

## ***Visual Thought Stopping for Pain Stress and Depression***

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### ***The Technique for Pain Control, Depression & Stress Reduction Visual Perception Afterimage Thought Stopping Originated by Dr Costello in 1998***

***Preamble*** – *This article was first published on 9.9.99 in the Journal of the Australian National Institute of Criminology. "While focusing on imperative issues in counseling and therapy for victims of crime, our professionalism dictates increased vigilance. No longer may we sit comfortably in our counseling rooms without an awareness of drug-related crimes and our immediate liaison with State and Federal Police and Law Enforcement Agencies. Please see Appendix file -- Costello (Adobe download)*

#### ***Abstract***

"Our brain waves can be synchronized with light or sound frequencies through non-invasive conditioning. Sound waves affect mood. For example one may contrast Chuck Berry's 'Johnnie Be Good' with Mozart's, 'Magic Flute'. The low frequency of the chosen wavelength relaxes the brain, like viewing a tranquil scene or listening to lullaby. Through gentle induction, patients were physically relaxed by graded entrainment exercises. This simple technique differs completely from progressive relaxation and guided imagery. The afterimage method was demonstrated and then applied by participants. Discussion related to systematic afterimage relaxation induction. The recuperative power of the immune system post-trauma is facilitated with effective pain control, neuromuscular tension decrease and reduced reactive depression."

#### ***History of Afterimage from Psychology***

In the History of Psychology, Simon Kemp viewed medieval theories of mental representation. "Throughout most of the Middle Ages, it was generally held that stored mental representations of perceived objects of events preserved the forms or species of such objects. This belief was consistent with a metaphor used by Plato. It was also consistent with the medieval belief that a number of cognitive processes took place in the ventricles of the brain and with the phenomenology of afterimages and imagination itself.

In the 14th century, William of Ockham challenged this belief by claiming that mental representations are not stored but instead constructed on the basis of past learned experiences".

Later, it was Sir Isaac Newton who completed the first formal study on afterimage and reputedly sent himself blind for a couple of weeks when looking directly at the sun; such was his exuberance in discovery.

### ***Research Objectives***

After a lengthy pilot study in 1998, the research project developed cross-cultural replication funded by Cassel Research Institute San Diego and the Mornington Research Centre. My objective was to originate "a simple cost free technique" with solid experimental design for Complimentary Medicine; not to be confused with 'alternative medicine' or any notions of color therapy, chakra, mysticism or the like. There may be some relationship between the psychology of color and its magical powers but that is not the subject of this presentation.

### ***Priory Considerations***

1. Post-trauma, people who suffer acute adrenergic stress and psychological reactions, sometimes find it difficult to self-administer relaxation programs. They desire immediate simple behavioral techniques when considering heightened emotional reactions.
2. Superlative results achieved by traditional methods are certainly not disputed. For example; Progressive relaxation and Autogenic Feedback Training (Luthe, 1976), Guided imagery (Ahsen, 1989), Brain computer systems and Body Fortran (Cassel, 1989), and Subliminal induction techniques (Budzynski 1987), and (Chung 1993) et al.
3. Utilizing neuropsychology principles, psychophysiology and cognitive behavioral management, a new technique is found almost accidentally, for Multidisciplinary application.
4. "Neuropsychology employs the study of brain and behavior relationships through cognitive functioning. Our specialty includes assessment, evaluation and clarification of underlying cerebrocortical processes influencing an individual's behavior. We identify cognitive impairment as outcomes of disease or traumatic brain injury for pertinent inputs in medico-legal reporting". (Costello, 1998). The author believes neuropsychology focuses on imminent needs of remedial therapeutic treatment and will thus amend this definition for the American Board of Psychological Specialties...

### ***Hypotheses***

"If the visual cortex can be conditioned/entrained with the lowest visual wavelength 400, then, synchronization may generalize to induce a relaxed cerebrocortical altered state of consciousness."

### ***Vision and Color Perception***

The retina of the human eye is approximately the size of a postage stamp and contains 130 million light sensitive receptors, cones and rods. Approximately 5 million cone cells enable us to detect high intensities to distinguish innumerable colors of the visual

spectrum. Interestingly, two thirds of the brain consists of visual cortex. After the retina changes colors and shapes to neuron impulses, the optic nerve carries messages to the brain for interpretation.

Curiously, Grossman (1967) reports the erudite research of Adrian and Mathews going back to 1927, "Recordings from the whole optic nerve demonstrate a burst of action potentials in response to visual stimuli. If a constant stimulus is presented for an extended period of time, the frequency of the optic nerve discharge attains a maximum and then gradually declines to some asymptomatic value. Termination of the stimulus causes a sudden increase in the rate of discharge followed by a gradual return to the resting level (defined by spontaneous discharges)."

It is not the purpose of this preliminary article to enter an excursion into the dynamic range of luminescence and color vision acuity, suffice to mention that wavelengths of the visual spectrum ROYGBIV range from 15,000-400 nanometers. Significantly, the chosen afterimage resulting from the 50-mm (fluorescent yellow-green) circle on a white background produces an exact wavelength of 400 to achieve (Indigo-Purple).

### ***Method Constructs***

1. Please see Patient Protocol Appendix (A) providing detailed explanation. Afterimage conditioning was achieved through graduated exercises, entrained for one month, practiced for 30-second intervals increasing from 1.5-3.0 minutes daily.
2. A sample of N=70 was assessed, however research data is continuous for N=300 multifactorial analysis.
3. Considering the early work of Adrian and Matthews, that termination of the stimulus causes a sudden rate of discharge followed by a gradual return to resting levels of spontaneous discharges, as conditioning increased, (3) stimuli terminations for three minutes occurred in the fourth week.
4. Subjects were encouraged to consecutively repeat the afterimage exercise whenever desired. This was to capitalize on potential increased discharge, producing longer afterimage durations.
5. The experimental design included patient self-assessment through daily visual analogues and diaries. Our program was administered pro-bono to private patients, VRAS, TAC, WorkCover and Positive Lifestyle Centre rehabilitation referrals from the Dandenong Magistrate's Court.
6. Pre-post results were scored through AUS & US standardized personality tests (Gilley, 1976 Cassel and Costello validations 87, 90, 94)
7. Pre-post computerized biofeedback tests were likewise standardized on Australian and US population norms, (Cassel and Costello 1987-94).
8. Randomized EEG's were performed on subjects, pre-post afterimage induction, suggesting an additional study involving computerized neurofeedback.
9. Ongoing with the first study N=300, translations have been made for German, Greek, French and Italian trials.

## ***Tentative Results***

Time constraints have precluded statistical analysis originally planned for presentation at the APA/ACFE Annual Convention in New York, Dec 1999. This pre-publication has not intended to include the comprehensive statistical analysis to be published later in 2000 (J.Instructional Psychology). Instead, several representative case studies will be distributed and discussed for elaboration.

1. Please see Appendix (B) for personality profile example. When administering the Psychological Lifestyle Assessment (Forms A and B), pre-post assessment revealed increases in scores for:
  - (a) self-esteem,
  - (b) satisfaction,
  - (c) involvement,
  - (d) assertiveness
  - (e) Overall ego-strength.
2. Reduced scores were recorded for:
  - (a) depression,
  - (b) loneliness,
  - (c) anxiety,
  - (d) negative attitude (health concerns) and
  - (e) Overall stress load.
3. (Please see Appendix (D) for self-evaluation example). Self reported patient visual analogues and diaries revealed changes in:
  - (a) increased physical relaxation/stress reduction
  - (b) reduced pain perception
  - (c) increased and un-disturbed sleep
4. (Please see Appendix (C) for example of biofeedback assessment.) Pre-post computerized biofeedback measurement recorded:
  - (a) Reduced EMG (frontalis to lower abdominal muscles),
  - (b) Increased peripheral body temperature,
  - (c) Reduced EDA,
  - (d) Reduced and stabilized heart rate.

## **Technique Origination**

This was a chance discovery. On a cold winter's evening in July 1998, the author was experimenting in advanced pain control, using "The Little White Cloud Technique", a visual imagery exercise developed 25 years ago. The exercise sets a picturesque relaxing beach scene, warm sunshine on a balmy day and necessarily, without any distractions. We visualize a white cloud on the horizon and then, slowly bring it to the shore and eventually, above one's head. Unlike usual clouds absorbing water, this imagery absorbs depressing thoughts, unwanted worries or thoughts and muscular tension. Gradually, one imagines the cloud's increasing expansion. Simultaneously, we release our preoccupations and trauma, expelling these ever slowly, into the cloud. Then the resulting color is imagined to darken with the heaviness of these thoughts and feelings. Finally, one gently pushes this now unwanted cloud into the distant horizon and resumes progressive relaxation recovery.

## ***Startle Response***

As a psychologist and psychotherapist, the author has used this visual imagery with patients for over 25 years. To my surprise when visualizing the oncoming cloud, it appeared already to be of a "dark shade". Startled by this variation of self-induced visual imagery, the exercise was continued for exploration. Instead of experiencing feelings of relaxation, when the cloud approached and hovered, contrasting feelings of apprehension occurred. Allowing the imagery to continue with some hesitance, instead of presumed absorption, the cloud enveloped the author in a "rich indigo-violet color". Unexpected feelings resulted in complete relaxation and feelings of bliss for 15 minutes.

## ***Replication Endeavors***

1. Regrettably, the experiment was not successfully repeated, although later trialed for two months with 80 subjects.
2. To visualize the illusive "indigo-violet color", was virtually impossible to achieve.
3. Through arduous experimentation the answer was novel, discovered eventually in using visual perception afterimage conditioning, elaborated in the patient protocol. Please see Appendix (A).

## ***Sundry Conclusions***

1. In Australia (1964-99), visual perception afterimage experiments (ANU Department of Psychology) were used as prac-work laboratory exercises for teaching statistics in Psychology I.
2. When inquiring why no research could be found on this subject since the 60's, it was explained that photography, cinematography, advertising, television and the media had exhausted the topic.
3. Apart from PsyclINFO isolated references, more specialized research was found in ***The Handbook of Perception and Human Performance Vols: 1 & 2***, Eds. K.R.. Boff, Armstrong Aerospace Medical Research Laboratory, L. Kaufman, NY University and J.Thomas UCLA, John Wiley & Sons NY. Much of this beautiful research however, remained "classified" until recent years.
4. There are no published references at the time of writing concerning afterimage being employed in areas of stress reduction, physical relaxation induction, personality change and altered states of consciousness.
5. Results of the ongoing research thus far, suggest this technique has merit in facilitating physical and mental relaxation with re-adjustment through thought stopping, not only for victims of crime.

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