



Dreaming (& Waking) Lucidity and Healing
A Proposal: Can Lucid Dreaming Effect Immunocompetence?

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In developing a clinical model of mind-body relationships we are at an immediate disadvantage. Having evolved a cognitive understanding of mind and body as a dichotomous phenomenon, we bypass the variable of experience that the mind and body are a unity. In recent years psychological, neurological and immunological (collectively known as psychoneuro-immunology (PNI)), boundaries have been dissolving. Consequently, it seems prudent to dissolve the mind-body dichotomy in order to orient our current models and views of health and well-being towards models and views more congruent with experience.

The ability to create a dichotomous view of the mind-body issue seems to stem from the ability to be a self-reflective and conscious mammal, thereby able to make choices and judgements, to create concepts, use a logical frame of reference, etc., in order to explain our experience. Yet it is the experience which is the reality, but the experience of being able to create and form concepts and models is the experience which becomes the reality. The point being that we first have to be conscious self-reflective creatures in order to choose models that affect our experience, (or choose experiences which affect our models). It follows that a model to investigate self reflective consciousness, and hence our ability to make a model whether dichotomous or otherwise, is necessary. It is proposed here that the model of sleep laboratory lucid dreaming offers the potential of allowing us to investigate the cognitive-physiological mechanisms of PNI phenomenology.

Psychoneuroimmunology (PNI) is an emerging discipline that dissolves artificial boundaries between psychology, neurology and immunology. In evolving this

discipline, the founders used a wise open minded approach with clever experimental designs to demonstrate the interrelationships of psychophysiological and immunologic systems. The current solid foundation in animal and human research establishes a base from which further psychoneuroimmunologic homeostatic mechanisms can be explored (Ader, 1981; Goetzl, 1985; Guillemin, Cohn, & Melnechuk, 1985; Levy, 1982). Relevant to the use of dream lucidity in PNI investigations is the PNI-hypnosis work.

Evidence for Psycho-Immunological Relationships in the Hypnosis Literature

A subjective common denominator in the reports of hypnosis subjects is that they actually saw or experienced something happening as if it were real and not imagined. This observation in the literature is supported by studies showing that hypnotic (suggested) hallucinations, both auditory and visual, alter the commensurate evoked potentials as if there was actual interference (Hogan, Macdonald, & Olness, 1984; Spiegel, Cutcomb, Ren, & Pribram, 1985). The parallels to nonlucid or lucid dreaming, experiencing something as if it is real, are striking.

Instances of suggestion altering physiological phenomenon such as allergic responses, congenital skin diseases, warts, post pubertal breast growth, burns, blood flow, bleeding, and tumors, are reviewed and reported elsewhere (Barber, 1984; Fry, & Weakland, 1984; Gravitz, 1985). Here I am going to briefly review and comment on one set of studies relevant to a research project currently taking place in our laboratory.

Frequently quoted is the work of English physician Stephen Black (Black, 1963; Black, 1963). In part of his work, he showed inhibition of delayed hypersensitivity to purified protein derivative of tuberculin (PPD) (Black, 1963). An especially well controlled study used subjects specifically chosen for their deep hypnotic trance susceptibility and shown not to be allergic to PPD within a week prior to the study. The effect of the hypnotic procedure to inhibit the clinical wheal and flare response in one but not another PPD injection placed on one forearm was tested. Four of the five subjects showed complete inhibition of the clinical response in one but not the other PPD while the fifth inhibited greater than 90% as measured clinically. Full thickness skin biopsies of pre-marked areas of forearm showed that, even though the clinically observed reaction was suppressed, no detectable change in histologic degree of cellular infiltration compared to controls was observed, i.e., the immune products were still delivered. What was evident was that the exudation of fluid and hyperemia had been inhibited. They concluded that the technique of direct suggestion under hypnosis could give rise to a clinical Mantoux-negative (PPD-negative). The subjective experience of suggested physiological plasticity could be described as a state of actually experiencing the desired effect as opposed to just imagining it.

However, another explanation was that suggestion alone from a physician in whom the subjects had genuine trust operated in inhibiting the clinical Mantoux while sparing the (histologic) cellular infiltrate.

Relevant to this second explanation is a well-controlled study by two Japanese investigators (Barber, 1984), 13 high school boys with previous experience of painful

poison ivy like contact dermatitis were randomized into a hypnotic procedure and a suggestion-alone--control groups. In the control group, a prominent physician merely suggested that one plant was harmful or not and then touched the subject. The authors found that, in both control and hypnosis groups, the experimenters could suggest that subjects react to a harmless plant and not to react to the actual poisonous plant. Biopsies were not done. The experience of the strong emotions of previous experiences were hypothesized to be able to cause a reaction when a harmless plant was applied, presumably by drawing on the previous unpleasant experience as a mental/emotional process. The trust in a respected physician not to lie about whether the leaf being applied was harmful or not was also hypothesized to be working at more than a superficial level. This is further supported by the placebo literature.

One of the premises in PNI is that the immune system can be brought under a level of volitional control. The biopsy hypnosis article suggests that there may be a level of autonomy or wisdom inherent in the immune system as classical immunologists report, since there was a cellular response to a real molecular antigenic stimulus. Blacks study may be interpreted to suggest that perhaps only certain aspects of the immune response are under volitional control, i.e., those involved with interaction at a specific environmental focus, the lymphokines perhaps (migratory, activating, cytotoxic, interleukins and other factors). However, an injection of sterile water with the suggestion of it being a PPD with a true PPD suggesting it was water with a biopsy showing cellular infiltrate with the water and none in the PPD would have been more convincing of a pan-volitional control of immune response.

PNI inferences relevant to natural killer cell cytotoxicity can be made regarding Black's observation that the endothelial cell contraction and extravasation of fluid into the surrounding tissue was inhibited but that the immune response per se was not (at least histologically). Two factors which might contribute in part to this affect are autonomic nervous system activity by direct vaso-dilatation and/or constriction and, at a molecular level, interferon. Interferon was found to be a helping factor in decreasing motility of vascular endothelial cells, which play an important role in the extravasation of cancer cells (Brouty-Boye & Zetter, 1980).

One innovative interpretation of this literature, made by Theodore Barber, is that the volitional plasticity of various physiological processes under suggestion is mediated by controlling blood flow, analogous to controlling blood flow to genital organs by fantasizing, this being mediated by the autonomic nervous system (Barber, 1984). In another anecdotal hypnosis article the authors suggest that the autonomic nervous system is first brought under control, and by extension, (anatomically and figuratively I assume) the immune system (Fry & Weakland, 1984).

Finally, a relevant comment about the clinical sessions in Blacks work is that the hypnotic procedure was used over five days to reinforce the desired effect as well as to reinforce dreams of the experiment working. I assume the authors mean in a figurative and/or literal sense. This raises another question relevant to the use of lucid dreaming of whether the hypnotic technique or the REM sleep physiologic processes giving rise to dreaming, independently, co-dependently, neither or both gave rise to the observation.



Current Pilot Study

We are currently testing the hypothesis that lucid REM sleep and its associated mental and physiological processes are an important variable in human immune responsiveness. The design focus of this study is twofold; 1) we want to investigate the feasibility of developing a flexible and useful neuroimmunologic protocol adaptable to a variety of psycho-techniques. The neurological aspect will involve all-night polysomnography, including sleep EEG, EOG, EMG, EKG, respirations, finger pulse, and temperature oscillation. Simultaneous brain cortical electrical mapping will be done to evaluate any correlations of specific EEG spectral frequency patterns with, not only sleep stage, but immunologic variability. The immunologic aspect will focus specifically on peripheral blood lymphocytes natural killer cell cytotoxicity (NK) in relation to the sleep stage from which the sample is drawn, with the subjects pre-sleep and post-sleep waking samples serving as his own controls. The natural killer cell is the non-T (thymus derived) non-B (bone marrow derived) cell lineage whose importance in preventing metastatic cancer spread as well as an important agent in microbial protection is well documented (Herberman & Ortaldo, 1981; Lotzova & Herberman, 1986; Pross & Roder, 1982; Trinchieri & Bice, 1984) and a current focus of extensive research (Rosenberg, Lotze, Muul, Chang, Avis, Leitman, Linehan, Robertson, Lee, Rubin, Seipp, Simpson & White, 1987). The Chromium (Cr) 51 release assay using the K562 tumor cell line will be used. 2) We want to incorporate the physiologically defined psychological activity of lucid dreaming (in which the dreamer is explicitly aware of dreaming while continuing to dream in the physiologic state of REM sleep) into the above neuroimmunologic protocol, therefore by design a PNI study. This will introduce into the study the element of self-reflective awareness, a uniquely human variable. The probing of this variable will be relatively easy, since the element of volition conferred by self-reflective awareness allows for communication from the lucid REM sleep dream state to the polysomnoimmunographic technicians.

A Final Word

Natural immunity has been shown to be an important variable in cancer and

other disease processes. The quantitative measures of natural immune functions are becoming popular probes for evaluating not only prognostic outcome, but for evaluating the impact of psycho-social techniques on immunocompetence (Kiecolt-Glaser, Glaser, Williger, Stout, Messick, Sheppard, Richer, Romisher, Briner, Bonnel, & Donnerberg, 1985; Kiecolt-Glaser, Glaser, Strain, Stout, Tarr, Holliday, & Speicher, 1986). It is hoped that insight into the within individual mechanisms of direct psychological impact on natural immunity will facilitate modification of therapeutic processes toward those more integrative of psycho-social techniques that increase immune and biologic competence.

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