Abstracts from CyberTherapy 14

Designing the Future of Healthcare

June 21–23, 2009
Lago Maggiore, Verbania, Italy
similar to video games, but participants use their body instead of a game controller to control the game. In the application analyzed in this study, the user must direct controlled movement and grasping of a series of balls falling from the top of the screen.

Procedures
Participants were 7 people, all over age 55, with normal mobility (no motor or balance deficits). Participants engaged in a 45-minute sessions spaced 1 week apart for 4 weeks. They were tested at four different levels of speed: level 1, M = 42 objects/minute; level 2, M = 47 objects/minute; level 3, M = 57 objects/minute; and level 4, M = 117 objects/minute.

Results
Proportion correct was analyzed with two nonparametric repeated measures analysis of variance tests (Friedman’s). The variable “week” was tested as a within-participants variable. The analysis indicated there was no significant difference in performance across the 4 weeks; that is, no practice effects occur on this schedule of intervention. An analysis of the level of test difficulty (level 1, M = 0.953, SD = 0.063; level 2, M = 0.971, SD = 0.040; level 3, M = 0.912, SD = 0.112; level 4, M = 0.597, SD = 0.202) was conducted and showed a significant difference among levels, χ²(3, N = 7) = 13.8, p > 0.05. Participants performed poorly on the level with the fastest on-screen objects.

Conclusions
The results suggest that practice effects are not a concern on a once-a-week VR schedule. However, the initial choice for speed of on-screen objects needs to be carefully considered because a speed of 117 objects/minute was a challenge even for persons with normal mobility.

References

A Web-Based Tool for Cooperating Behaviors in Eating and Physical Activity Control
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Introduction
The field of information technology and the Internet for health care has developed rapidly in the last few years. Recently patient-centered and consumer-centered health care systems have been developed. 1,2 New services devoted to improved personalized health care are emerging from current Web-orientated research. 3 Among them, social networking, “which involves modeling relationships between actors,” can represent a key to enhancing weight-change behavior programs involving Web technology and to surmounting the evidenced barriers. The delivery of structured behavioral weight-loss programs is feasible by Internet and may reach greater numbers of people, helping them to maintain weight loss. 4 Reducing participant abandonment and promoting online weight-loss motivation remain to be explored. 5,6 Membership in a community can improve motivation in performing tasks. 7 Therefore, we designed and implemented a dynamic Web application for controlling eating and physical activity behaviors based on the cooperation between two communities: the patient community (people who decided to follow a healthy lifestyle to lose weight) and the nutritionist community (professionals who guide patients to reach a healthy lifestyle).

Methods
A Web application consists of a data layer, usually a database or a file system structure, and uses a Web site as the front end. We designed the database to store data and information regarding the two cooperating communities. For the participants, in addition to demographic data, we considered height, weight, body mass index, daily physical activity, and messages to other patients (interacting as in a self-help group) and to nutritionists. For the nutritionists, we considered advice given to participants and other nutritionists. A file system structure collects digital pictures of participants’ meals, taken by the participant using a digital camera. The Web system graphical user interface was designed for easy completion of data forms and better comprehension of displayed information.

The Web application was implemented using Microsoft Active Server Pages technology with JavaScript scripting language. Active Data Objects technology was used to retrieve Web page content from the database developed using Microsoft Access. The data storage structures contain participants’ data that require ensuring confidentiality and protection against unauthorized access and use. Those security features were developed by a registration procedure of users, who were given their own login and password.

Results
The Web system contains four sections, giving every role the required functions. Patients can insert data, upload digital pictures of meals, and ask for advice by sending messages to other participants or to the nutritionists. For each patient, nutritionists can calculate both calories consumed during
meals and calories burned during physical activities. Then, they can advise participants of benefits or disadvantages of their health and nutritional choices. Nutritionists also can communicate with each other. Managers can register users or temporarily disable their access to the system, while administrators can manage Web site content.

Conclusions

The Web-based tool allows the collection of all eating and activity data of a community of participants as well as recording interactions among participants and nutritionists. Participants can cooperate, as in a self-help group, while nutritionists can guide those who are struggling with unhealthy lifestyle choices and their consequences.

References

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An e-Health System for the Elderly: Efficacy of Emotional “Virtual Worlds”

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Introduction

A digital gap exists between information and communication technologies (ICTs) and the elderly population that can exacerbate isolation, loneliness, depressive symptoms, anxiety, and adaptive disorders. Several current works point out the advantages of using ICTs to improve the quality of life of older people. Butler is a technology platform that uses the Internet as a network linking different types of users. The system offers ICT-based tools adapted to the elderly population. Butler’s diagnostic application detects symptoms of physical unease, mood anxiety, and depression. Its therapeutic application features “virtual worlds to generate positive emotions,” which includes two 3D virtual environments that present various visual and auditory stimuli to produce changes in users’ moods (one for joy and one for relaxation). These environments simulate natural settings and include several procedures for mood induction often used in psychology (narrative, autobiographical memories, relaxation procedures). The “Therapeutic Book of Life” allows practitioners to apply a training program of reminiscence. Butler includes a playful application increase social relationships, provide entertainment, and teach new technologies. It also features E-mails, Search for Friends, My Memories, Book of Life, and Easy Access to Internet. The objective of the present work is to offer data of the efficacy of Butler’s virtual worlds to generate positive emotions tool.

Methods

Participants

A sample of about 25 participants, ages 58 to 70, will use the 3D virtual environment. Following ethical requirements, participants will not suffer from any psychological or cognitive problems nor exhibit high scores in anxiety or depression.

Measures

The State Trait Anxiety Inventory (STAI Spanish version) is a self-administered questionnaire composed of 40 items, divided into two subscales, concerning feelings of anxiety, both general (trait) and situational (state). Only the situational subscale is used in this work; it is applied before and after each Butler session. The Visual Analogic Scale (VAS) in this instrument quantitatively assesses (from 1, not at all, to 7, totally) the degree to which the respondent experienced different emotions at various periods (before and after each Butler session). The emotions assessed are joy, sadness, anxiety, and relaxation. The Positive General Mood State (GMS), a visual analogue scale consisting of 7 facial expressions, ranks mood from 0 to 6 (0, a face of maximum sadness, and 6, a face of maximum happiness). Users choose the facial expression that best represents their mood before and after their walk through the virtual reality parks.

Procedure

We contacted people over 60 years old who attended the university and invited them to participate in the study. They will complete the STAI-S and the Yesavage-15 scale in order to detect clinical scores for anxiety and depression (which is set as exclusionary criteria). Once the informed consent is signed, the participants will receive the key to access the system, and they will come to the university once a week to use Butler. Before and after each session, a researcher will administer the VAS, STAI-S, and GMS. Users also will decide which activities to perform at each session.

Results

It is expected that the virtual walk trough the 3D environment will increase the corresponding emotion (joy or relaxation),