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Let Us Converse Virtually! Conversation Skills Training through Virtual Reality

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**Background**

People with autism spectrum disorder (ASD) typically have difficulties with communication and socialization skills, (Fombonne, 2005; Levy & Perry, 2011; Rivet & Matson, 2011; Suzuki 2011). Such difficulties are linked to the development of problem behaviours, and thus young adults with ASD struggle to find or keep employment; to begin or maintain a relationship; to become part of a community.

Assistive technology aims improving their quality of life by helping them attain employment and independent living.

**Virtual Reality Affordances**

Studies have shown that a Virtual World can:
- stimulate users’ interactivity (Roussou, 2004) and motivation (Garris et al., 2002; Ott & Travea, 2009)
- make conversations easy, structured and inclusive (Newburt, 2013)
- offer users a sense of co-presence and realism (Childs, 2010; Yee et al., 2009)
- provide an increased sense of control (de Freitas et al., 2010)
- improve users’ knowledge, enjoyment and interest in learning (Papastergiou, 2009).

**Virtual Learning for people with ASD (VL4ASD) project**

**Virtual World (VW) development: early stages**

The VW development was an iterative process and employed a Participatory Design approach:
- 2 developers with experience and expertise in autism, created a minimally viable version of the VW.
- software test sessions with two 15-user stress test groups (8 of whom were people with ASD), which identified anomalies or features that were difficult to use.
- revised version of VW was created that showed significant performance improvements (Politis et al., 2017)

**The Training materials**

The training consists of 6 sessions in the Virtual World (VW) and covers the following categories:

1. What is conversation and how does it work?
2. Why is conversation useful? & Approaching someone to have a conversation
3. Starting a conversation & Why are topics appropriate and inappropriate?
4. Finding common interests
5. Taking turns & Answering questions
6. Switching topics & Ending a conversation

**VW development: User feedback of training material**

This testing phase included a feedback session with 6 people with ASD, and another with 2 practitioners.

**PROS:**
- Participants felt that VR has potential in providing training for neurodiverse populations; they thought delivering training in three formats (PowerPoint, videos, chatbot) could contribute to the learning.

**CONS:**
- Participants commented on the visual presentation, pacing and organisation of the content.
- They felt that in its current stage of development the chatbot was not interactive enough.
- They focused more on design elements, rather than the educational content (Politis et al., 2017)

**Intervention**

**Study Design:** Multiple Baseline Design

**Sample:** 3 participants on the mild/moderate end of the autism spectrum (one had co-morbid Anxiety, depression & ADHD); early 20s (2 male - 1 female); all three were students (one also has a full-time job); one was receiving another treatment at that time.

**Procedure:** 4 Phases; 15-16 sessions in total over 9-week period

**Duration:** 10-30 minutes each session

**PHASE 1**
- Having a conversation in a ...

**PHASE 2**
- Training - then a conversation in the ...

**PHASE 3**
- Having a conversation in a ...

**PHASE 4**
- Virtual Space

**Semi-scripted conversations in Phases 1-3**

(i) Phase 1 was related to school life, in Phases 2 and 3 the topics covered TV, films, music, travel, animals, computers etc.

**Assessment**

**Perceived Empathic Self-Efficacy Scale (PESE); Perceived Social Self-Efficacy Scale (PSSE); Generalized Anxiety Disorder Scale (GAD)**

We have also adapted the Conversation Skills Rating Scale (CSRS), which is currently under review and validation.

**References**

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