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MTT-VR/AR (Virtual and Immersive Transformative Therapeutic Metaphors) in stress treatment:

the evolution of cybertherapy

F. Termini[1]

I.E.ME.S.T. Euro-Mediterranean Institute of Science and Technology - Istituto Euro-Mediterraneo di Scienza e Tecnologia (IEMEST), Via Michele Miraglia 20, 90139 Palermo, Italy
e-mail: fedeletermini@iemest.eu

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Abstract. The following contribution, the result of the work of a multidisciplinary research team, is aimed at presenting the first qualitative and descriptive results of a research project that provides further evidence and confirmation of the usefulness of applying emerging technologies (Immersive, 3D, V/R, A/R) to the field of clinical psychology and psychotherapy. In this paper we will present an innovative psychotherapeutic technique, that of transformative therapeutic metaphors (MTT), based on Mills', Crowley's and Gordon's therapeutic metaphors ((Mills (1988); Gordon (1992))), which we have already used in a different and innovative way at a clinical level, but which, interpreted and used in a virtual and immersive context (MTT-VR/AR), offer, from a clinical point of view, the possibility of enhancing the expression and representation of psychic contents as well as the advantage of initiating and rendering a more effective transformative dialogue.

Key words. Clinical psychology and psychotherapy – transformative therapeutic metaphors – emerging technologies

1. Therapeutic Metaphors

The main characteristic of metaphors is that they use a symbolic language that takes on a synthetic form and expression that encompasses both cognitive and affective-emotional dimensions. The symbolic code makes them universal, intelligible and economical from the point of view of the expressive and communicative interpretation of psychic contents. Moreover, the symbolic language brings them closer to the evocative power of poetry and art in general (Termini, Raciti (2017)). The emotional stimulus provided by the imagination gives a glimpse of new aspects, angles and visions of reality. Resistance breaks down precisely because metaphors and the unconscious speak the same language and as they have many aspects in common, they recog-

nise each other. What patients need is not so much a logical understanding of their problems as a change in their emotional attitude, their description, representation and perception of them. As M. Erickson taught us, metaphors affect and recode not only the psyche but also the functionality of our nervous system and its connections, they allow us to recover hidden or dormant internal resources (Erickson (1959)). Metaphors are an excellent indicator of trauma and the emotional state associated with it, of the individual's map (historical events, emotionally significant figures, relationships, belief systems, attitudes and values, etc.). They widen the network of reference experiences to allow the restructuring process and the recovery, in a rehabilitative key, of alternative adaptation strategies. Isomorphism with traumatic contents, emotionally characterised, and decentralisation (Gordon (1992)) favour the global vision, hence the prevalent functioning of the right hemisphere, with a higher level of analysis and observation of situations.

Fig. 1. Family in oculus viewer 1.

Fig. 2. Family in oculus viewer 2.

2. Methodology

The subjects who participated in the research were subjected to, pre- and post-experiment, with a view to measure their anxiety level by means of a self-administered psychometric instrument, the STAI-X (Sanavio et al. (1997)), which detects state, trait and post-treatment anxiety. Initial anxiety in subjects was triggered and self-induced, prior to administration, by asking them to imagine stressful situations that were meaningful and emotionally relevant to them. The metaphors used in the research were independently chosen by each subject and for each of them, two were used. Both the subjects in the control group and those in the experimental group were treated with the technique of therapeutic metaphors, which incorporates Gordon's model (Gordon (1992)) and Mills and Crowley's technique (Mills (1988)), but extends it and makes it innovative thanks to the fact that a transformative dialogue is established with them, with the difference that in the group that we could define as the control group, taken from clinical practice, the interaction took place only at an imaginative level and was simultaneously shared with the therapist, in the group subjected to the experiment, the metaphors were translated on a virtual level and used in an immersive context (see fig.1, fig.2, fig.3). This was done in order to isolate the variable "dialogue-interaction with virtual metaphor" (intervening variable) from that "dialogue-interaction with imaginative metaphor" (control variable). A second control group was treated in the following manner: the subjects were allowed to spontaneously interact with the metaphors without, however, establishing any kind of dialogue with them. This was done in order to test the importance and weight of the transformative dialogue with them.

3. Treatment

The subjects were asked, as they proceeded in their interaction with the individual virtual metaphor of their choice (virtually touching and manipulating it, approaching or moving away from it, etc.), to report a possible dialogue with it, based on the following activation

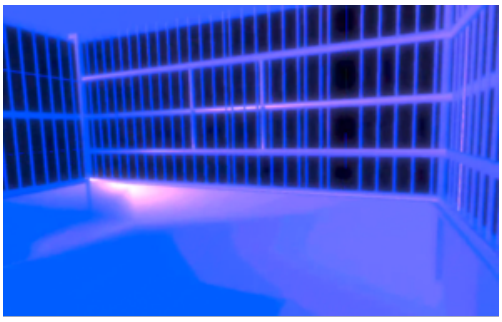

Fig. 3. Prison in oculus viewer.

questions: “What would the metaphor tell you or ask you if it could speak?”, “What would it counsel you?”; “What would you say or respond to it?”. During and at the end of the dialogue, the subject was asked to describe the feelings and emotions experienced.

4. Instruments

The instrument used in this research was the STAI-X (State and Trait Anxiety Inventory - version X), in its versions STAI X-1 (state anxiety), STAI X-2 (trait anxiety) and STAI X-3 (post-treatment anxiety), which are part of a battery of several broad spectrum tests, the CBA 2.0 (Cognitive Behavioural Assessment 2. 0 (Cognitive Behavioural Assessment 2. 0 - Primary Scales), which not only uniformly collects a subject’s anamnesis, but also offers a wide range of initial measurements against which to assess the evolution of the case and the outcome of any treatment, and provides measurements of some essential psychological constructs such as anxiety, depression, fears, obsessions, compulsions and psychophysiological disorders (13). The tests, as mentioned above, were self-administered. The experiments were carried out by allowing the virtual metaphors to be used via a CAVE environment (Immersive Room) and visors. The CAVE used consists of a layout with three vertical walls managed by a control room, a playback system consisting of three Barco F70-W6 3D video projectors and a TRACKPACK/E 4-chamber tracking system managed by the DTrack software. Stereoscopic viewing is made possible through active Volfoni Edge VR 3D glasses with EGT marker support. The visor used in the experiments is the Oculus Quest 2, which allows users to enjoy virtual reality applications in standalone mode without the need to be connected to a workstation. In addition to wearing the visor, the user holds the two controllers that allow interaction with the environments created for the metaphors.

5. Discussion of results

In the experiments performed, the post-treatment score obtained on card 10 (STAI X-3) of the STAI-X (cut-off 85: higher score, indicates presence of anxiety; vice versa, lower score than the cut-off, indicates absence of the state), indicated a total absence of the state of anxiety. Furthermore, what emerges from the clinical observations of the experimentation is that treatment with MTT-VR/AR allows subjects to interface, in the transformative dialogue of traumatic contents, no longer directly and exclusively with the figure of the therapist, with whom it takes time to establish a therapeutic alliance based on trust, but with the virtual metaphor, which becomes the representation of preconscious and unconscious contents (or rather the representation of unconscious traumatic contents) with which the subject dialogues more easily precisely because they represent an externalised part of himself/herself. The use of this technique, therefore, would lead to a threefold advantage:

1) it could circumvent the resistance of individuals suffering from anxiety, obsessive disorders, depressive disorders, post-traumatic stress disorder, etc., to open up immediately with a change specialist with whom they interact for the first time;

2) would implement the effectiveness of the treatment due to the fact that the subject is as if in dialogue with himself/herself or rather with an interface of internal and personal contents that s/he himself/herself has helped to generate and create;

3) the subject has the possibility of seeing and manipulating what makes him/her feel bad. Although not entirely real since it is virtual, but precisely because of this character-

istic, s/he can more easily deconstruct and change, crossing and transcending the interlocking and rigid limits of reality.

Differences have emerged between the metaphors used with viewers (visors virtual reality) and the same ones used in caves (immersive room). In fact, viewers create an "intimate" immersive context that brings out and facilitates the emergence of unconscious content. The emotional distance that the cave creates leads us to consider it more of a "cold technology" as opposed to the former which we could call "warm technology". Space (dynamic displacement) and time, as we have noted, are the other factors to consider but these bring the two technologies together.

The field of pulsating variable stars is now entering a new era, with new scientific and technological challenges.

6. Conclusions

The time taken to move from a state of anxiety to one of relaxation constitutes a discriminating variable between the group subjected to the experimental activity and the first so-called control group, in the sense that this transition occurs more quickly, i.e. it is reached shortly after the start of the treatment thanks to the dialogical interaction with the virtual metaphor. This could make the technique of transformative therapeutic metaphors (MTT) implemented by the new technologies (MTT-VR/AR) of great use for mass emergency interventions (on large numbers), humanitarian crises and collective traumas such as pandemic and post-pandemic (Termini , Curcurù (2020)) or those resulting from war contexts. The experiment also showed that the second control group, i.e. the one treated with the possibility of spontaneously interacting with the metaphors, but without establishing any kind of dialogue with them, did not result in a reduction in anxiety. We expect to further develop this research by applying this technique to numerically larger and more significant groups divided by subjective emergence categories on which analyses of within- and between-group variance can be performed.

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