

A VR BASED THERAPY FOR THE TREATMENT OF IMPOTENCE AND PREMATURE EJACULATION

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Abstract. The use of psycho-dynamic psychotherapy integrating virtual reality (VR) dealt with in this study on the treatment of erection dysfunctions and premature ejaculation started several years ago, after having seen the scarce results we obtained using exclusively a psycho-dynamic approach (accompanied by pre-recorded sound and music). Considering the particular way that full-immersion VR involves the subject who experiences it, we hypothesized that better results could be obtained during therapy for these sexual disorders and in particular regarding the nature of erection dysfunction, commonly referred to as impotence “a persistent or recurrent inability to attain, or to maintain until completion of the sexual activity, an adequate erection.” The plan for therapy consisted of 12 hour-long sessions over a 25-week period, and the methods involved the use of a VR helmet, joystick and miniature television screens that projected specially-designed CD-ROM programs on psychological development.

1. Introduction

In treating sexual dysfunction, impotence and premature ejaculation, our research group decided to associate the use of psycho-dynamic psychotherapy with multimedial methods in order to attain faster, better results. After various pilot studies, we found that VR was the best approach. Infact VR, *through specially designed program*, acts upon the brain at various levels. We found confirmation of this effect on the brain by using the brain pet scan. The therapy program described in this chapter, is repeatable, and allows concrete results to be obtained in a relatively brief period. We may therefore say that our research offers sex therapists and urologists, a new way of treating sexual disturbances.

2. A clinical study

This study was conducted on heterosexual patients divided into two groups: Group I included patients who had been impotent for at least six months; Group II, those affected by primary premature ejaculation. Patients, after having answered a sexological questionnaire, were examined and given laboratory tests in order to find any urological or internal pathologies, and any patients having organic pathologies serious enough to constitute the sole cause of their sexual dysfunction were excluded from the study. Only when all these investigations gave normal findings, including lab analyses and the nocturnal Rigiscan, was the impotence classified as being due to psychological factors, and the first group was divided into two subgroups, A (purely psychological causes) and B (mixed causes):

- In *group I* 50 patients began a 25-week course of treatment with full-immersion VR as well as psychotherapy. They ranged in age from 22 to 75 years (mean: 45 years).

Twenty of these patients (40 %) exhibited psychological impotence (*subgroup A*); *subgroup B*, thirty patients (60%), had combined factors.

- In *group II* 16 patients began a 25-week course of treatment with full-immersion VR as well as psychotherapy. They ranged in age from 21 to 44 years (mean: 31 years).

All patients in the two groups, after a first psychological and sexuological session to determine their symptoms, and with their informed consent, received the following therapeutic procedure.

The treatment consists of 12 one-hour sessions, initially once a week, and later once every two or three weeks. Three additional sessions are held with the sex-partner (if any) in order to identify any problems within the couple, such as collusion or hostility. The 12 treatment sessions were as follows: The first baseline session employs acoustic therapy, the second consisted of psychotherapy; then, in the following weeks, four acoustic sessions were alternated with six VR experiences; a final discussion followed.

During the acoustic experience, the psychotherapist together with the patient listened to a recording of two voices (on a musical background) that described pathways through a forest. The patient's reactions, comments and body language were noted and, with the psychotherapist, he discussed his experience afterwards. During the 5-minute VR experiences, the patients used a joystick and a stereophonic head mounted display to interact in a virtual environment (VE) developed using the VREAM toolkit software. The computer used was a PC Pentium 133 (16 Mb Ram). In the VE four different expandable pathways (similar to the ones described in the first audio session) opened up through a forest, taking them back to their childhood, adolescence and teen years when they started to get interested in the opposite sex.

The patient, feeling that he was totally unobserved and in complete privacy, heard, saw and moved along the VR pathway with unlimited movement capabilities. Different situations were presented with obstacles that the patient had to overcome for going on. In this virtual world we also included bits of non-erotic film which were always related to the ontogenesis of male sexual identity. Each film-clip lasted about 30 seconds and was activated by all patients in response to the same actions, and completed the immersive experience. The psychotherapist was linked to the patient through headphones to overcome any technical interaction difficulties. Situations that might have directly stimulated a sexual reaction were not evoked by the acoustic and VR experiences.

Apart from sensations of well-being or improved general condition, only the return of adequate erection with completion of sexual activity was regarded as a positive result. In the case of premature ejaculation - even if we are aware of the DSM IV definition [1] and the importance of the patient's and his partner's subjective evaluations - we chose to omit these evaluations in favor of objective observations: the capacity to significantly prolong the time between penetration and ejaculation (more than 2 minutes or more than 15 pelvic thrusts) was therefore regarded as a positive result. At the end of the sessions, the patients completed a second self-administered sexual-activity questionnaire. The partner was interviewed separately at the end of the cycle to obtain confirmation of the results.

3. Results

After 25 weeks of treatment, we obtained the following results:

- *Group I A - impotence due to psychological factors*: drop-outs 3 cases; no result 3 cases; improvement 3 cases (partial positive response); resolution 11 cases (complete positive response). Excluding drop-outs (15% before the seventh session), the total partial and complete positive responses thus amounted to 82%. An increase in positive results, but still less than 66% (two out of three times) was defined as a partial positive result.
- *Group I B - impotence due to combined factors (psychological and a general medical condition or substance-use deemed contributory but not sufficient on its own to account for the sexual dysfunction)*: drop-outs 5 cases; no result 4 cases; improvement 6 cases (partial positive response); resolution 15 cases (complete positive response). Excluding the

17% drop-out rate, the total partial and complete positive responses was therefore 84 %. A partial positive result was similarly defined as with group I A.

- *Group II - premature ejaculation:* drop-outs 1 case; no result 4 cases; improvement 2 cases (partial positive response); resolution 9 cases (complete positive response).

The total partial and complete positive responses was therefore 73%, excluding dropouts (6%). A partial positive result was defined as with group I. Patients benefiting from the therapy reported lasting improvement when contacted six months after the last session. No undesirable physical reactions of any kind were caused by the 15-minute VR experience, and most patients reported, in fact, a desire to prolong the full-immersion VR experience.

4. Discussion

In this study, which follows other research done by us on the use of VR for the treatment of impotence, including one of our projects now being published in the International Journal of Impotence Research [2,3,4], we have grouped together both cases of impotence and premature ejaculation treated using VR-inclusive therapy in order to point out that this new methodology, which uses a repeatable protocol in its plan of therapy, speeds up the psycho-dynamic process which leads to the resolution of the problem in a very high percentage of cases, as indicated in the results table.

It is an evolution of the first sex therapy proposed by Masters and Johnson [5], and takes into consideration as well the new advanced theories of Kaplan [6], Stoller [7], Money [8], Schaffer and Emerson [9], Ainsworth and Bowlby [10,11] and Baldaro Verde [12,13], and is applied over a six-month period. It follows that sexual identity, then, defined by a multi-factor concept, is acquired in the earliest years of life through a process of identification with the same-sexed, parent, and is completed by the parent of the opposite sex. It becomes a certainty only at the end of an often difficult, complex process which includes a fusion of biological, psychological and social elements in a dynamic continuum. The evolving aspect lies in the temporal order in which gender identity, social role and objectives emerge. The dynamic aspect involves the possibility that one of the pillars of sexual identity may be damaged or even destroyed. In such cases therapy is required, and sexual identity must be rebuilt and the symptoms decoded. At this critical moment, the VR method enables the patient to quickly develop memories and emotions that are worked through with the psychotherapist at the end of the session, while the patient is still under the influence of the interactive experience, thus accelerating the process of working through events and sensations personally, allowing the patient to enter the sphere of associations of sexual dysfunction, which requires much more time when only psychotherapy is used. The patient follows pathways in the virtual experience that accelerate a psycho-dynamic process which eludes cognitive defenses and directly stimulates the subconscious, hence also everything related to his experience in the sexual sphere. The obstacles that lead to sexual dysfunction are thus brought to light. As the patient becomes aware that the causes of his sexual dysfunction can be modified, he acquires, under the therapist's guidance, a further means of taking part in the healing process. We suggest, on the basis of the neuro-psychological work of Damasio [14], that by interacting with his own senses through VR, the patient generates inputs that act on phylogenetically lower brain centers through the neocortex to modify certain associations. Disinhibition of the sex drive, in the Freudian sense [15, 16, 17, 18, 19], is the probable result.

The positive results of this therapy were lasting: this suggests that this method accelerates the healing process by re-opening old brain pathways or opening and consolidating new ones. This assumption is based on studies with the marine snail *Aplysia californica* [20, 21, 22, 23] and implies that new and rarely-used inter-synaptic connections may be established so that new mnemonic associations favoring satisfaction of natural drives can flow. We may, therefore, dare to affirm that, through this plan of therapy which applies virtual reality, it is possible to obtain changes in functional metabolic activity in specific areas of the brain connected with the erection mechanism, a finding confirmed by tests performed using Brain Pet done before and after therapy [24].

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