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Virtual Reality and psychotherapy

- Research -

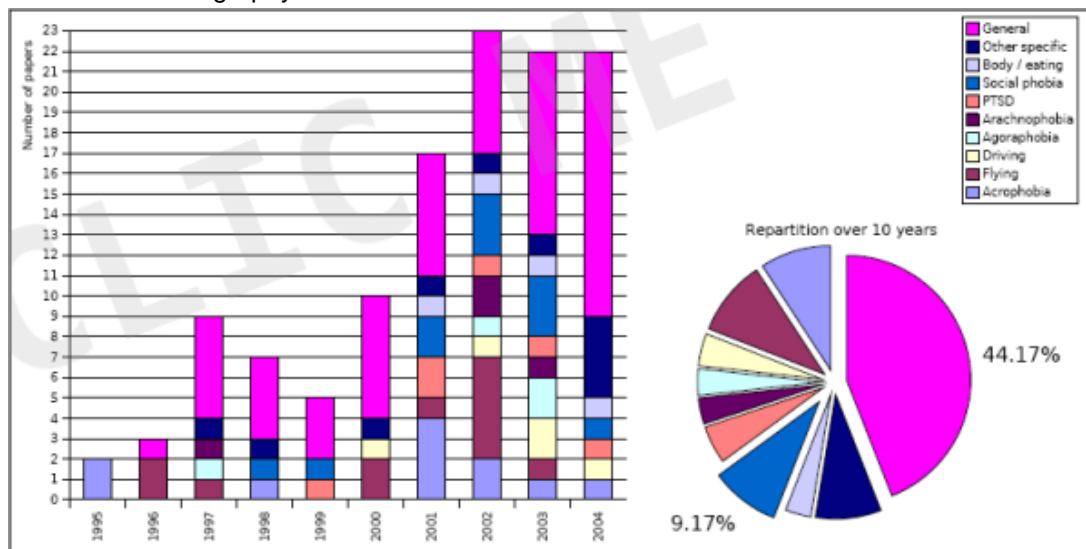


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Birth of Virtual Reality Exposure Therapy

In 2005, I could retrace the evolution of the research activity in this field by collecting almost every publications related to VR in psycho-therapeutic context that are referenced in the major databases (ACM, IEEE, Pascal, BIOSIS, JMEDLINE, Web of Science and CSA) and in many international conferences (e.g. ICDVRAT). My database covered the past ten years before the publication of my thesis (2005) and shows the evolution and the repartition of scientific work in this area. This analysis was made possible by the limited amount of publications in this emerging and specific field. Statistics on VRET Bibliography



VRET publications Repartition of the publication on VR therapy since 1995, sorted by anxiety disorders.

Over the 120 references collected, I could observe a strong increase of publications since 1995 which reflects the growing interest and the success for VR in psychotherapy. In addition, although there has always been more articles discussing the general aspects of VRET (44% in average), the variety of disorders studied shows the flexibility of the VR technique. Not surprisingly, phobias whose exposure are related to well known simulation areas were the first and the most studied (flight simulator for fear of flying and geometrical environments for acrophobia).

VRET beginnings

Publications only represent a single facet of the development of VR for exposure therapy: in parallel, virtual reality techniques became a speciality for psychological clinics or hospital psychiatry services. Among them, Virtually Better, Inc. is an example of private center created in 1996 to apply the results of successful researches conducted by Barbara O. Rothbaum and Larry F. Hodges, particularly known as pioneers in VRET with the treatment of acrophobia (Hodges, 1995) or fear of flying (Hodges et al., 1996). Similarly, the Virtual Reality Medical Centers today propose a large set of simulators for the treatment of various phobias. Their technology and experience in the use of VR in therapeutic programs is the result of researches conducted by Dr. Brenda K. Wiederhold of the Interactive Media Institute (IMI). With similar goals, the European Union funded the VEPSY research project which started in 2001 to join the efforts of multiple countries and eventually validate and disseminate tele-medicine and portable virtual environments for clinical psychology. More specifically, medical institutes in Italy (G. Riva, Istituto Auxologico Italiano, Milan), Spain (C. Botella, Universitat Jaume I, Castellón), and France (P. Légeron, Hôpital Sainte-Anne, Paris) who focus on clinical psychology promote VRET by providing free software solutions (VEs used for panic attacks and customizable architectural environments usable for various phobias). Their experience in the application of virtual reality in medicine, neurology and psychology is explained in details by Riva et al. (2003).

VR for exposure therapy of social phobia



I wouldn't want to sum-up my thesis here, but to outline two interesting observations:

* People who usually feel stressed when having to speak in public have similar anxiety symptoms (heart rate changing, skin conductivity raising) when addressing a symbolic virtual audience (cf. preliminary study). * Using VR immersion for exposure sessions during the cognitive and behavioral therapy of social phobic patients help them overcoming their anxiety of public speaking (cf. therapeutic study).

Tracking gaze in VR to observe avoidance behaviors

Using an eye tracker during a VR exposure session informs the therapists on the avoidance behavior of phobic subject. For social phobia, we could observe where the patients are really looking when speaking to someone or to an assembly, and show that they typically avoid to look people in the eyes, even if the characters are virtual (cf. clinical tests).



The comparison of pre- and post-therapy gaze data shows a clear improvement of the behavior and is therapeutically very useful (cf. therapeutic study).

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