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## Bridging the Gap Between Neurotherapy and Psychotherapy

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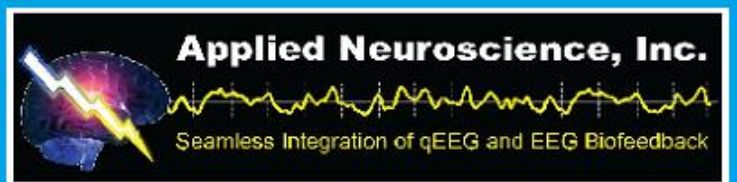
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David Freides, PhD

**ABSTRACT.** Carmen's (2004) frontal lobe, infrared, neurofeedback procedure uses films which 'play' when emissions exceed a threshold and 'pause' when they go below, to decrease boredom and increase motivation to persist at the task of raising and sustaining emissions. Observations are reported on two well-practiced migraine subjects whose emissions plummeted and did not recover during a session when the film they were watching touched on interpersonal issues about which they were in conflict. Implications of these observations for the relationship between neurotherapy and psychotherapy are presented and discussed. doi:10.1300/J184v10n01\_10

**KEYWORDS.** Infrared emission neurotherapy, psychotherapy, psychological conflict

## **BACKGROUND**

The observations discussed in this paper occurred in the context of an eight session, free of charge, IRB-approved open trial of frontal pole infrared brain emission neurofeedback (IRBEN) for migraine headaches. The equipment used and procedures followed were devised by Carmen (2004). The feedback loop makes use of a small box housing an infrared sensor which is responsive to radiation in the 7 to 14 micron band coming through an open, 32 mm, circular field of view. The box is mounted on the center of the forehead by means of velcro straps. The feedback loop is completed by a read-out of infrared emissions on a numeric LED display in degrees Fahrenheit with a resolution of 100 units per degree. The infrared data are sampled at 60 times a second and are updated in the dis-

play 3.5 times a second. The patient's task at all times is to raise and sustain the level of emissions. Participants are told that higher emissions are likely to occur if they can get their mind into a state of relaxed concentration (despite the fact that the instruction seems to be an oxymoron to many). They are also warned to avoid getting frustrated because such a state generally is associated with plummeting emissions.

A training session of IRBEN lasts for 30 to 35 minutes and maintaining concentration for that length of time across sessions is not easy to do. Carmen also devised a procedure that made the experience more interesting and increased motivation to persist in working at the task. He placed a VCR adjacent to the LED display, and had participants also watch a film of their choice from a small library of movies. He wired

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a VCR remote control so that a threshold for infrared emissions could be set below which the film 'paused' and resumed playing when the threshold was exceeded. Thus, patients find themselves controlling the display of the movie by means of their infrared emissions. Thresholds are revised and announced every five minutes. At the beginning of a session, thresholds were set approximately 20 units below the level of emission. This level was low enough that emissions rarely dropped below threshold and learning was mostly errorless. However, when there were major drops in emission levels, the films did pause. After two or three session's practice, and especially during the last ten minutes of a training session, thresholds were set closer to the level of output, or even somewhat above, so that subjects would have the experience of making the film resume.

### **CLINICAL OBSERVATIONS**

The patient had enrolled and completed eight sessions of IRBEN. She had experienced considerable relief from the three or more migraine headaches per month which she had previously suffered but requested additional occasional (once per month to six weeks) booster sessions in the hope of ridding herself of migraines altogether. She paid a fee for these sessions. Each training session was quite similar from about the second or third training session through the eleventh. Over the course of a 35-minute session, she would gradually raise her infrared emissions by two to three hundred units and mostly stayed above threshold. There were occasional setbacks when emissions would fall below threshold and the film would go on pause. These were relatively brief as she would soon find a way to increase and sustain her emissions at a higher level.

The first 20 minutes of the twelfth session went about as usual. However, suddenly her emissions declined precipitously, did not recover, and declined even further when thresholds were reset to a lower level. The remaining 10 to 15 minutes were total frustration as her emissions continued to decline no matter what she tried to do. When the session was over, I inquired as to whether she recalled what was going on in the film when her emissions dropped

and she replied that the film heroine's father was a very good man. I asked whether fathers were on her mind lately and she indicated that her father had "acted up" that week but that was an old story she had worked over in previous psychotherapy. I accepted this reply and bid her goodbye until our next session. Later, it dawned on me that from the little she had mentioned about her life before, her father was the greatest source of conflict in her life. He had been, and still was, a charming, psychopathic man with alcoholism who repeatedly raised her expectations and then disappointed her by not following through on his promises. She was now in her fifth decade, but he continued to exploit their relationship by stealing assets she had acquired on her own.

When seen next, a brief interchange revealed that she had given much thought to what 'father' meant to her. She was not seeing me for psychotherapy, but nonetheless I inquired as to the emotions stirred by this last encounter. She described a series of vaguely negative feelings but no anger. Anger, she noted, was excluded from her repertoire of emotions. I then made some comment, which she readily understood, to the effect that it must take a lot of work to accomplish such a feat since large parts of the nervous system are devoted to dealing with feelings about fight or flight and it seemed to me that her father knew how to provoke both. We proceeded with the neurofeedback session which took place in typical fashion. The next time I saw her, she thanked me for opening up the issue of how she deals with anger.

Another episode of this sort occurred with a different patient who had enrolled in the open trial and completed the eight planned IRBEN training sessions after which she was free, at twelve months follow-up, of the severe, monthly migraines from which she used to suffer. In her sixth training session, her emissions suddenly plummeted and could not be elevated during the remainder of the session. When asked whether she noted what was going on in the film just before her emissions dropped, she replied 'resignations' referring to developments in the plot where the hero was contemplating resigning from an office he had held. She, too, was contemplating offering her resignation, in her case from a training program, and she was very conflicted about whether to pro-

ceed. The last two training sessions occurred without disruption.

### **CONCLUSION AND POSSIBLE IMPLICATIONS**

In these two clinical observations, each from different people, unresolved personal issues provoked by the thematic content of the films being watched, interfered with the process of raising emissions. The disruption was not permanent and in subsequent sessions both persons were able to resume exercising their emission raising skills.

Carmen introduced films into his IRBEN neurofeedback procedures as a means of alleviating boredom and increasing attention. In doing so, I believe that he implicitly assumed that the motivational and attentional effects he sought from film watching would operate in parallel but independently of the process of learning to raise frontal infrared emissions. It was speculated that raising frontal lobe infrared emissions activated frontal inhibitory circuits which could mitigate paroxysmal activity in the trigemino-vascular system that was producing the headache. The clinical vignettes just described, however, suggest that themes or issues or behaviors depicted in films may associatively elicit thoughts, conflicts, and memories that stir negative emotions which, in turn, interfere with the process of raising emissions and suppressing headaches. The lesson is that personal issues, the stuff of psychotherapy, may interact with and subvert the neurofeedback process in some, perhaps many, persons with migraine headaches and other conditions as well. The neglect of such issues may lead to only partial success or total failure of neurofeedback treatment through no limitation of the neurofeedback procedure itself. By similar reasoning, success in neurotherapy may be associated with explicit or inexplicit psychotherapy skills by the neurofeedback practitioner.

The observation that movie themes can interfere with IRBEN training is further evidence for the invalidity of the Cartesian mind-body dualism that has permeated so much of Western thought. Present observations are consistent with newer views of the biological underpin-

nings of psychotherapy as found in Cozolino's (2002) work and in Fisher's (2005) reports of the crucial importance of a neurofeedback component in psychotherapy with severe reactive attachment disorders.

I have an impression that personal issues generally do not manifest themselves during the early sessions of IRBEN neurofeedback. Patients appear to be orienting themselves to the novel aspects of the experience. Part of the novelty lies in the fact that they cannot account for their success in raising emissions although they can read the numbers and see that systematic and incremental changes are occurring. After four to five training sessions, the novel aspects appear to have habituated considerably and it is only then that disruptions of the sort described seem likely to occur. When the disruptions do occur, there seems to be a matter-of-fact acceptance of the data and its implication that their brain and nervous system are doing things that are not under deliberate control. Such acceptance, I believe, can foster further efforts to understand and deal with alienated and disassociated aspects of prior experience.

Most neurofeedback procedures do not make use of material with thematic content such as that found in films. Carmen simply stressed that the movies only need to be interesting. The possibility that films with particular themes or issues might be useful in working with certain patients is a subject for future research. The technology exists for Carmen's innovative use of films with infrared neurofeedback (essentially, one protocol rewarding increasing emission at one site straddling Fpz) and for use with EEG neurofeedback (many protocols rewarding either increases or decreases in infinitely variable frequency bands). It remains to be seen whether the evocation of personally conflictual themes or issues will interfere with the learning processes of any or all EEG neurofeedback protocols.

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