

Virtual Reality Technology for Psychological/Neuropsychological/Motor Assessment and Rehabilitation: Applications and Issues

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After an early period of inflated expectations and limited delivery, Virtual Reality (VR) technology has emerged as a viable tool for cognitive/behavioral mental health and rehabilitation applications. VR allows for the systematic presentation of stimuli that target human behavioral and cognitive processes relevant for assessment and intervention purposes. The capacity of VE technology to create dynamic interactive three-dimensional (3D) stimulus environments, within which all behavioral responding can be recorded and measured, offers clinical assessment and intervention options that are not available using traditional methods. These applications have shown promise for addressing: fear and anxiety with phobic and PTSD clients, distracting patients during painful and anxiety-provoking medical and dental procedures, treating eating disorders and obesity, navigation and spatial training in children with motor impairments, functional skills in persons with developmental disabilities and autism, and in the assessment (and in some cases, rehabilitation) of memory, attention, spatial skills, and executive cognitive functions in populations with CNS dysfunction. Functional VE training scenarios have also been designed to test and teach instrumental activities of daily living such as street-crossing, automobile driving, meal preparation, supermarket shopping, use of public transportation, and wheelchair navigation. The therapeutic targets chosen thus far for these clinical applications reflect an informed appreciation for the unique assets that are available using virtual technology and these initiatives have formed a foundation of work that provides support for the value of further development of VR Mental Health/Rehabilitation applications.

However, in order for VEs to be efficiently developed in the areas of clinical psychology and neuropsychology, a number of basic theoretical and pragmatic issues need to be considered. The current status of VEs in these fields, while provocative, is limited by the small number of controlled studies that have been reported which apply this technology to clinical populations. This is to be expected considering the technology's recent development, its relatively high initial development costs, and the lack of familiarity with VEs by established researchers using traditional tools and tactics in these fields. In spite of this, some work has emerged which can begin to provide a basic foundation of knowledge which could be useful for guiding future research efforts. Although much of the work does not involve the use of fully immersive head-mounted displays (HMDs), studies reporting 3D projection screen, and PC-based flatscreen approaches are providing valuable information on issues necessary for the reasonable and measured development of VE/mental health applications.

This tutorial will present an overview of VR applications and address the issues related to the use of Virtual Reality technology for Psychological/Neuropsychological/Physical Assessment and Rehabilitation. The workshop will give participants the latest information on how the technology is being applied with clinical (and some non-clinical) populations, professional issues involved in its use, and what is in store for the future! A demonstration of the presenter's VR applications will close the presentation and all attendees will receive a CD that contains the slides presented at this tutorial.