

Multicomponential VR-enhanced treatment of emotional overeating in obese subjects: a controlled clinical trial

Gian Mauro Manzoni, Psy.D. candidate,

Gian Luca Cesa, Psy.D. candidate, Daniela Villani, Ph.D.
candidate, Giuseppe Riva, Ph.D.

Istituto Auxologico Italiano – Italy
Applied Technology for Neuro-Psychology Lab.

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AIMS

The goal of this study is to evaluate the efficacy of a virtual reality enhanced therapy in the treatment of emotional overeating in obese subjects.

The therapeutic aim is to help obese subjects to cope and manage the emotions in response to which emotional overeating occurs.

We have just begun to investigate the effectiveness of Immersive VR, coupled with adequate therapeutic narratives and integrated by a self-monitoring technique and a mobile non-immersive VR tool.

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OBESITY

Obesity is a medical condition characterized by overweight. Overweight is defined by a BMI>25; obesity is defined by a BMI>30 and a BMI>35 defines a severe/morbid obesity (WHO, 2003).

Obesity is a biopsychosocial pathology, in fact its development is characterized by a complex and dynamic system of biological, social and psychological factors.

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EMOTIONAL OVEREATING (1)

From a behavioural point of view, it consists in eating an unusually and large amount of food in response to negative as well as positive emotions, independently from speed and level of control.

Psychologically, emotional overeating is well explained by the psychosomatic theory of obesity, for which obese people overeat when anxious and eating reduces this anxiety (Kaplan and Kaplan, 1957)

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EMOTIONAL OVEREATING (2)

Clinical observations as well as laboratory studies showed that over-weighted and obese people tend to eat more food in response to emotions than normal-weighted subjects and tend to eat in response to emotions even when normal-weighted subjects don't (Ganley, 1989).

Explaining mechanisms may involve both brain metabolism (serotonin) and learning factors, e.g. an earlier association of pleasurable, non-anxious situations with feeding (Canetti, 2002).

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EMOTIONAL OVEREATING (3)

Emotional overeating is a dysfunctional eating behaviour that affect many obese people (Masheb and Grilo, 2005).

It seems to be a component of binge eating and Binge Eating Disorder (BED)

Even if we cannot sustain that emotional overeating is implicated in the aetiology of obesity, we can say with certainty that in many cases it contributes to its maintenance and increase.

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THE NEW VR-ENHANCED THERAPEUTIC PROTOCOL (1)

The traditional psychological clinical protocol for the treatment of obesity undervalues the importance of emotional overeating in obesity.

In order to clinically approach this dysfunctional eating behaviour, we developed a new VR-enhanced therapeutic protocol that consists in both pc-based and mobile sessions.

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THE NEW VR-ENHANCED THERAPEUTIC PROTOCOL (2)

It incorporates different clinical components:

- Progressive muscular relaxation, autogenic training (only warmth part) and deep breathing exercises
- Self-monitoring work (ABC) from cognitive-behavioural psychotherapy
- Development of emotion awareness and induction of good feelings from Emotion-focused therapy

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THE NEW VR-ENHANCED THERAPEUTIC PROTOCOL (3)

It lasts three weeks and it is organized in this way:

- 1° week: two VR pc-based and therapist-based sessions and five days of mobile sessions.
- 2° week: one VR pc-based and one therapist-based sessions and five days of mobile sessions.
- 3° week: one VR pc-based and one therapist-based sessions.

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THE NEW VR-ENHANCED THERAPEUTIC PROTOCOL (4)

1° session:

Introduction



Problem
formulation



Immersive VR



Debriefing

2° session:

Immersive VR



Debriefing



Self-monitoring
assignment



Mobile phone
delivery

3° session:

Analysis of self-
monitoring sheets



Debriefing about
the mobile
sessions

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THE NEW VR-ENHANCED THERAPEUTIC PROTOCOL (5)

4^o session:

Immersive VR



Debriefing



Self-monitoring assignment



Mobile phone delivery

5^o session:

Analysis of self-monitoring sheets



Immersive VR



Debriefing

6^o session:

Conclusion about the whole experience



Suggestions to keep on self-monitoring and having relaxing sessions at home

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THE NEW VR-ENHANCED THERAPEUTIC PROTOCOL (6)

In immersive VR phases, participants experience relaxation by applying different relaxation techniques and listening to different therapeutic narratives.

A virtual environment representing a tropical island is used to enhance relaxation by visually presenting key images for facilitating the process and enabling participants to practice, and hence master, relaxation techniques in a more realistic context.

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THE NEW VR-ENHANCED THERAPEUTIC PROTOCOL (7)

In the two mobile phases, subjects continue relaxation exercises individually and daily through the support of a mobile phone playing a relaxing video extracted from the virtual environment, with a relaxing narrative.

Plus, they apply self-monitoring each time they feel down, writing on a sheet about the situation in which they are, the emotions, the thoughts and the behaviours.

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THE CLINICAL TRIAL (in progress)

Participants

25 female in-patients (Mean age=49,08; SD=10,6) meeting WHO criteria for morbid obesity. Further inclusion criterion was and is a score of 1 or higher in at least one of the 6 items of the Emotional Overeating Questionnaire (EOQ)

Experimental design

We compared 3 conditions:

VR: Immersive VR relaxation with integrated clinical protocol

TR: Traditional relaxation with integrated clinical protocol

CTRL: Control group with no treatment

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THE CLINICAL TRIAL (in progress)

Measures (1)

Primary outcome variable – 3 months follow-up (in plan)

EOQ (Emotional Overeating Questionnaire) (Masheb, 2005)

Secondary outcome variable – post treatment and follow-up

WELSQ (Weight efficacy life style questionnaire)

(Riva et al., 2003, *Italian validation*)

BDI (Beck Depression Inventory)

STAI (Trait Anxiety Inventory)

Tertiary outcome variables – in session emotional changes

STAI (State Anxiety Inventory)

VAS (Visual Analogue Scale)

PANAS (Positive Affect Negative Affect Scale)

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THE CLINICAL TRIAL (in progress)

Measures (2)

Sense of presence

ITC-SOPI (Independent Television Commission - Sense Of Presence Inventory) (Lessiter et al., 2001)

Physiological measures – in session changes

heart rate, galvanic skin response, electromyography and respiration - objective correlates of relaxation



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PRELIMINARY RESULTS

Premise

- Statistical data analyses are characterized by low statistical power due to the small number of the participants.
- In the VR experimental condition, only two participants followed correctly the clinical protocol.
- Difficulties in VR protocol are linked to:
 - Mobile phone use
 - Virtual environment complexity

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PRELIMINARY RESULTS

Between groups comparisons

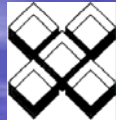
- Analyses concerned only two patients in VR group
- Descriptive analyses showed:
 - a higher reduction in state anxiety (STAI) for the VR group (Mean delta= -14,62) compared with TR group (Mean delta=-7,99)
 - a higher reduction in VAS anxiety scale for the VR group (Mean delta= -1,37) compared with TR group (Mean delta= -0,56)

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DISCUSSION

- Medium opacity influenced the treatment efficacy.
- Data about the participants adherence to the VR protocol show that only two were able to experience correctly the VR and the mobile phases.
- Probably, VR protocol would be more usable and so more effective for a different population.

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Thank you for your attention

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