



Virtual Reality in Transition Program for Adults with Autism: Self-Efficacy, Confidence, and Interview Skills

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Abstract

Adults with high-functioning autism spectrum disorder (HFASD) are understudied within the literature, especially within the context of employment. Extant data, though limited, suggests competitive integrated employment rates which are significantly lower than neurotypical individuals. Researchers have suggested that one factor related to these low employment rates are limited interview skills demonstrated by individuals with HFASD. Additionally, individuals with HFASD tend to report lower levels of self-confidence and self-efficacy (SE), within the context of their ability to successfully pass a job interview. Benefits of employment for those with HFASD include a sense of purpose, independence, and social interaction, all of which improve wellness. To address these needs, a Virtual Reality Job Interview Training Program (VR-JIT) was implemented in an adult transition program to improve job interview skills. As such, this exploratory study examined pre-post changes in participants' SE and self-confidence specific to their perceived interview skills; VR-JIT was a viable method to improve confidence and skill with interviewing and may help improve vocational opportunities that are linked with wellness for those with HFASD.

Keywords Autism · Autism spectrum disorder · Adult transition · Job interviews · Adults with autism · Virtual reality

Gainful employment is associated with wellness, independence, social interaction, and a sense of purpose (Bell and Weinstein 2011; Diener et al. 2016; Lorenz et al. 2016). Data show that unemployment status for individuals with disabilities is significantly higher than their typically developing peers, with recent data demonstrating that 82.7% of individuals with a disability are unemployed, compared to 34.7% of individuals without a disability (Bureau of Labor Statistics 2017). These estimates include people with disabilities who are employed part-time or self-employed (Bureau of Labor Statistics 2017). Adults with autism spectrum disorder (ASD) experience significantly higher unemployment rates than other disability categories with estimates suggesting that as many as 68% of adults with ASD are unemployed (Bishop-Fitzpatrick et al. 2016; Nord et al. 2016; Shattuck et al. 2012; Wehman et al. 2016). Given the positive outcomes associated with employment and the poor employment rates of individuals with

disabilities, especially those with ASD, an understanding of factors influencing employment rates is warranted.

Autism Spectrum Disorder

As a spectrum disorder, ASD represents deficits in social communication and restrictive interests or repetitive behavior ranging from mild to severe. ASD encapsulates characteristics that may vary over time and among individuals with concurrent difficulties with adaptive functioning (American Psychiatric Association [APA] 2013). Intellectual abilities may range from significantly below average to well above average; while individuals with ASD commonly experience significant problems with social interactions, social communication, social reciprocity, and understanding as well as enacting nonverbal social communicative behaviors (APA 2013). The term high-functioning ASD (HFASD) was previously described under the diagnosis of Asperger Disorder per DSM-IV (APA 2005; Lake et al. 2014) and does not present with co-occurring intellectual disabilities or linguistic delays. Estimates suggest that approximately 44% of individuals with ASD fall under the category of HFASD, as their intellectual functioning falls within

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the average to above average range (i.e., $IQ > 85$) (CDC 2018; Lake et al. 2014).

Individuals with HFASD in the Workforce

Individuals with HFASD possess desirable worker traits and in many instances are superior to neurotypical workers in attention to detail, work ethic, quality of work, focus, and consistency (Lorenz and Heinitz 2014; Scott et al. 2017). These positive outcomes are further corroborated by employers who assert that enhancements in company culture and influx of new creative skills were realized when individuals with HFASD were integrated, at only minimal training costs (Scott et al. 2017). These strengths have led some within the business community to actively recruit individuals with HFASD for jobs requiring sustained attention or in-depth knowledge specific to a singular domain (Bishop-Fitzpatrick et al. 2016). Identification of such strengths and the economic benefits tied to integration of individuals with HFASD has resulted in an ASD focused recruitment by companies such as Microsoft (Bishop-Fitzpatrick et al. 2016; Warnick 2018). Furthering vocational prospects is the fact that vocational interests expressed by individuals with HFASD are more diverse than previously thought, and include science, technology, social sciences, education, and hospitality (Lorenz and Heinitz 2014; Ohl et al. 2017; Scott et al. 2017). These much-needed changes, though insufficient to reduce the disparity in employment opportunities, are likely to provide new opportunities for individuals with HFASD.

Factors Influencing Employment Rates of Individuals with HFASD

The many positive outcomes associated with employing individuals with HFASD have led many, including parents, policy makers, researchers, and community members, to question why high rates of unemployment for this population persist. Although a paucity of research specific to employability of individuals with HFASD exists, the extant research suggests unemployment rates are intertwined with diagnostic criteria related to social deficits as well as restricted patterns of interest (APA 2013; Hedley et al. 2017; Lorenz et al. 2016). These limitations are evidenced during the interview process, but once employment begins at the job site level, with support, individuals with HFASD perform well (Lorenz and Hadley 2014; Scott et al. 2017; Warnick 2018). For example, Smith et al. (2015), note that limited job interview skills pose a “major barrier” to obtaining work for individuals with HFASD (p. 3364).

Another factor related to high rates of unemployment for individuals with HFASD is their limited vocational skill base, such as following directions and ability to be flexible when changes occur in the workplace (Scott et al. 2017). As a result, individuals with HFASD need both intensive vocational

instructions prior to entering the work force, as well as training onsite once they obtain employment (Wehman et al. 2016). To address these needs, young adults with ASD often participate in federally funded Adult Transition Programs (ATP) where they are provided with intensive instruction aimed at improving their vocational skills (U.S. Department of Education 2017). ATPs extend K-12 public education for individuals with disabilities who have not earned a regular high school diploma through the provision of an individual education program (IEP) until the student ages out by 22 years of age (California Education Code Article 2 § 56026 (A)). Transition services, as defined within the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004 (§ 34 CFR 300.43 (a)), are designed to be results-oriented toward development of the greatest independence possible in vocation, independent living, community participation, and post-secondary education (U.S. Department of Education 2017). Although IDEIA clearly delineated the need to ensure ASD youth and adults have the skills needed for successful employment, the extant body of research has not identified pre-employment best practices (Seaman and Cannella-Malone 2016). Consequently, the need for additional research is critical, especially given that the Centers for Disease Control estimates that 1 in 59 children are diagnosed with ASD (CDC 2018). This suggests that approximately 50,000 individuals with ASD will reach the age of majority annually (Shattuck et al. 2012). Increasing employment rates for this demographic group is not only critical on an individual level, but on a societal level as well.

Self-Efficacy

Self-efficacy (SE) is defined as the individual's perception regarding one's ability to successfully accomplish a specific task (Bandura 1977). SE is a motivational construct related to self-beliefs and goal attainment (Lorenz et al. 2016; Pearlman-Avnion and Aloni 2016). The association between SE beliefs and individual performance is one of the most robust relationships in both the educational and organizational literature (see Bandura 1997 for complete review). In short, the higher an individual's SE beliefs, the more likely one is to engage in a given task and persist when the task becomes difficult (Bandura 1977). Although limited, the emergent literature specific to SE beliefs of individuals with HFASD suggests they differ from neurotypical peers. For example, generalized SE beliefs of individuals with HFASD have been shown to be lower than the general population by about one standard deviation (Lorenz and Heinitz 2014). Additionally, researchers have asserted individuals with HFASD have distinct SE profiles when compared to individuals with learning disabilities or intellectual disabilities (Chou et al. 2017). Moreover, Lorenz et al. (2016) found that even when individuals with HFASD had high performance on specific tasks, their overall SE was lower than their typical peers. Noteworthy is the

finding that employment appears to mediate this relationship, as demonstrated by the finding that employed adults with HFASD had higher SE beliefs when compared to unemployed peers with HFASD (Lorenz and Heinitz 2014; Lorenz et al. 2016). Enhancing SE is critical in light of unrealistically negative self-appraisals many individuals with HFASD hold even when their employment performance exceeds performance of neurotypical workers in several domains (Lorenz and Heinitz 2014; Scott et al. 2017). Researchers have long held that mastery performance is the most effective strategy for increasing SE beliefs (Bandura 1977, 1997). Accordingly, providing individuals with HFASD opportunities to learn and practice the skills needed to succeed on given tasks, such as passing a job interview, is more likely to lead to higher levels of SE and well-being in young adults with HFASD than interventions aimed at reducing maladaptive behavior (Lorenz and Heinitz 2014; Zange, 2013). This can be accomplished by ensuring the implementation of structured opportunities for success where growth is evident to the individual with HFASD.

Virtual Reality Interviewing

Individuals with ASD have an affinity for screen-based media including computers, television, video games, and social media (Mazurek et al. 2012; Ward and Mazurek 2018). Furthermore, research indicates individuals with HFASD are adroit in technology usage, in part, because of their self-reported comfort levels relating to a structured environment, the ability to respond asynchronously, strong textual cues, and limited nonverbal input (Van der Aa et al. 2016). In response to the strong preference for technology-based platforms, ASD researchers have begun to develop a variety of platforms aimed at increasing academic, social, and emotional outcomes for individuals with ASD (Politis et al. 2017).

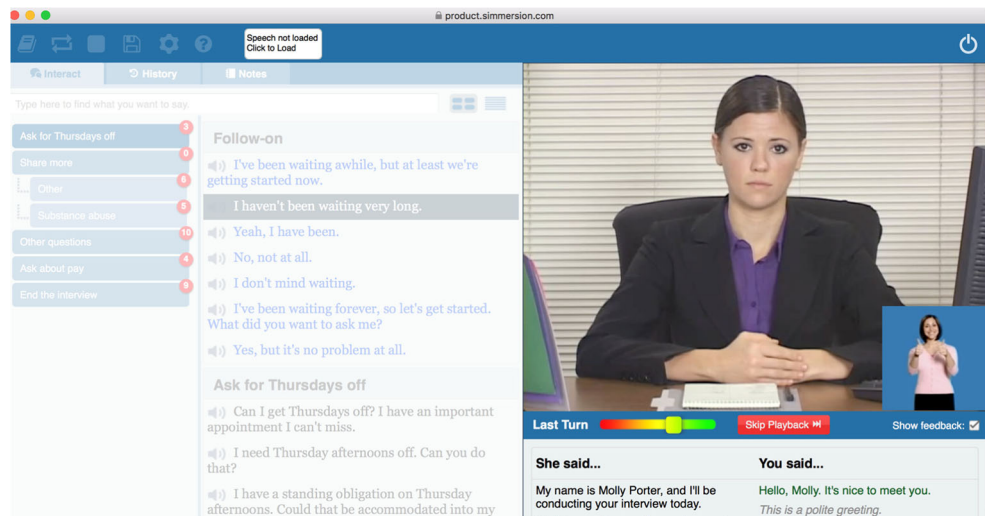
Once such technology is Virtual Reality (VR), which provides users with a realistic interactive experience within a given environment. Research demonstrates that VR interventions not only provide many of the same benefits as screen-based media but offer additional benefits such as immediate feedback within a realistic environment, thus increasing the likelihood of skill transfer (Didehbani et al. 2016; Kandalaf et al. 2013; Parsons and Mitchell 2002). These studies corroborate previous findings that individuals with HFASD prefer computer-based feedback and that such platforms improve learning outcomes (Oznoff 1995). Importantly, individuals with HFASD report lower levels of social anxiety when interacting with VR avatars than when interacting directly with others (Didehbani et al. 2016; Parsons and Mitchell 2002). In short, VR technology is a promising instructional platform for increasing academic and social outcomes for individuals with HFASD.

Given the positive outcomes associated with VR platforms, especially for individuals with HFASD, it is not surprising that these platforms are increasingly being used within vocational educational settings (Politis et al. 2017). One such application implemented across a variety of educational and vocational settings is VR, Job Interview Training with Molly Porter, (VR-JIT). Though limited, findings demonstrated participants with HFASD found the system enjoyable to use, effective in building self-confidence, and efficacious in increasing interview skills (Smith et al. 2014b). The VR-JIT was initially designed to assist vocational rehabilitation clients with psychiatric conditions to reduce anxiety levels induced by the interview process, thus improve interview performance (Bell and Weinstein 2011; Smith et al. 2014a). VR-JIT employs virtual reality simulated interviews with a fictional human resources manager avatar, named Molly Porter, who derives varied interview experiences via non-branching logic including more than 1000 recorded interviews across three varying levels of difficulty (Bell and Weinstein 2011). Molly Porter's facial expressions, tone of voice, and continuing questions change to match the progress of the interview. For example, when an interviewee responds in a manner that is flippant or suggests disinterest in the job, Molly Porter's demeanor becomes curt and may lead to termination of the interview. When the interviewee provides responses indicative of dependability, the ability to effectively work collaboratively with colleagues, and honesty, the interview progresses in a positive manner. Changes in the avatar's responses provide specific and immediate feedback to the interviewee, which enables the interviewee to adjust their performance accordingly. Specific and timely feedback in a non-threatening manner is beneficial for all individuals including those with HFASD (Didehbani et al. 2016; Parsons and Mitchell 2002). To aid the participant in recognizing social cues during the VR-JIT, a "coach in the corner" is present throughout the interview to provide gestural feedback, such as thumbs up or thumbs down prompts (See Fig. 1). Further, brief textual feedback is provided throughout the interview with detailed feedback specified at the end of each session. These added supports are designed to maximize the learning experience.

Progress monitoring is recommended for educators as it utilizes data-based decision making to inform instructional practices, such as determining when students are responding adequately to instruction or when changes to instructional practices are needed (American Institutes for Research 2018). Data collected within the VR-JIT assesses key domains of interview performance, including representing oneself as dependable, being a good team member, being professional, and negotiating personal needs, as well as an overall interview score. These progress-monitoring data collection points allow the facilitator to differentiate instruction through the identification of strength as well as areas for intervention. Previous research assessing the effectiveness of VR-JIT with adults

Fig. 1 VR-JIT Job Interview Training with Molly Porter interface

VR-JIT Job Interview Training with Molly Porter Interface



with HFASD showed significant increases in participants' confidence in job interviewing and improved interview skills within the VR-JIT (Bell and Weinstein 2011; Smith et al. 2014a, 2014b).

Current Study

This study seeks to expand the limited research specific to young adults with HFASD within the context of employment by examining a VR technology aimed at improving job interview skills. Specifically, this exploratory study examines the relationship between the implementation of the VR-JIT and SE, self-confidence, and interview skills pre- and post-intervention for young adults with HFASD in an ATP school setting. Additionally, this study assesses the participants' perceptions regarding effectiveness of the program within an ATP setting through analysis of self-reported survey data specific to participants' self-reported enjoyment and the extent to which students would recommend the VR-JIT platform to a friend for instructional purposes. Lastly, feasibility of implementation in a whole group setting (e.g., classroom setting) was evaluated. Based on previous research findings, these researchers hypothesized that the implementation of the VR-JIT program would improve HFASD students' interview skills, self-confidence, and SE (Bell and Weinstein 2011; Smith et al. 2014a, 2014b).

Methods

Participants

Sixteen adult students enrolled in an ATP in a Southern California suburban public school district were recruited to

participate in this study. Four students did not complete all aspects of the study due to other school activities. Of the 12 who completed the training, 10 were male and 2 were female. Gender choices included male, female, and other (open choice). Participants' age ranged from 18 to 22 years of age ($M = 19.8$). All students included in the study had the educational designation of autism which was corroborated with a medical diagnosis. Of the 12 participants who completed the VR-JIT, 11 had student files containing intellectual ability scores (IQ standard scores ranged from 83 to 117; $M = 95.6$, $SD = 13.1$). Assessments used to estimate IQ scores were Wechsler Intelligence Scale for Children, Fourth Edition (4), Woodcock Johnson IV Tests of Cognitive Abilities (2), Wechsler Abbreviated Intelligence Scale (2), Cognitive Assessment System (1), Woodcock Johnson III Tests of Cognitive Abilities (1), and Kaufman Brief Intellectual Test (1).

Intervention

The VR-JIT (Job Interview Training with Molly Porter, www.simmersion.com) intervention began in April of 2017 and ended in June 2017. At the onset of the intervention, the first author demonstrated the mechanics of using the VR-JIT by streaming from the VR-JIT online platform to a classroom television during two 45-min whole group instruction sessions. These whole group sessions included the following modules: The Job Application, Getting Ready, and The Interview. The modules, which are available within the VR-JIT, were selected as a starting point to familiarize students with the system. The virtual reality interview was also presented to the whole class where students selected responses orally while the first author demonstrated how the system worked. Using direct instruction allowed the first author to gauge student understanding of the system prior to student

independent study. Then students accessed the VR-JIT with individual Google Chrome books equipped with headsets with microphones. Individual student VR-JIT session use averaged 128.8 min (~2.15 h) ranging from 39 to 270 min over 3 months of periodic classroom study.

General Self Efficacy Scale (GSEF)

A ten-item general self-efficacy scale (Schwarzer and Jerusalem 1995 and 2014) designed to measure an individual's perceptions regarding their ability to manage novel situations was administered pre- versus post-completion of the VR-JIT. The 4-point Likert scale asked participants to rate their level of agreement with statements that ranged from 1 = "I completely disagree" to 4 = "I completely agree," (e.g., "I can always manage to solve difficult problems if I try hard enough" and "Thanks to my resourcefulness, I know how to handle unforeseen situations." Cronbach's alpha reliability ranged from .76 to .90 (Schwarzer and Jerusalem 1995 and 2014). Data analysis was based on the total mean score across all items as well as individual items; higher scores represent healthier self-efficacy.

Interview Self Confidence Survey

Participants' self-confidence specific to their interview skills was obtained from answers on a 9-item 7-point Likert scale used in previous research with the VR-JIT (M.D. Bell [personal communication], November 11, 2015; Smith et al. 2014a). Examples include: "How skilled are you at making a good impression on a job interview?" or "How skilled are you at maintaining rapport through the interview?" Higher scores reflect positive self confidence; internal consistency was previously reported as $\alpha = .92$ (Smith et al. 2014a).

Progress Monitoring within VR-JIT

Progress monitoring data were collected within the VR-JIT system from participant virtual interviews in the following domains: total time engaged with the VR-JIT, completions of interviews, advocating for personal needs, being dependable, displaying team work, being positive, being honest, showing interest in the job, being professional, and making a good impression. These measurements were charted within the VR-JIT software for individual students over the course of the intervention.

Student Satisfaction with the VR-JIT

After 3 months of usage with an average of 128 min of experience with VR-JIT, participants were asked to rate the program on a 5-point Likert scale that queried: "Do you think you learned how to interview better with the Interview with Molly

Porter system?", "Would you recommend the Interview with Molly Porter system to a friend?", "Do you think ATP should use the Interview with Molly Porter system with other students?" and "How fun was using the Interview with Molly Porter System?"

Results

General Self Efficacy Scale (GSEF)

To assess changes in participants' GSEF beliefs, independent samples *t* tests were run (SPSS version 24) which demonstrated significant difference in scores from pre-test ($M = 2.08$, $SD = .76$) to post-test ($M = 2.8$, $SD = .92$), $t(21) = -2.07$, $p = .05$ (two-tailed), $r = .412$ (medium effect size) on resourcefulness in difficult situations. While no statistical significance was found for the whole GSEF scored scale $t(21) = -1.32$, $p = .20$, $r = .277$ (small effect size), the mean increased from pre-test ($M = 2.7$, $SD = 4.78$) to post-test ($M = 2.98$, $SD = 5.28$). Results demonstrated that participants believed they could handle difficult situations better after the intervention.

Interview Self Confidence Survey

Adult students with HFASD self-reported improvements on key domains related to their confidence with job interviews pre- versus post- VR-JIT, please see Table 1.

Participants reported improvements in making a good first impression with significantly higher scores on this domain after the VR-JIT, ($r = .55$) large effect size. The ability to maintain rapport through the interview was reflected in participants' significant improvement on the post-measure, ($r = .46$) medium effect size. Confidence scores specific to positively concluding the interview were also significantly better at post-test ($r = .57$) large effect size. Overall comfort with the interview was not significant, ($r = .278$), small effect size.

Interview Skills Progress Monitoring

Progress monitoring data were collected within the VR-JIT system on the following domains: overall interview skills (skills may be defined as interview knowledge and strategies), ability to advocate for personal needs (e.g., asking for a day off for a standing appointment), the extent to which one presented oneself as a team player, and one's ability to create a positive impression. Progress monitoring data were collected within the VR-JIT system from participant virtual interviews including graphical displays of progress from baseline to their final completed interview, scores for each domain per interview, and access to the interview transcript with coaching for

Table 1 Independent sample *t* tests on confidence belief pre- and post-test

	Condition							
		Pre-test			Post-test			
Belief	<i>df</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>r</i>
Interview skill	21	4.0	1.08	5.3	.95	−3.01	.007	.549
Rapport	21	3.23	1.48	4.7	1.42	−2.40	.026	.464
End positive	21	4.69	1.11	6.10	.99	−3.15	.005	.566
Interview comfort	21	3.84	1.34	4.60	1.35	−1.33	.198	.278

Two tailed

any response needed improvement. Paired *t* tests revealed significant improvements on all domains (see Table 2).

Correlations

Spearman's rho correlation revealed a highly significant positive correlation between GSEF and comfort with the job interview ($p = .01$). Total time using the VR-JIT showed a significant positive correlation with total interview skill ($p = .05$) (see Table 3).

Student Satisfaction with VR-JIT

Approximately 92% of participants endorsed implementing VR-JIT in ATPs for students with similar needs, and stated they would recommend VR-JIT to a friend. About 42% of participants self-reported VR-JIT was fun to use with an equal percentage indicated neutral responses. Results further suggest, that approximately 80% of participants rated VR-JIT as a more effective learning tool than traditional methods. More than 90% of students either agreed or were neutral in their responses specific to the extent to which they liked using VR-JIT as an instructional tool within their own classroom environment (please see Fig. 2).

Table 2 Paired *t* tests pre- and post-test for interview skills

	Condition							
		Pre-test			Post-test			
Skill	<i>df</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>r</i>
Interview Skill (100)	9	79.8	13.10	93.5	8.68	−2.36	.043	.618
Time off (5)	9	2.5	2.64	4.5	1.58	−2.45	.037	.633
Team player (15)	9	12.8	2.25	15.0	2.25	−3.09	.013	.717
Impression (20)	9	17.6	2.63	19.8	.63	−2.04	.040	.562

Two-tailed, parenthetical numbers represent the total possible points for each skill

Table 3 Spearman's rho correlation on beliefs and skills

Variable	1	2	3
1. GSEF			
2. Comfort	.77**		
3. Interview skill	.05	.13	
4. Time on VR-JIT	.12	.36	.69*

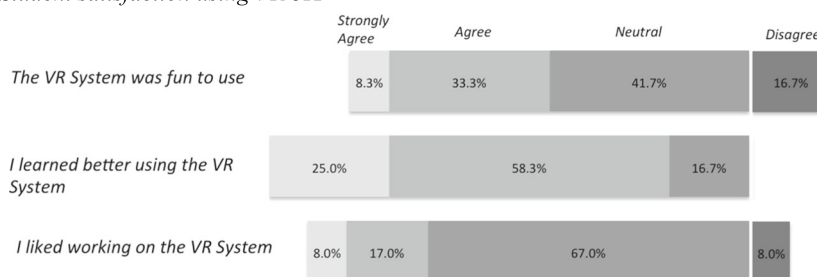
***p* at .01, **p* at .05 (two-tailed)

Discussion

The existing literature suggests that individuals with HFASD have significantly higher unemployment rates than their neurotypical peers (Bishop-Fitzpatrick et al. 2016; Nord et al. 2016; Shattuck et al. 2012; Wehman et al. 2016). Researchers asserted that high rates of unemployment result from limitations in social and communication skills—hallmark characteristics of ASD—which hinder not only the interview process, but the likelihood an employment offer will be made (Hedley et al. 2017; Lorenz et al. 2016; Wehman et al. 2016). The present exploratory study evidenced significantly improved job interview skills and increased self-reported confidence levels for participants in this study. Therefore, these authors assert that the VR-JIT is an effective tool for improving the interview skills of individuals with HFASD.

Another benefit gained from the implementation of the VR-JIT included improved SE beliefs specifically related to handling novel difficult situations. Further, 92% of participants indicated that they would recommend this system to a friend with 80% of participants stating they learned better with VR-JIT. These findings mirror other studies, which demonstrated that individuals with HFASD prefer computer-based interactions (Didehbani et al. 2016; Kandalaft et al. 2013; Mazurek et al. 2012; Van der Aa et al. 2016). As this system was effective and enjoyable for adults with HFASD, it is likely that other students with similar disabilities will benefit from its use.

SE is related to vocational attainment; those with greater SE are more willing to attempt job interviews and persevere with tasks on the job (Lorenz and Heinitz 2014; Lorenz et al. 2016). As SE has been shown to be lower for those with HFASD by about 1 standard deviation (Lorenz and Heinitz 2014), avenues to improve SE are needed. While pre-post evaluation of the GSEF did not reveal statistical significance, the post GSEF from our study (post-test [$M = 2.98$, $SD = 5.28$]) improved to the level reported in the literature ($M = 2.95$, $SD = 5.13$) for a neurotypical population of adults in the USA (Schwarzer and Jerusalem, 2014, p. 4). The promising finding that individuals with HFASD improved on the

Fig. 2 Student satisfaction using VR-JIT*Student satisfaction using VR-JIT*

GSEF scale item relating to resourcefulness pre-post intervention, along with a positive correlation between GSEF and comfort with the job interview, further support the implementation of VR job skill programs. These improvements in SE are well aligned with Bandura's SE construct which states that opportunities for success on tasks that are similar to aspirations relate to the greatest gains in SE (Bandura 1977). The VR-JIT clearly marks student successes by tracking growth by a numeric score and provides a graphical representation of improvements that students see when they access the VR-JIT. Because SE beliefs and individual performance is well documented across both the educational and organizational literature (Bandura 1977, 1997) and because individuals with HFASD often hold unrealistically negative self appraisals (Lorenz and Heinitz 2014; Scott et al. 2017), an intervention such as the VR-JIT may play a vital role in improving SE related to employment for adults with HFASD, thus potentiating the positive relationship between employment and wellness (Bell and Weinstein 2011; Diener et al. 2016; Lorenz et al. 2016).

As recommended by Seaman and Cannella-Mallone (2016), "...researchers of future studies should seek to evaluate evidence-based practices in relation to both pre-employment and job retention skills" (para. 20). As the population of individuals with ASD continues to rise, with estimates indicating 50,000 individuals will turn 18 in year 2012 and onward (Shattuck et al. 2012), it is essential that interventions relating to employability for this group are studied, and where warranted, interventions be implemented.

School psychologists are uniquely positioned to assist educational teams in making recommendations that will support student social skills, behavior, and interventions, such as VR-JIT. Although the school psychologist's role in transition planning is not well defined, as collaborative team members, school psychologists can enhance adult transitional outcomes for students (Kellems et al. 2016). Additionally, the use of the VR-JIT data may assist school psychologists in identifying areas of need related to SE and self-confidence, so that interventions aimed at increasing SE beliefs can be implemented.

Conclusion

The current study expands the existing limited literature specific to vocational experiences of adults with HFASD. The implementation of the VR-JIT in an ATP classroom setting improved interview skills and self-confidence and increased SE beliefs and comfort levels specific to participation in job interviews for individuals with HFASD. These findings suggest a novel and practical way to improve a limiting factor of employment, the interview, for those with HFASD. Future research is needed to determine how VR-JIT may relate to employment as well as how this system may be used long term in an ATP setting.

Limitations

Causality cannot be determined from this study as it was not experimental in nature. Generalization of the findings is limited by the small sample size and the fact that the sample gathered was from one school site. Further, while this study provides evidence for personal post-test improvements, it does not afford an understanding of feasibility and generalizability to the utility of skills learned. To this end, these authors encourage others to replicate this study with a larger sample size and across multiple settings.

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Compliance with Ethical Standards

Ethics All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Informed Consent Informed consent was obtained from all individual participants in this study.

Conflict of Interest The authors declare that they have no conflict of interest.

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