Simulated Interviews 3.0
Training Abilities of Diagnosis by means of Virtual Agents

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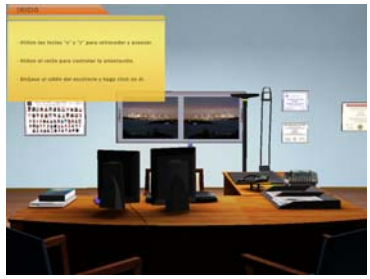
The diagnostic interview in Psychology and other Health Sciences involves a series of abilities that require sound training. This training should be provided under guidance from a professor in controlled settings that mimic real-life situations as closely as possible. In the initial stages of training interaction with real patients should be avoided. The objective of this study was to develop a system constructed with 3D design applications that creates virtual environments in which the trainee interacts with a group of simulated patients. From them the trainee must obtain the data needed to make an accurate diagnosis. The virtual patients are realistic objects constructed using a series of parameters that define their verbal, emotional and motor responses. The high level of interactivity achieved increases the trainees' sensation of participating in the simulated situation and thus improves the learning of the skills required



Virtual Reality (VR) is frequently used for professional training of many kinds. VR provides high similarity with real life situations but does not expose the student to situations for which s/he is still not prepared. VR simulations also make it possible to graduate the difficulty of the problems to be solved, facilitating learning by bringing subjects progressively closer to the solution.

These simulated interviews can be presented on a computer screen or on a more immersive system comprising Head Mounted Displays (HMD) plus tracking devices. HMD are helmets or glasses with small LCD screens placed close to the eyes. Electromagnetic position trackers can be used in combination with HMD in order to detect head movements and send this information to the computer. The computer receives the information and sends to the microscreens the visual information corresponding to the zone of the virtual environment towards which the user is oriented. Several studies have reported improved learning with more immersive systems like these.

The first stage of the development involved the compilation of a linguistic corpus from which the contents of the simulated interviews was later extracted (that is, the virtual patients' questions and answers). The DSM IV-TR diagnostic trees (American Psychiatric Association) were used as basic sources of information. A linguistic corpus was produced that corresponded to the main diagnostic groups on axes I and II of the APA classificatory system. In the following stage the corpus was applied to generate the agents that would simulate the answers of patients corresponding to different, specific diagnostic categories from each of the main diagnostic groups: anxiety disorders, psychotic disorders, mood disorders and personality disorders. Virtual environments simulating a psychologist's office were prepared. Applications such as 3D Studio Maxwere used to construct the models. Graphic simulation of virtual patients was created with the construction and animation tools of three-dimensional figures, such as Poser and Ventriloquist for 3D Studio Max. Finally, these components were put together in seven virtual simulations corresponding to patients with the following conditions: obsessive compulsive disorder, generalized anxiety disorder, schizoaffective disorder, bipolar disorder, borderline personality disorder, schizophrenia and schizophreniform disorder.

On entering "Simulated Interviews 3.0" the user enters a virtual office in which s/he can move around. Skills of psychopathological examination are taught via a series of virtual diagnostic interviews. The objective of the interviews is to obtain enough data to formulate a diagnosis. To do so, the student selects the most suitable question at each stage of the interview; the system informs him/her how accurate his choice is, and the virtual patient responds to his/her questions. Each list of alternatives of questions contains a button called "HYPOTHESIS"; when the student presses it a list of possible diagnoses appears, from which s/he selects the one s/he considers best for the case in question. The student decides at each stage whether to continue asking questions or whether s/he has enough information to formulate a diagnostic hypothesis. If s/he selects the correct diagnosis at any given time during the interview, the system will only accept it if the patient has been adequately examined. Once the student gives the correct diagnosis, at a suitable moment of the interview, s/he will be able to formulate a prognosis.

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