:10.1016/j.psychres.2014.08.030

Bellini, S. (2004). Social Skill Deficits and Anxiety in High-Functioning Adolescents with Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities, 19*(2), 78-86.

Bennett, K. D., Aljehany, M. S., & Altaf, E. M. (2017). Systematic Review of Video-Based Instruction Component and Parametric Analyses. *Journal of Special Education Technology, 32*(2), 80-90. doi:10.1177/0162643417690255

Blick, R. N., Litz, K. S., Thornhill, M. G., & Goreczny, A. J. (2016). Do inclusive work environments matter? Effects of community-integrated employment on quality of life for individuals with intellectual disabilities. *Research in Developmental Disabilities, 53-54*, 358-366. doi:10.1016/j.ridd.2016.02.015

Brooke, V., Brooke, A. M., Schall, C., Wehman, P., McDonough, J., Thompson, K., & Smith, J. (2018). Employees with Autism Spectrum Disorder Achieving Long-Term Employment Success: A Retrospective Review of Employment Retention and Intervention. *Research and Practice for Persons with Severe Disabilities, 43*(3), 181-193. doi:10.1177/1540796918783202

Bross, L. A., Travers, J. C., Munandar, V. D., & Morningstar, M. (2018). Video Modeling to Improve Customer Service Skills of an Employed Young Adult With Autism. *Focus on Autism and Other Developmental Disabilities*. doi:10.1177/1088357618805990

Bross, L. A., Zane, T. L., & Kellems, R. O. (2018). Customer Service Skill Development for Students With Autism Spectrum Disorder Using Video Modeling. *Career Development and Transition for Exceptional Individuals, 42*(4), 246-252. doi:10.1177/2165143418794626

Bush, K. L., & Tasse, M. J. (2017). Employment and choice-making for adults with intellectual disability, autism, and down syndrome. *Research in Developmental Disabilities, 65*, 23-34. doi:10.1016/j.ridd.2017.04.004

Cannella-Malone, H. I., & Tullis, C. A. (2010). Use of video technology to teach individuals with autism spectrum disorders: A systematic review of the literature still needed. *Evidence-Based Communication Assessment and Intervention, 4*(3), 109-112. doi:10.1080/17489539.2010.514722

Capo, L. (2001). Autism, employment, and the role of occupational therapy. *Work, 16*(3), 201-207.

Carey, S. (2016) *Communicating on the job – a lived perspective/Interviewer: T. Andrews*. Altogether Autism Journal.

Cascio, C. J., Foss-Feig, J. H., Heacock, J., Schauder, K. B., Loring, W. A., Rogers, B. P., . . . Bolton, S. (2014). Affective neural response to restricted interests in autism spectrum disorders. *Journal of Child Psychology and Psychiatry, 55*(2), 162-171. doi:10.1111/jcpp.12147

Cervantes, P. E., & Matson, J. L. (2015). Comorbid Symptomology in Adults with Autism Spectrum Disorder and Intellectual Disability. *J Autism Dev Disord, 45*(12), 3961-

3970. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/26254894. doi:10.1007/s10803-015-2553-z

Chalfant, A. M., Rapee, R., & Carroll, L. (2007). Treating anxiety disorders in children with high functioning autism spectrum disorders: a controlled trial. *Journal of Autism and Developmental Disorders, 37*(10), 1842-1857. doi:10.1007/s10803-006-0318-4

Chen, J. L., Sung, C., & Pi, S. (2015). Vocational Rehabilitation Service Patterns and Outcomes for Individuals with Autism of Different Ages. *Journal of Autism and Developmental Disorders, 45*(9), 3015-3029. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/25982310. doi:10.1007/s10803-015-2465-y

Cheng, C., Oakman, J., Bigby, C., Fossey, E., Cavanagh, J., Meacham, H., & Bartram, T. (2017). What constitutes effective support in obtaining and maintaining employment for individuals with intellectual disability? A scoping review. *Journal of Intellectual & Developmental Disability, 43*(3), 317-327. doi:10.3109/13668250.2017.1327040

Chiang, H. M., Cheung, Y. K., Li, H., & Tsai, L. Y. (2013). Factors associated with participation in employment for high school leavers with autism. *Journal of Autism and Developmental Disorders, 43*(8), 1832-1842. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23224594. doi:10.1007/s10803-012-1734-2

Collins, J. C., & Collet-Klingenberg, L. (2018). Portable electronic assistive technology to improve vocational task completion in young adults with an intellectual disability: A review of the literature. *Journal of Intellectual Disabilities, 22*(3), 213-232. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28125942. doi:10.1177/1744629516689336

Connor, A., Sung, C., Strain, A., Zeng, S., & Fabrizi, S. (2019). Building Skills, Confidence, and Wellness: Psychosocial Effects of Soft Skills Training for Young Adults with

Autism. *Journal of Autism and Developmental Disorders*. doi:10.1007/s10803-019-03962-w

Cotugno, A. J. (2009). Social competence and social skills training and intervention for children with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders, 39*(9), 1268-1277. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/19365716. doi:10.1007/s10803-009-0741-4

Craven, J. (2017). Appreciation and integration in the workforce. In M. A. Gill (Ed.). Altogether Autism, https://www.altogetherautism.org.nz/appreciation-and-integration-in-the-workforce/.

Cuvo, A. J., Godard, A., Huckfeldt, R., & DeMattei, R. (2010). Training children with autism spectrum disorders to be compliant with an oral assessment. *Research in Autism Spectrum Disorders, 4*(4), 681-696. doi:10.1016/j.rasd.2010.01.007

DiGennaro Reed, F. D., Hyman, S. R., & Hirst, J. M. (2011). Applications of technology to teach social skills to children with autism. *Research in Autism Spectrum Disorders, 5*(3), 1003-1010. doi:10.1016/j.rasd.2011.01.022

Dotson, W. H., Richman, D. M., Abby, L., Thompson, S., & Plotner, A. (2013). Teaching skills related to self-employment to adults with developmental disabilities: an analog analysis. *Research in Developmental Disabilities, 34*(8), 2336-2350. doi:10.1016/j.ridd.2013.04.009

Dow, N. (2019). I'm a high-functioning autistic and I need a job. Retrieved from https://www.stuff.co.nz/national/113251207/im-a-highfunctioning-autistic-and-i-need-a-job

Dreaver, J., Thompson, C., Girdler, S., Adolfsson, M., Black, M. H., & Falkmer, M. (2019). Success Factors Enabling Employment for Adults on the Autism Spectrum from Employers' Perspective. *Journal of Autism and Developmental Disorders*. Retrieved

from https://www.ncbi.nlm.nih.gov/pubmed/30771130. doi:10.1007/s10803-019-03923-3

English, D. L., Gounden, S., Dagher, R. E., Chan, S. F., Furlonger, B. E., Anderson, A., & Moore, D. W. (2017). Effects of video modeling with video feedback on vocational skills of adults with autism spectrum disorder. *Developmental Neurorehabilitation, 20*(8), 511-524. doi:10.1080/17518423.2017.1282051

Eussen, M. L. J. M., Gool, A. R. V., Verheij, F., Nijs, P. F. D., Verhulst, F. C., & Greaves-Lord, K. (2012). The association of quality of social relations, symptom severity and intelligence with anxiety in children with autism spectrum disorders. *Autism, 17*(6), 723-735.

Ezell, J., Hogan, A., Fairchild, A., Hills, K., Klusek, J., Abbeduto, L., & Roberts, J. (2019). Prevalence and Predictors of Anxiety Disorders in Adolescent and Adult Males with Autism Spectrum Disorder and Fragile X Syndrome. *Journal of Autism and Developmental Disorders, 49*(3), 1131-1141. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/30430320. doi:10.1007/s10803-018-3804-6

Factor, R. S., Ryan, S. M., Farley, J. P., Ollendick, T. H., & Scarpa, A. (2017). Does the Presence of Anxiety and ADHD Symptoms Add to Social Impairment in Children with Autism Spectrum Disorder? *J Autism Dev Disord, 47*(4), 1122-1134. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28132125. doi:10.1007/s10803-016-3025-9

Gal, E., Landes, E., & Katz, N. (2015). Work performance skills in adults with and without high functioning autism spectrum disorders (HFASD). *Research in Autism Spectrum Disorders, 10*, 71-77. doi:10.1016/j.rasd.2014.10.011

Gardner, S. J., & Wolfe, P. S. (2018). Results of a Video Prompting Intervention Package Impacting Dishwashing Skill Acquisition for Adolescents With Autism. *Journal of Special Education Technology, 34*(3), 147-161. doi:10.1177/0162643418802666

Gengoux, G. W. (2014). Priming for Social Activities. *Journal of Positive Behavior Interventions, 17*(3), 181-192. doi:10.1177/1098300714561862

Gentile, J., & Gillig, P. (2012). *Psychiatry of intellectual disability : A practical manual.* Hoboken: John Wiley & Sons.

Gilson, C. B., & Carter, E. W. (2016). Promoting Social Interactions and Job Independence for College Students with Autism or Intellectual Disability: A Pilot Study. *Journal of Autism and Developmental Disorders, 46*(11), 3583-3596. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/27573857. doi:10.1007/s10803-016-2894-2

Grob, C. M., Lerman, D. C., Langlinais, C. A., & Villante, N. K. (2019). Assessing and teaching job-related social skills to adults with autism spectrum disorder. *Journal of Applied Behavior Analysis, 52*(1), 150-172. doi:10.1002/jaba.503

Halim, A. T., Richdale, A. L., & Uljarević, M. (2018). Exploring the nature of anxiety in young adults on the autism spectrum: A qualitative study. *Research in Autism Spectrum Disorders, 55,* 25-37. doi:10.1016/j.rasd.2018.07.006

Halle, S., Ninness, C., Ninness, S., & Lawson, D. (2016). Teaching Social Skills to Students with Autism: A Video Modeling Social Stories Approach. *Behavior and Social Issues, 25*(1), 42-54. doi:10.5210/bsi.v.25i0.6186

Hancock, J. (2018). Autism and Anxiety. *TLN Journal, 25*(2), 30-35.

Hassiotis, A., Serfaty, M., Azam, K., Strydom, A., Blizard, R., Romeo, R., . . . King, M. (2013). Manualised Individual Cognitive Behavioural Therapy for mood disorders in people with mild to moderate intellectual disability: a feasibility randomised

controlled trial. *J Affect Disord, 151*(1), 186-195. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23827533. doi:10.1016/j.jad.2013.05.076

Holwerda, A., van der Klink, J. J., de Boer, M. R., Groothoff, J. W., & Brouwer, S. (2013a). Predictors of sustainable work participation of young adults with developmental disorders. *Research in Developmental Disabilities, 34*(9), 2753-2763. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23792372. doi:10.1016/j.ridd.2013.05.032

Holwerda, A., van der Klink, J. J., de Boer, M. R., Groothoff, J. W., & Brouwer, S. (2013b). Predictors of work participation of young adults with mild intellectual disabilities. *Research in Developmental Disabilities, 34*(6), 1982-1990. doi:10.1016/j.ridd.2013.03.018

Hughes, L. A., Banks, P., & Terras, M. M. (2013). Secondary School Transition for Children with Special Educational Needs: A Literature Review. *Support for Learning, 28*(1), 24-34.

Hume, K., Sreckovic, M., Snyder, K., & Carnahan, C. R. (2014). Smooth Transitions. *TEACHING Exceptional Children, 47*(1), 35-45. doi:10.1177/0040059914542794

IHC. (2017). *Valuing All: Leave no one behind*. Retrieved from https://ihc.org.nz/sites/default/files/documents/Valuing%20All%20Leave%20no%20one%20behind%20-%20Report.pdf

Kabashi, L., & Kaczmarek, L. A. (2016). Evaluating the Efficacy of Video-Based Instruction (VBI) on Improving Social Initiation Skills of Children with Autism Spectrum Disorder (ASD): A Review of Literature. *Review Journal of Autism and Developmental Disorders, 4*(1), 61-81. doi:10.1007/s40489-016-0098-5

Kamps, D., Leonard, B., Vernon, S., Dugan, E., Delquadri, J., Gershon, B., . . . Folk, L. (1992). Teaching social skills to students with Autism to increase peer interactions in

an integrated first-grade classroom. *Journal of Applied Behavior Analysis, 25*(2), 281-288.

Kellems, R. O., & Morningstar, M. E. (2012). Using Video Modeling Delivered Through iPods to Teach Vocational Tasks to Young Adults With Autism Spectrum Disorders. *Career Development and Transition for Exceptional Individuals, 35*(3), 155-167. doi:10.1177/0885728812443082

Koegel, L. K., Koegel, R. L., Frea, W., & Green-Hopkins, I. (2003). Priming as a Method of Coordinating Educational Services for Students with Autism. *Language, Speech, and Hearing Services in Schools, 34*(3), 228-235.

Kreiser, N. L., & White, S. W. (2014). Assessment of Social Anxiety in Children and Adolescents With Autism Spectrum Disorder. *Clinical Psychology: Science and Practice, 21*(1), 18-31.

Leblanc, L. A. (2010). Using Video-based Interventions with Individuals with Autism Spectrum Disorders Introduction to the Special Issue. *Education and Treatment of Children, 33*(3), 333-337.

Lei, J., Calley, S., Brosnan, M., Ashwin, C., & Russell, A. (2018). Evaluation of a Transition to University Programme for Students with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*. doi:10.1007/s10803-018-3776-6

Lorenz, T., Frischling, C., Cuadros, R., & Heinitz, K. (2016). Autism and Overcoming Job Barriers: Comparing Job-Related Barriers and Possible Solutions in and outside of Autism-Specific Employment. *PLoS One, 11*(1), e0147040. doi:10.1371/journal.pone.0147040

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd. ed.). Sydney: Psychology Foundation.

Makin, C., Hill, V., & Pellicano, E. (2017). The primary-to-secondary school transition for children on the autism spectrum: A multi-informant mixed-methods study. *Autism & Developmental Language Impairments, 2*, 1-18. doi:10.1177/2396941516684834

Mandow, N. (2019). The autism employment conundrum. *Two Cents' Worth.* Retrieved from https://www.rnz.co.nz/programmes/two-cents-worth/story/2018692451/the-autism-employment-conundrum

Matson, J. L., & Cervantes, P. E. (2013). Comorbidity among persons with intellectual disabilities. *Research in Autism Spectrum Disorders, 7*(11), 1318-1322. doi:10.1016/j.rasd.2013.07.018

Matthews, L. R., Harris, L. M., Jaworski, A., Alam, A., & Bozdag, G. (2014). Function, health and psychosocial needs in job-seekers with anxiety, mood, and psychotic disorders who access disability employment services. *Work, 49*(2), 271-279. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23803442. doi:10.3233/WOR-131660

Maulik, P. K., Mascarenhas, M. N., Mathers, C. D., Dua, T., & Saxena, S. (2011). Prevalence of intellectual disability: a meta-analysis of population-based studies. *Research in Developmental Disabilities, 32*(2), 419-436. doi:10.1016/j.ridd.2010.12.018

Mazzone, L., Ruta, L., & Reale, L. (2012). Psychiatric comorbidities in asperger syndrome and high functioning autism: diagnostic challenges. *Annals of General Psychiatry, 11*(1), 16.

McCoy, K., & Hermansen, E. (2007). Video Modeling for Individuals with Autism A Review of Model Types and Effects. *Education and Treatment of Children, 30*(4), 183-213.

McGlinchey, E., McCallion, P., Burke, E., Carroll, R., & McCarron, M. (2013). Exploring the Issue of Employment for Adults with an Intellectual Disability in Ireland. *Journal of Applied Research in Intellectual Disabilities, 26*(4), 335-343.

Menon, S. (2014). *The EdAble Project: A Pilot Study into Supported Employment Using Self Management Techniques and Assistive Technology for Adults with ASD.* (Master of Psychology (Educational and Developmental)), Monash University, Melbourne, Australia.

Ministry of Health. (2017). Autism spectrum disorder. Retrieved from https://www.health.govt.nz/your-health/conditions-and-treatments/disabilities/autism-spectrum-disorder

Moore, K., McDonald, P., & Bartlett, J. (2017). Emerging trends affecting future employment opportunities for people with intellectual disability: The case of a large retail organisation. *Journal of Intellectual & Developmental Disability, 43*(3), 328-338. doi:10.3109/13668250.2017.1379250

Moskowitz, L. J., Walsh, C. E., Mulder, E., McLaughlin, D. M., Hajcak, G., Carr, E. G., & Zarcone, J. R. (2017). Intervention for Anxiety and Problem Behavior in Children with Autism Spectrum Disorder and Intellectual Disability. *Journal of Autism and Developmental Disorders, 47*(12), 3930-3948. doi:10.1007/s10803-017-3070-z

Nah, Y. H., Brewer, N., Young, R. L., & Flower, R. (2018). Brief Report: Screening Adults with Autism Spectrum Disorder for Anxiety and Depression. *Journal of Autism and Developmental Disorders, 48*(5), 1841-1846. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/29198039. doi:10.1007/s10803-017-3427-3

Nikopoulos, C. K., & Keenan, M. (2003). Promoting social initiation in children with autism using video modeling. *Behavioral Interventions, 18*(2), 87-108. doi:10.1002/bin.129

Nikopoulos, C. K., & Keenan, M. (2007). Using video modeling to teach complex social sequences to children with autism. *Journal of Autism and Developmental Disorders, 37*(4), 678-693. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/16897375. doi:10.1007/s10803-006-0195-x

O'Handley, R. D., Ford, W. B., Radley, K. C., Helbig, K. A., & Wimberly, J. K. (2016). Social Skills Training for Adolescents With Intellectual Disabilities: A School-Based Evaluation. *Behavior Modification, 40*(4), 541-567. doi:10.1177/0145445516629938

Ogilvie, C. R. (201). Step by Step: Social Skills Instruction for Students with Autism Spectrum Disorder Using Video Models and Peer Mentors. *TEACHING Exceptional Children, 43*(6), 20-26.

Plavnick, J. B., & Duenas, A. D. (2018). Brief Report: Effects of Video-Based Group Instruction on Spontaneous Social Interaction of Adolescents with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders, 48*(6), 2231-2236. doi:10.1007/s10803-018-3481-5

Plavnick, J. B., Kaid, T., & MacFarland, M. C. (2015). Effects of a School-Based Social Skills Training Program for Adolescents with Autism Spectrum Disorder and Intellectual Disability. *Journal of Autism and Developmental Disorders, 45*(9), 2674-2690. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/25820638. doi:10.1007/s10803-015-2434-5

Psychology Foundation of Australia. (2018). Overview of the DASS and its uses. Retrieved from http://www2.psy.unsw.edu.au/groups/dass/over.htm

PsyToolkit. (2018). Depression Anxiety Stress Scales (DASS). Retrieved from https://www.psytoolkit.org/survey-library/depression-anxiety-stress-dass.html

Ratcliffe, B., Wong, M., Dossetor, D., & Hayes, S. (2015). The Association Between Social Skills and Mental Health in School-Aged Children with Autism Spectrum Disorder, With and Without Intellectual Disability. *Journal of Autism and Developmental Disorders, 45*(8), 2487-2496. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/25758822. doi:10.1007/s10803-015-2411-z

Rausa, V. C., Moore, D. W., & Anderson, A. (2016). Use of video modelling to teach complex and meaningful job skills to an adult with autism spectrum disorder. *Developmental Neurorehabilitation, 19*(4), 267-274. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/25825994. doi:10.3109/17518423.2015.1008150

Rayner, C., Denholm, C., & Sigafoos, J. (2009). Video-based intervention for individuals with autism: Key questions that remain unanswered. *Research in Autism Spectrum Disorders, 3*(2), 291-303. doi:10.1016/j.rasd.2008.09.001

Rzepecka, H., McKenzie, K., McClure, I., & Murphy, S. (2011). Sleep, anxiety and challenging behaviour in children with intellectual disability and/or autism spectrum disorder. *Res Dev Disabil, 32*(6), 2758-2766. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21700417. doi:10.1016/j.ridd.2011.05.034

Sancho, K., Sidener, T. M., Reeve, S. A., & Sidener, D. W. (2010). Two Variations of Video Modeling Interventions for Teaching Play Skills to Children with Autism. *Education and Treatment of Children, 33*(3), 421-442.

Schreibman, L., Whalen, C., & Stahmer, A. (2000). The use of video priming to reduce disruptive transition behavior in children with autism. *Journal of Positive Behavior Interventions, 2*(1), 3-11.

Sevin, J. A., Rieske, R. D., & Matson, J. L. (2015). A Review of Behavioral Strategies and Support Considerations for Assisting Persons with Difficulties Transitioning from Activity to Activity. *Review Journal of Autism and Developmental Disorders, 2*(4), 329-342. doi:10.1007/s40489-015-0056-7

Shukla-Mehta, S., Miller, T., & Callahan, K. J. (2009). Evaluating the Effectiveness of Video Instruction on Social and Communication Skills Training for Children With Autism

Spectrum Disorders: A Review of the Literature. *Focus on Autism and Other Developmental Disabilities, 25*(1), 23-36. doi:10.1177/1088357609352901

Sng, C. Y., Carter, M., & Stephenson, J. (2013). A Review of Video Modelling and Scripts in Teaching Conversational Skills to Individuals with Autism Spectrum Disorders. *Review Journal of Autism and Developmental Disorders, 1*(2), 110-123. doi:10.1007/s40489-013-0010-5

Spain, D., Blainey, S. H., & Vaillancourt, K. (2017). Group cognitive behaviour therapy (CBT) for social interaction anxiety in adults with autism spectrum disorders (ASD). *Research in Autism Spectrum Disorders, 41-42*, 20-30. doi:10.1016/j.rasd.2017.07.005

Spain, D., Happé, F., Johnston, P., Campbell, M., Sin, J., Daly, E., . . . Murphy, D. G. (2016). Social anxiety in adult males with autism spectrum disorders. *Research in Autism Spectrum Disorders, 32,* 13-23. doi:10.1016/j.rasd.2016.08.002

Spain, D., Sin, J., Linder, K. B., McMahon, J., & Happé, F. (2018). Social anxiety in autism spectrum disorder: A systematic review. *Research in Autism Spectrum Disorders, 52,* 51-68. doi:10.1016/j.rasd.2018.04.007

Spivey, C. E., & Mechling, L. C. (2016). Video Modeling to Teach Social Safety Skills to Young Adults with Intellectual Disability. *Education and Training in Autism and Developmental Disabilities, 51*(1), 79-92.

Srivastava, A. K., & Schwartz, C. E. (2014). Intellectual disability and autism spectrum disorders: causal genes and molecular mechanisms. *Neuroscience and Biobehavioral Reviews, 46*(2), 161-174. doi:10.1016/j.neubiorev.2014.02.015

Statistics New Zealand. (2013). Disability Survey: 2013. Retrieved from http://archive.stats.govt.nz/browse_for_stats/health/disabilities/DisabilitySurvey_HOTP2013/Commentary.aspx

Sung, C., Connor, A., Chen, J., Lin, C., Kuo, H., & Chun, J. (2019). Development, feasibility, and preliminary efficacy of an employment-related social skills intervention for young adults with high-functioning autism. *Autism, 23*(6), 1542-1553.

Trembath, D., Balandin, S., Stancliffe, R., & Togher, L. (2010). Employment and Volunteering for Adults With Intellectual Disabilities. *Journal of Policy and Practice in Intellectual Disabilities, 7*(4), 235-238.

Waghorn, G., & Chant, D. (2005). Employment restrictions among persons with ICD-10 anxiety disorders: Characteristics from a population survey. *Journal of Anxiety Disorders, 19*(6), 642-657.

Walsh, E., Holloway, J., & Lydon, H. (2017). An Evaluation of a Social Skills Intervention for Adults with Autism Spectrum Disorder and Intellectual Disabilities preparing for Employment in Ireland: A Pilot Study. *Journal of Autism and Developmental Disorders, 48*(5), 1727-1741. doi:10.1007/s10803-017-3441-5

Walton, K. M., & Ingersoll, B. R. (2013). Improving social skills in adolescents and adults with autism and severe to profound intellectual disability: a review of the literature. *Journal of Autism and Developmental Disorders, 43*(3), 594-615. doi:10.1007/s10803-012-1601-1

Wehman, P., Brooke, V., Brooke, A. M., Ham, W., Schall, C., McDonough, J., . . . Avellone, L. (2016). Employment for adults with autism spectrum disorders: A retrospective review of a customized employment approach. *Research in Developmental Disabilities, 53-54*, 61-72. doi:10.1016/j.ridd.2016.01.015

White, S. W., Oswald, D., Ollendick, T., & Scahill, L. (2009). Anxiety in children and adolescents with autism spectrum disorders. *Clinical Psychology Review, 29*(3), 216-229. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/19223098. doi:10.1016/j.cpr.2009.01.003

Wilczynski, S. M., Trammell, B., & Clarke, L. S. (2013). Improving Employment Outcomes among Adolescents and Adults on the Autism Spectrum. *Psychology in the Schools, 50*(9), 876-887. doi:10.1002/pits.21718

Wilkins, J., & Matson, J. L. (2009). A Comparison of Social Skills Profiles in Intellectually Disabled Adults With and Without ASD. *Behavior Modification, 33*(2), 13.

Williams, S., Leader, G., Mannion, A., & Chen, J. (2015). An investigation of anxiety in children and adolescents with autism spectrum disorder. *Research in Autism Spectrum Disorders, 10*, 30-40. doi:10.1016/j.rasd.2014.10.017

Zanolli, K., Daggett, J., & Adams, T. (1996). Teaching preschool age autistic children to make spontaneous initiations to peers using priming. *Journal of Autism and Developmental Disorders, 26*(4), 407-422.

Appendix A – Participant recruitment questions.

Questions:

- Tell me one thing you are looking forward to in your new job?
- What is something you are not looking forward to?
- Is there anything you are nervous or anxious about in your new job?
- How did you learn about the programme?
- What were you doing with your time before you were selected for the programme?

Note: answers to these questions should be relevant to the questions, e.g. “I am looking forward to getting paid” and should be considered an appropriate answer to the first questions. Each response must be 2 or more words long.

Appendix B – Information and consent form for participants

Participant Information Sheet

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

The purpose of this research

- To help adults with Autism Spectrum Disorder or Intellectual Disability starting in the [redacted] programme to learn some social skills they can utilise while at work, and to possibly help reduce anxiety before the first day of work.

Who is associated with the research

- Amanda Humphrey-Rush (researcher)
- Gin Vern Jot (researcher)
- Angelika Anderson (supervisor)

[redacted]

How to contact the researchers and supervisors

Amanda Humphrey-Rush

[redacted]

Gin Vern Jot

[redacted]

Angelika Anderson

University of Waikato Supervisor

[redacted]

What's involved for participants

- You will be asked to complete an initial meeting with one of the researchers at [redacted] to discuss the research and ensure you understand. This is expected to take no longer than 1 hour. All meetings after this can be completed at a location of your

choice (e.g. [redacted], your home, somewhere else). After this meeting you will be asked to decide if you want to participate in the study or not.

- After the initial meeting, you will meet with a researcher again to complete an anxiety measure, to find out how anxious you are about starting work. This will take 5-10 minutes and means you will answer some questions about how you are feeling. After this, you will be invited to ask any questions you may have.

- You will be given some videos showing some social skills to practice before you start work. You will be asked to watch these videos every day at home, including on the morning before you start work. The video will be no longer than 5 minutes.

- You may also be provided with a video showing what will happen on the first day of work, specifically going to the meeting place and travelling to work. Again, you will be asked to watch this a minimum of 3 times or maximum of once per day at home, including on the morning before you start work. The video will be no longer than 3 minutes.

- On the morning of starting work, you will be asked to meet the researcher and will again answer questions about how anxious you are. You will be asked a couple of questions about how you feel about starting work. The researcher will then travel in the van with you to work, and we will watch you and others in the van talking to each other.

What will happen to information we collect?

- Any information you give us will be stored securely by the researchers, on a laptop which is password protected.

- We will use this information to write a report for our master's thesis. This report will then be published on the Waikato University website. There will be no personal information used in the report which may identify you, e.g. your name will not be used. Information that will be published in the report may include your age, gender, intellectual diagnosis only.

- The [redacted] employment team will be provided with general information about how the study has helped participants, and whether any of the changes we have put in place have helped to reduce people's anxiety or increase social behaviours. This will be given directly to [redacted] but will not include information about who was involved in the study, and what support they received during this time.

- If you would like information about what we found out in this study and any findings about you, we can share this with you at the end of the study. We can only do this once we have finished all our work on this project. If you would like to get this information, please email us or tell us, and we will make sure you get this when the study is completed.

By agreeing to be involved in this study, you confirm you are happy with your information being used as explained above.

How to opt out of this study?

- You can stop being part of this study anytime until we have collected all data.
- To stop being part of this study, please tell the researcher by text, phone, email or in person, or tell [redacted].

How to get more information:

- If you want any more information or have any questions about this study, please email me on the above email and I will respond as soon as I am able to.

This research project has been approved by the Human Research Ethics Committee (Health) of the University of Waikato under HREC(Health)2019#44. Any questions about the ethical conduct of this research may be addressed to the Secretary of the Committee, email humanethics@waikato.ac.nz, postal address, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

Note: Some information in this form has been covered as it provides information which may identify participants or the employment agency involved.

Does Video Priming and Video Modelling reduce anxiety and increase social behaviours for adults with Autism or Intellectual Disability who are starting paid work?

Consent Form for Participants

I have read the **Information Sheet for Participants** for this study and have had the details of the study explained to me. My questions about the study have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I also understand that I am free to withdraw from the study until the time where all data has been collected, or to decline to answer any particular questions in the study. I agree to provide information to the researchers under the conditions of confidentiality set out on the Information Sheet.

☐ I agree for this interview to be audio recorded

☐ I agree to participate in this study under the conditions set out in the Information Sheet form.

Signed: _____

Name: _____

Date: _____

Parent Signed: _____
(if applicable)

Name: _____

Date: _____

Researcher's Name and contact information:

Supervisor's Name and contact information:

Appendix C – Semi-structured interview questions for anxiety

First anxiety assessment

- Do you feel anxious about starting work?
- What part of starting work are you most anxious about?
- How does being anxious make you feel?
- On a scale of 1-5, with 1 being not anxious at all, and 5 being very, very anxious, how anxious do you feel now about starting work?

Second anxiety assessment

- Has watching the priming video helped you to feel less anxious?
- Why? Why not?
- Are you still most anxious about [the thing you were most anxious about above] or something different?
- On a scale of 1-5, with 1 being not anxious at all, and 5 being very, very anxious, how anxious do you feel now about starting work?

Appendix D – Social skills behaviour observation data collection sheet

Participant Initials:	Observer Initials:	Date:	Intervention: Baseline / Intervention / Maintainance

	Observation #1		Observation #2		Observation #3		Observation #4	Observation #5		Observation #6	
	Tally		Tally		Tally						
Greeting others	M/O:		M/O:		M/O:		M/O:	M/O:		M/O:	
Introducing self	M/O:		M/O:		M/O:		M/O:	M/O:		M/O:	
Asking about others interests											
Initiating conversation (Unrelated to other catogeries)	M/O:		M/O:		M/O:		M/O:	M/O:		M/O:	
Responding to others	M/O:		M/O:		M/O:		M/O:	M/O:		M/O:	
Asking “how are you?”											
Asking for help											