Volume 3, Issue 2, Summer 2010

JCR

Journal of CyberTherapy &Rehabilitation

Official Journal of the International Association of CyberPsychology, Training & Rehabilitation

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June 13-15, 2010 – Seoul, Korea

THE VIRTUAL REALITY MEDICAL INSTITUTE

JOURNAL OF CYBERTHERAPY & REHABILITATION

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THE VIRTUAL REALITY MEDICAL INSTITUTE

Brussels, Belgium

San Diego, California

International Association of CyberPsychology, Training & Rehabilitation

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CyberTherapy
& Rehabilitation

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EDITORIAL

Welcome to the Summer 2010 issue of the Journal of CyberTherapy & Rehabilitation (JCR). As you know, JCR is one of the two official journals of the International Association of CyberPsychology, Training & Rehabilitation (iACToR). Now in its 15th year, the annual international CyberPsychology & CyberTherapy Conference (CT15) agreed, in 2009, to become the official conference of iACToR. So, along with CyberPsychology, Behavior, & Social Networking Journal (CPB&SN), CyberTherapy & Rehabilitation (C&R) Magazine, and JCR, we celebrate our Combined Communications Platform. The journals, conference, magazine, and association combine into one powerful platform to address previous information deficits in the utilization of advanced technologies in healthcare. We will strive to speak with a united voice to inform and educate about the uses of technologies in healthcare, as well as how technologies are impacting behavior and society.

This year we are proud to be holding CT in Asia for the first time. Organized by the Interactive Media Institute (IMI), a 501c3 nonprofit organization, in cooperation with Hanyang University, CT15 is being held June 13-15, 2010 in Seoul, Korea. This venue speaks to the continued growth and collaboration, not just amongst Europe and America, but also amongst researchers and scholars worldwide. This year's conference theme is two fold: First, CT15 will explore technologies as enabling tools. This will include the uses of advanced technologies such as virtual reality simulations, videogames, telehealth, video-conferencing, the internet, robotics, brain computer interfaces, wearable computing, non-invasive physiological monitoring devices, in diagnosis, assessment, and prevention of mental and physical disorders. In addition, we will look at interactive media in training, education, rehabilitation, and therapeutic interventions. Second, CT15 will explore the impact of new technologies. CT15 will investigate how new technologies are influencing behavior and society through cyberadvertising, cyberfashion, and cyberstalking, to name a few.

I would like to take this opportunity to thank all those who are helping to make this year's conference possible through their tireless energy and drive – the Co-Organizer and Conference Co-Chair Professor Sun Kim; this year's Scientific Chairs, Professors Stéphane Bouchard, José Gutiérrez Maldonado and Giuseppe Riva; Tutorial Chairs, Professor Luciano Gamberini and Alessandra Gorini; Exhibit Chair and Conference Organizer, Professor Jang-Han Lee; Cyberarium Chair Professor Hunter Hoffman; and Technical Chairs Professors Mariano Alcañiz and Evangelos Bekiaris. Many thanks also to the Scientific Committee, made up of prominent researchers from around the world, and the Local Advisory Committee in Seoul, as well as all of the presenters and attendees. Finally, my gratitude to James Cullen and Jang-Han Lee for overseeing the Conference Coordination, and to the teams at Hanyang University, Interactive Media Institute, Virtual Reality Medical Center, and Virtual Realty Medical Institute for their time and contributions to all facets of the conference.

To our sponsors, who continue to support our vision and help make it a reality, a warm and heartfelt thank you – Bionet, Defense Advanced Research Projects Agency/ Defense Science Office (DARPA/DSO), the European Commission, DGINFSO, Hanyang University, Institute of Aging Society Silver & u-Health Research Center, the Interactive Media Institute, Istituto Auxologico Italiano, Mary Ann Liebert, Inc. Publishers, National Institute on Drug Abuse, National Institutes of Health, OsteoSys, Université du Québec en Outaouais, the Virtual Reality Medical Center, and the Virtual Reality Medical Institute.

As integral parts of our Combined Communications Platform, the CT Conference series will continue to work together with iACToR, JCR, and C&R to educate industry, academia, and government officials on the explosive growth of advanced technologies for therapy, training, education, prevention and rehabilitation.

As in previous conferences, this year's conference will be hosting an interactive exhibit area, the Cyberarium, which allows conference attendees and members of the press to try new technologies firsthand. To recognize

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ORAL PRESENTATION ABSTRACTS

Executive Functions in a Virtual World: a Study in Parkinson's Disease

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Abstract

In Parkinson's disease executive functions are altered. We used a Virtual Reality version of the Multiple Errand Test in order to evaluate decision making ability in 12 patients and 14 controls. Patients with Parkinson's disease, even if non-demented, showed strategies full of errors, suggesting that impulse control disorder, very frequent in the course of this disease, could precede cognitive dysfunction.

Keywords: Executive functions, Virtual Reality

Introduction

Even if Parkinson's disease (PD) is primarily known as a movement disorder due to a dysfunction of the nigrostriatal dopaminergic system, in recent years, many scientific studies, supported by clinical evidence, have also revealed an alteration in executive functions. This includes difficulty in planning, concept formation, working and visual memory, lexical and attention deficits, and difficulty in dual and sequencing tasks.

Virtual Reality (VR) immersion works as an experimental model where "real" motor symptoms are eliminated or attenuated, and thus helps to focus on findings by evaluating the cognitive component of strategy.

The scope of our study was to evaluate planning, memory, and attention abilities in PD non-demented patients by using a virtual version of a neuropsychological test, the Multiple Errand Test (VMET) (Fortin, Godbout, & Braun, 2003).

Methods

We evaluated 12 PD not-demented patients and 14 controls by clinical scores (Unified Parkinson's disease Rating Scale, Hoehn & Yahr stage), neuropsychological battery (Minimental state, Token Test, Corsi's memory span, Digit span, Short Story recall, Word recall Test, Tower of London Test, Frontal Assessment Battery, Trail Making Test, Street Completion Test) and a virtual version of MET (VMET), which was presented within a virtual supermarket. This is an assessment of executive functions in daily life which consists of performing tasks according predefined rules, meaning there are items to be bought and information to be obtained. Specifically, subjects were requested to select and buy various products presented on shelves with the aid of a joy pad. The analyzed variables were the execution times for the entire task, errors in executing the tasks, with a scoring range from 11 (the subject has correctly done the tasks) to 33 (the subject has totally omitted the tasks), inefficiencies, with a scoring range from 8 (more inefficiencies) to 32 (no inefficiencies), rule breaks, with a scoring range from 8 (more rule breaks) to 32 (no rule breaks), strategies, with a scoring range from 13 (more strategies) to 52 (no strategies), interpretation failures, with a scoring range from 3 (more interpretation