Poster #2652

A Virtual Adolescent Patient with PTSD for Training Psychiatrists

Caroly Pataki, M.D., USC Keck School of Medicine, 2250 Alcazar Street, CSC 2200, Los Angeles, CA 90033-9074; **Jeff Sugar, M.D.**; **Patrick Kenny**; **Thomas D Parsons, Ph.D.**; **Albert A Rizzo, Ph.D.**; **Michele Pato, M.D.**; **Cheryl St. George, R.N.**

Objective: The objective of this study is to pilot a virtual adolescent patient (VP) with posttraumatic stress disorder (PTSD) to determine its feasibility and effectiveness as a tool to enhance psychiatric trainees' skills in interviewing PTSD patients and their knowledge of this disorder.

Background: Effective interviewing skills are a core competency for psychiatry residents, child and adolescent psychiatry residents and medical students and are essential in the assessment of posttraumatic stress syndromes during which sensitive clinical information may be challenging to elicit from adolescent patients. The goals of utilizing a virtual adolescent patient with natural language and voice recognition capabilities are to provide a standardized educational experience for trainees in which knowledge of PTSD, sensitivity of the interviewer and effectiveness of interviewers' questions in eliciting diagnostic information are recorded and immediate feedback regarding the efficacy of the interview is available. "Standardized patients"(SP), hired actors to portray patients with given medical and mental health problems, are routinely used in medical training, including psychiatry clerkships to evaluate students' clinical skills in a timed examination called the Objective Structured Clinical Examination (OSCE) (Hanson et al. 1998). While standardized patients are often utilized to teach interview skills, the diversity of the scenarios depicted are limited by the availability of human actors and their skills. This becomes an even greater challenge when the actor needs to be an adolescent. The potential use of computer generated virtual humans as standardized virtual patients (VPs) is recognized by researchers and clinical educators as this technology is increasingly refined enough to produce a VP applicable for psychiatric applications -- interactive with a high degree of consistency and realism (Parsons et al. 2008; Kenny et al. 2007). In a randomized trial comparing computer-based virtual patients (VP) cases with standardized patients (SP) in a workshop teaching mental health professionals the clinical management of psychiatric responses to disasters, including PTSD, VPs and SPs performed equally well in improving performance and diagnostic ability among workshop participants (Triola et al. 2006). Our study aims to provide pilot data on the current performance of a virtual adolescent PTSD patient with respect to assessment of psychiatric trainees' interview skills, diagnostic acumen and knowledge. This pilot data will guide potential refinements of the VP technology for future applications in psychiatric training.

Methods: IRB approval was obtained to recruit medical students during a psychiatry clerkship, psychiatry residents and child and adolescent psychiatry residents to participate in a 15 –30 minute psychiatric interview with the virtual adolescent patient. Subjects were 15 medical trainees: 1) Medical students (N=7); 2) Psychiatry Residents (N=4);, Child and Adolescent Psychiatry Residents (N=4) who consented to a videotaped interview of a virtual adolescent patient,"Justina", developed at the USC – Institute for Creative Technologies (Kenny et al. 2008). The videotaped interviews did not contain identifiers of the psychiatric trainees and were securely stored by the investigators for viewing and rating their quality and content. Subjects were: 6 females, 9 males; mean age =29.80, SD 3.67. Ethnicity of subjects was Caucasian =67%; Indian =13%; and Asian = 20%. The subject procedure consisted of three phases.
Phase I: Pre-Interview Questionnaires

Justina Pre-Questionnaire This scale was developed to collect demographic data, and ask questions related to the subject's openness to the experience and obtain the subject's perception of the technology and expectations of their performance.

Virtual Patient Pre-Questionnaire This questionnaire included a brief vignette of the patient and a 10 -question multiple-choice pre-test of knowledge of posttraumatic stress symptoms.

Tellegen Absorption Scale (Tellegen & Atkinson, 1974) This questionnaire provided a measure of imaginative absorption that was compared to the subject's rating of the virtual patient's "believability".Immersive Tendencies Questionnaire (Witmer & Singer, 1996) This questionnaire provided a measure of experiential immersiveness that was compared to the subject's rating of the virtual patient's "believability"

Phase II: Interview
II. Subjects conducted a 15-minute videotaped interview using a headphone with a microphone to converse with the virtual patient. The video camera taped the subject's facial expressions as well as body posture for the investigators to rate later

Phase III: Post-Interview Questionnaires Justina Post-Questionnaire This scale was developed to survey the subject's perceptions of the interview with the virtual patient in terms of the psychiatric diagnosis generated, verbal and non-verbal behavior of the virtual patient, how well the virtual patient responded to the subject, how well the subject's questions were recognized by the virtual patient, and if the subject felt able to express him or herself to the patient. In addition, subjects were asked how "believable" the virtual patient was and if they found the experience frustrating and/or satisfying. There were 25 questions on this form.This scale was developed to survey the subject's perceptions of the interview with the virtual patient in terms of the psychiatric diagnosis generated, verbal and non-verbal behavior of the virtual patient, how well the virtual patient responded to the subject, how well the subject's questions were recognized by the virtual patient, and if the subject felt able to express him or herself to the patient. In addition, subjects were asked how "believable" the virtual patient was and if they found the experience frustrating and/or satisfying. There were 25 questions on this form.

Virtual Patient Post-Questionnaire This questionnaire was the identical 10-question multiple-choice test of knowledge of posttraumatic stress symptoms.

The technology used for Justina, programmed to possess full diagnostic criteria for Posttraumatic stress disorder, is based on the virtual human technology developed at USC –Institute for Creative Technologies (Kenny et al. 2008). All subject and virtual patient speech was recorded and transcribed. Analysis: The set of questions by the subject and each corresponding response by the virtual patient was were classified into one of the 6 DMIV-TR diagnostic criteria cluster headings for Posttraumatic Stress Disorder. Two other categories (Rapport and Artifact) were added. (A= Exposure to trauma; B= Reexperincing; C= Avoidance; D= Increased Arousal; E= Duration > 1 month; F= Impairment; G= Rapport; H= Artifact). Interview questions and response pairs were analyzed for strength of their correlation according to the above cluster groups.

The impact of subjects' psychological characteristics of absorption and immersiveness on their ratings of believability were assessed. A composite variable that included scores from the Tellegen Absorption Scale and The Immersive Tendencies Questionnaire was analyzed for correlation to ratings of believability.

Subjects' ratings on the post-questionnaires of the virtual patient regarding believability, level of frustration, and the ability to understand the virtual patient were analyzed using a 7-point likert scale.

Videotaped Interview Ratings: Investigators viewed videotaped interviews and rated the quality and content of the subjects' interviews with the Arizona Clinical Interview Rating Scale and an Observed Structured Clinical Examination (OSCE) rating form modified for PTSD symptoms. Results: Preliminary data from the first 15 subjects showed moderate correlations (r) of subject question and virtual patient response pairs for the following diagnostic criteria categories: a) exposure to trauma ($r=0.45$), b) reexperiencing ($r= 0.55$), c) avoidance ($r=0.35$). Moderate correlations were also found for question and response pairs related to Rapport ($r= 0.56$). Weaker correlations were found for D. Increased Arousal ($r=0.13$); and F. Impairment ($r=0.13$). Category E. Duration >1 month did not receive adequate question and response pairs to analyze. Subjects' mean ratings based on a 7-point likert scale of the virtual patient's believability= 4.5; mean level of frustration with the interview= 5.3; and understanding the virtual patient = 5.1. A moderate correlation was found between subjects' mean composite scores from the Tellegen Absorption Scale and the Immersive Tendencies Questionnaire and believability ($r=0.4$). Investigator's ratings of the quality and content of the subjects' interviews will be analyzed and reported in the poster. Subjects' scores on the posttraumatic stress symptom multiple choice test pre and post interview will also be analyzed and reported in the poster.

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the virtual patient = 5.1. A moderate correlation was found between subjects' mean composite scores from the Tellegen Absorption Scale and the Immersive Tendencies Questionnaire and believability (r=0.4). Investigator's ratings of the quality and content of the subjects' interviews will be analyzed and reported in the poster. Subjects' scores on the posttraumatic stress symptom multiple choice test pre and post interview will also be analyzed and reported in the poster.

Conclusions: The virtual adolescent patient is a promising educational tool, effective in eliciting PTSD questions from psychiatric trainees and responding to them in a manner rated by subjects as understandable and believable. Although subjects rated the virtual patient as frustrating to interview, most left favorable comments about the technology and reported satisfaction when they obtained an appropriate response. This pilot data is part of an ongoing research effort to further refine the virtual patient technology as a standardized psychiatric educational tool. Given the many advantages of virtual standardized patients in medical education, it is likely that this technology will play an increasing role in the future of psychiatric interviewing and diagnostic education of psychiatric trainees.

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Figure 1: Justina Virtual Patient

Proceedings Abstract

Objectives: The objective of this study is to pilot a virtual adolescent patient (VP) with posttraumatic stress disorder (PTSD) to determine its feasibility and effectiveness as a tool to enhance psychiatric trainees' skills in interviewing PTSD patients and their knowledge of this disorder.

Methods: Subjects were 15 medical trainees: 1) Medical students (N=7); 2) Psychiatry Residents (N=4); 3) Child and Adolescent Psychiatry Residents (N=4) who consented to a 15 –30 minute videotaped interview of a virtual adolescent patient: "Justina", developed at the USC -Institute for Creative Technologies. Subject testing included: pre-questionnaires regarding expectations, the interview, and post-questionnaires measuring subjective experience. Subjects were provided a brief patient vignette prior to the psychiatric interview. Interviewer and virtual patient speech was recorded and transcribed. Interview question and response pairs were analyzed for correlation by categorization according to DSM-IV -TR PTSD diagnostic criteria subheadings.

Results: Correlations between question and response pairs were moderate for: A. Exposure to Trauma (r= .045); B. Reexperiencing (r=0.55); C. Avoidance (r=0.35) and G: Rapport (r=0.56). Subjects' average ratings of the interview for "believabilty" = 4.5; level of frustration =5.3 and understanding = 5.1 on a 7-point likert scale.

Conclusions: The virtual patient is a promising educational tool effective in eliciting PTSD questions from psychiatric trainees and rated by subjects as understandable and believable.

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Password: 282200
Title: A Virtual Adolescent Patient with PTSD for Training Psychiatrists
Submitter's E-mail Address: pataki@usc.edu
Learning Objectives:

- Attendees will learn how virtual human patient technology can be utilized to provide standardized educational experiences for psychiatric trainees
- Attendees will learn preliminary findings on how a virtual adolescent patient with PTSD performed on

"understanding" and "believability" during interviews by psychiatric residents, child and adolescent psychiatric residents and medical students

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First author

Presenting Author
Caroly Pataki, M.D.
USC Keck School of Medicine, Los Angeles, CA
Email: pataki@usc.edu

AACAP Member: Active
Consider for Scholarship: No

** DISCLOSURE WILL BE UPLOADED LATER **

Second author

Jeff Sugar, M.D.
El Segundo, CA
Email: jsugar@usc.edu

AACAP Member: Active
Consider for Scholarship: No

Third author

Patrick Kenny

Email: kenny@ict.usc.edu

Consider for Scholarship: No

Fourth author

Thomas D Parsons, Ph.D.

Email: TParsons@ict.usc.edu

Consider for Scholarship: No

Fifth author

Albert A Rizzo, Ph.D.

Email: arizzo@usc.edu

Consider for Scholarship: No

Sixth author

Michele Pato, M.D.

Email: mpato@usc.edu

Consider for Scholarship: No

Seventh author

Cheryl St. George, R.N.

Email: stgeorge@usc.edu

Consider for Scholarship: No