Monthly Focus

INTERSTRESS

Interreality in the Management and Treatment of Stress-Related Disorders

Stress contributes to many chronic diseases suffered by citizens in today's society. It is known to increase one's risk of developing disease, and may trigger or worsen such illnesses as depression, diabetes, and cardiovascular disease. What if lowering your stress level was as easy and as much fun as playing a video game? What if all of the work was automated for you, with reminders on your mobile phone? What if the system that achieved this was so smart, it changed the program the second you changed your behaviour? This is the vision of our project.

Clinical challenge

INTERSTRESS proposes a new e-Health concept: Interreality. Interreality is the integration of assessment and treatment within a hybrid, closed-loop empowering experience, bridging physical and virtual worlds into one seamless reality. Within Interreality:

• Behaviour in the physical world will influence the virtual world experience.

• Behaviour in the virtual world will influence the real world experience.

Our **objectives** are to:

• Achieve quantitative and objective assessment of symptoms using biosensors and behavioural analysis.

• Provide decision support for treatment planning through data fusionand detection algorithms.

• Provide warnings and motivating feedback to improve compliance and long-term outcome.

The INTERSTRESS project intends to design, develop and test an advanced ICT-based solution for the assessment and treatment of psychological stress.

Clinical use of Interreality is based on a closed-loop concept that involves the use of technology for assessing, adjusting and/or modulating the emotional regulation of the patient, his/her coping skills and appraisal of the environment based upon a comparison of the individual patient's behavioural and physiological responses with a training or performance criterion. The project will provide a proof of concept of the proposed system with experimental trials.

These goals will be achieved through:

• 3D Shared Virtual World role-playing experiences in which users interact with one another.

- Immersive in the healthcare centre, yet non-immersive in the home setting.

• Bio and Activity Sensors (from the Real to the Virtual World)

- Tracking of emotional/ health/ activity status of the user and influencing the individual's experience in the virtual world (aspect, activity, and access).

• Mobile Internet Appliances (from the Virtual to the Real World)

- Social and individual user activity in the virtual world has a direct link with the user's life through a mobile phone/PDA.

Case Example

Rosa relies on support from her elderly mother to cope with her husband's death. But when Rosa's mother also falls ill, Rosa is forced to assume the role of caretaker, and her coping efforts seem ineffective: Rosa is affected by chronic stress. In the INTERSTRESS system, Rosa is exposed to virtual scenarios simulating real-life stressors, allowing the therapist to index their impact.
At home, Rosa can practice stress management skills in simulated environments and meet others in the virtual community to share experiences.

Current Status

The release of the main INTERSTRESS technological components was completed in November 2011, and the integrated service platform is currently in an advanced development stage. The formative evaluation studies have included over 100 participants from three EU countries – Italy, Spain, and Germany. **The clinical trials are set to begin in Spring 2012 and will last for nine months**, during which time the efficacy and effectiveness of the Interreality approach in supporting stress management will be compared with conventional cognitive-behavioral therapy programs.
The assessment phase will feature psychological questionnaires, a standard clinical interview, and a week-long self-monitoring phase, where participants will be responsible for monitoring their physiological and psychological stress reactions by means of biosensors and a smartphone (experimental group) or a diary (control group). **In the experimental training phase, participants in the experimental condition will be exposed to typical stressful scenarios in a virtual reality simulation and will then be taught basic coping strategies**.

Expected Results & Impact

Stress is an increasingly recognized phenomenon that has negative effects on growing numbers of people. **Chronic stress is responsible for premature mortality in Western countries**, and work-related stress accounts for premature cardiovascular mortality rates. In 2006, Health Canada released a report indicating that work stress accounted for $1,950,000 of organization's losses.
INTERSTRESS aims to **improve links and interaction between patients and doctors**, facilitating **more active participation of patients in the care process**.
Also, it expects that there will be a reduction in hospitalization and improved disease management and treatment at the point of need, through more precise assessment of health status. This will reduce healthcare costs and provide greater accessibility for individuals.
Overall, INTERSTRESS envisions a **better quality of life**, where personalized, immersive e-therapy in which biosensors, VR simulations, and presence allow the ability to detect and manage stress anytime, anywhere are key components of the INTERSTRESS solution. This speaks to the continued call for the active participation of individual citizens in their own health and well-being, and the **need for affordable healthcare in the palm of the users' hands**.

Partners

Italy: Istituto Auxologico Italiano, FIMI S.r.l., Virtual Reality & Multimedia Park Spa, Università di Pisa, Create-NET, Consiglio Nazionale Delle Ricerche; Greece: Centre for Research and Technology Hellas; Spain: Starlab Barcelona SL; Belgium: Virtual Reality Medical Institute; Germany: University of Passau; Switzerland: Universität Basel

Timetable:	from 03/2010 – to 02/2013
Total cost:	€4.417.451
EC funding:	€3.009.653
Instrument:	ICT
Project Identifier:	FP7-247685

Important Links:

Project website: http://www.interstress.eu
Project factsheet: http://www.interstress.eu/images/Interstress_factsheet.pdf
European Commission funded projects:
http://ec.europa.eu/information_society/activities/health/research/fp7phs/index_en.htm

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