

## HYPNOSIS PROFILE

### STOP PRESS

- **FMRI evidence of cortical efficiency in hypnotisable subjects which is compromised by hypnosis in left lateral and anterior cingulate frontal regions.**

Egner, T., Jamieson, G., Gruzelier, J.H. (2005) *Hypnosis decouples cognitive control from conflict monitoring processes of the frontal lobe. Neuroimage, in press.*

- **For an integrative over view of work including schizophrenia, EEG-biofeedback and hypnosis see:**

Vaitl, D., Birbaumer, N., Gruzelier, J., Jamieson, G., Kotchoubey, B., Kübler, A., Lehmann D., Miltner, W.H.R., Ott, U., Pütz, P., Sammer, G., Strauch, I., Strehl, U., Wackermann, J., Weiss, T. (2005) *Psychobiology of Altered States of Consciousness, Psychological Bulletin, 131, 98-127.*

- **Contemporary Hypnosis is now published by John Wiley & Sons.**

**A# Background:** Began research on the psychophysiology of hypnosis in 1979, became member of the British Society of Experimental and Clinical Hypnosis in 1984, has 40 scientific publications on hypnosis.

#### ***B# Scientific Studies & Neurophysiological Model:***

With publications beginning in 1984 a series of studies has charted the cognitive neuroscience of hypnosis and hypnotic susceptibility, with the evolution of a working neurophysiological model.

The model posits a three-stage process for the classical induction of hypnosis involving:

- the engagement of thalamo-cortical-limbic attentional circuits under top-down influences of the frontal lobe through focussed attention and fixation;
- 2) suggestions of fatigue and tiredness at fixation which suppress frontal-cingulate top-down influences to facilitate the control and orchestration of behaviour by the hypnotist,
- 3) and in neutral hypnosis a lateral shift to favour right hemispheric influences. The evidence has been complimented by a recent fMRI/EEG study.

- Model:

Gruzelier JH (1988): *The neuropsychology of hypnosis. Heap M (ed). Hypnosis: Current Clinical, Experimental and Forensic Practices, Croom Helm, London: 68-76.*

Gruzelier JH (1990): *Neuropsychological investigations of hypnosis: Cerebral laterality and beyond. In Hypnosis: Theory, Research and Clinical Practice; Van Dyck R, Spinhoven Ph, Van der Does AJW, (eds) Free University Press: 38-51.*

Crawford HJ Gruzelier J (1992): *A midstream view of the neuropsychophysiology of hypnosis: Recent research and future directions. In Fromm W & Nash M (eds) Hypnosis; Research Developments and Perspectives, 3rd Edition, New York, Guildford Press, 227-266.*

Gruzelier JH (1996): *The state of hypnosis: Evidence and Applications. Quarterly Journal of Medicine. 89:313-317.*

Gruzelier, J. (1998) *A working model of the neurophysiology of hypnosis: A review of the evidence. Contemporary Hypnosis, 15, 3-21.*

Gruzelier, J.H. (2000) *Redefining hypnosis: Theory, methods and integration. Contemporary Hypnosis, 17 (2) 51-70.*

- Evidence: Laterality:

Gruzelier JH, Brow TD, Perry A, Rhonder J and Thomas M (1984): Hypnotic susceptibility: A lateral predisposition and altered cerebral asymmetry under hypnosis. **International Journal of Psychophysiology**, 2: 131-139.

Gruzelier J, Thomas M, Conway A, Liddiard D, Jutai J, McCormack K, Perry A, Rhonder J & Brow T (1987): Involvement of the left hemisphere in hypnotic induction: electrodermal, haptic, electrocortical and divided visual-field evidence. **Advances in Biological Psychiatry**, Basel, Karger: 6-17.

Cikurel K & Gruzelier J (1990): The effect of an active-alert hypnotic induction on lateral asymmetry in haptic processing. **British Journal of Experimental and Clinical Hypnosis**, 7: 17-25.

McCormack K & Gruzelier JH (1993): Cerebral asymmetry and hypnosis: A signal detection analysis of divided visual field stimulation. **Journal of Abnormal Psychology**, 102: 352-357.

Jutai J, Gruzelier JH, Golds J & Thomas M (1993): Bilateral auditory-evoked potentials in conditions of hypnosis and focused attention. **International Journal of Psychophysiology**, 15: 167-176.

Egner, T., Jamieson, G., Gruzelier, J.H. (2005) Hypnosis decouples cognitive control from conflict monitoring processes of the frontal lobe. *Neuroimage*, in press.

- **Fronto-Limbic functions:**

Gruzelier JH and Brow TD (1985): Psychophysiological evidence for a state theory of hypnosis and susceptibility. **Journal of Psychosomatic Research**, 29: 287-302.

Gruzelier JH & Warren K (1993): Neuropsychological evidence of left frontal inhibition with hypnosis. **Psychological Medicine**, 23: 93-101.

Kaiser, J, Barker, R., Haenschel, C., Baldeweg, T., Gruzelier, J. (1997) Hypnosis and event-related potential correlates of error processing in a stroop-type paradigm: a test of the frontal hypothesis. **International Journal of Psychophysiology**, 27, 215-222.

Kallio, S., Revonsuo, A., Hamalainen, H., Markela, J., Gruzelier, J. (2001) Changes in anterior attentional functions and word fluency associated with hypnosis. **International Journal of Clinical and Experimental Hypnosis**, 49, 95-108.

Croft, R.J., Williams, J.D., Haenschel, C., Gruzelier, J.H. (2002) Pain perception, hypnosis and 40Hz oscillations. **International Journal of Psychophysiology**, 46, 101-108.

Gruzelier, J.H., Gray, M., P.Horn (2002) The involvement of frontally modulated attention in hypnosis and hypnotic susceptibility: Cortical evoked potential evidence. **Contemporary Hypnosis**, 19 (4), 179-189.

Egner, T., Jamieson, G., Gruzelier, J.H. (2005) Hypnosis decouples cognitive control from conflict monitoring processes of the frontal lobe. *Neuroimage*, in press.

- **Non-specific factors; Relaxation:**

Gruzelier JH, Allison J & Conway A (1988): A psychophysiological differentiation between hypnosis and the simulation of hypnosis. **International Journal of Psychophysiology**, 6: 331-338.

Raab J & Gruzelier J. (1994): A controlled investigation of right hemispheric processing enhancement after restricted environmental stimulation (REST) with floatation. **Psychological Medicine**, 24: 457-462.

Williams J.D., Gruzelier, J.H. (2001) Differentiation of hypnosis and relaxation by analysis of narrow band theta and alpha frequencies. **International Journal of Clinical and Experimental Hypnosis**, 49, 185-286.

Jamieson, G., Dwivedi, P., Gruzelier, J.H. (2005) *Post-hypnosis changes in Mismatch negativity distinguish high from low hypnotic susceptibility. Brain Research Bulletin, in press.*

#### **C# Hypnotic Susceptibility.**

- The empirical studies disclosed that highly hypnotisable subjects have superior cognitive abilities. These include abilities to focus attention, to comply with instructions to let go of executive top-down processing, neurocognitive flexibility, and cognitive efficiency. (*see references above*)
- At the same time they share aspects of syndromes of the schizotypal personality such as cognitive activation and unreality experiences such as extrasensory perception. It is theorised that their superior cognitive abilities coincide with vulnerabilities for psychopathology.

Jamieson, G. and Gruzelier, J.H. (2001) *Hypnotic susceptibility is positively related to a subset of schizotypy items. Contemporary Hypnosis, 18, 32-37.*

Gruzelier, J.H. (2002) *New insights into the nature of hypnotisability. In Beyond and Behind the Brain, 4<sup>th</sup> Bial Foundation Symposium, Fundacao Bial, 275 – 292.*

Gruzelier, J.H. (2005) *New and rediscovered insights into the nature of hypnotizability, submitted.*

Gruzelier, J., De Pascalis, V., Jamieson, G., Laidlaw, T., Naito, A., Bennett, B., Dwivedi, P. (2004) *Relations between hypnotisability and psychopathology revisited. Contemporary Hypnosis, 21, 169-170.*

Laidlaw, T.M., Dwivedi, P., Naito, A., Gruzelier, J.H. (2004) *Low self-directedness (TCI), mood, schizotypy and hypnotic susceptibility. Personality and Individual Differences, in press.*

#### **D# fMRI/EEG.**

- The influence of hypnosis on fMRI and EEG coherence with a Stroop conflict task have been examined in participants selected for high and low hypnotic susceptibility.
- Results showed a compromise of anterior cingulate and left lateralised frontal blood oxygenation following hypnosis in hypnotisable participants.
- EEG assessment showed a reduction in connectivity between the two anterior regions.
- There was evidence of higher cortical efficiency outside of hypnosis in hypnotisable subjects.

Egner, T., Jamieson, G., Gruzelier, J.H. (2005) *Hypnosis decouples cognitive control from conflict monitoring processes of the frontal lobe. Neuroimage in press.*

#### **E# Self-Hypnosis & Immune Function.**

- In a series of controlled studies advantages from training in self-hypnosis have been shown for immune function, and for the first time for health, including a chronic viral illness.
- The health benefits attest to the validity of putative benefits indexing the immunological changes.
- Different induction scripts have also been compared showing advantages for directed, self-generated imagery over relaxation imagery.
- Hypnotic susceptibility has been shown to be advantageous for immunological response to psychological treatment.

- Review

Gruzelier, J (1999) *Hypnosis from a neurobiological perspective: A review of evidence and applications to improve immune function. Anales de Psicologia 15, 111-132.*

Gruzelier, J.H. (2001) *Hypnosis and the mind-body connection. In Behind and Beyond the Brain. Bial Foundation 3<sup>rd</sup> Symposium, Porto, Fundacao Bial.231-264.*

Gruzelier, JH (2002) *A review of the impact of hypnosis, relaxation, guided imagery and individual differences on aspects of immunity and health. Stress. 5, 147-163.*

Gruzelier, J.H. (2002) *The role of psychological intervention in modulating aspects of immune function in relation to health and well being.* **International Review of Neurobiology**, 52, 383-417.

Gruzelier, J. (2002) *Self-hypnosis and immune function, health, wellbeing and personality.* **Hypnos**, 29, 186-191.

- Empirical Studies

Fox, P.A., Henderson, P.C., Barton, S.E., Champion, A.J., Rollin, M.S.H., Catalan, J., McCormack, S.M.G. and Gruzelier, J. (1999) *Immunological markers of frequently recurrent genital herpes simplex virus and their response to hypnotherapy; a pilot study.* **International Journal of STD & AIDS**, 10, 730-734.

Gruzelier, J., Smith, F., Nagy, A., Henderson, D. (2001) *Cellular and humoral immunity, mood and exam stress: The influences of self hypnosis and personality predictors.* **International Journal of Psychophysiology**, 42, 55-71.

Gruzelier, J.H., Levy, J., Williams, J.D., Henderson D. (2001) *Effect of self hypnosis with specific versus nonspecific imagery: Immune function, mood, health and exam stress.* **Contemporary Hypnosis**, 18, 97-110.

Gruzelier, J.H., Champion, A., Fox, P., Rollin, M., McCormack, S., Catalan, P., Barton, S., Henderson, D. (2002) *Individual differences in personality, immunology and mood in patients undergoing self-hypnosis training for the successful treatment of a chronic viral illness, HSV-2.* **Contemporary Hypnosis**, 19, (4), 149-166.

Laidlaw T.M., Kerstein, R., Bennett, B., Naito, A., Dwivedi, A., Gruzelier, J.H. *Hypnotisability and immunological response to psychological interventions in HIV.* **Contemporary Hypnosis**, 21, 126-135.

#### **E# Energy Medicine.**

- With a programme grant from the Johrei Association, a Japanese non-touch healing method is being studied and compared with self-hypnosis/CBT training.
- This is providing a different immune and EEG profile of change.
- These suggest an activating process and an openness to experience with remarkable effects on natural killer cell activity.
- Clinical studies include exam stress, advanced stage breast cancer and early stage HIV.

Laidlaw, T.M., Naito, A., Dwivedi, P., Enzor, N., Brincat, C.E., Gruzelier, J.H. (2003) *Mood changes after self-hypnosis and Johrei prior to exams.* **Contemporary Hypnosis**, 20, (1), 25-40.

Naito, A., Laidlaw, T.M., Henderson, D.C., Farahani, L., Dwivedi, P., Gruzelier, J.H. (2003) *The impact of self-hypnosis and Johrei on lymphocyte sub-population at exam time: a controlled study.* **Brain Research Bulletin**, 62, 241-253.

Laidlaw, T., Bennett, B.M., Dwivedi, P., Naito, A., Gruzelier, J. (2005) *Quality of life and mood changes in metastatic breast cancer after training in self-hypnosis or Johrei: a short report.* **Contemporary Hypnosis**, 22, 84-93.

Bennett, B.M., Laidlaw, T.M., Dwivedi, P., Naito, A., Gruzelier, J.H. (2005) *A qualitative study of the experience of self-hypnosis or Johrei in metastatic breast cancer using interpretative phenomenological analysis.* Submitted.

Gruzelier, J.H., Laidlaw, P.M., Naito, A., Lynch, C.S., Dwivedi, P. (2005) *Electroencephalographic changes following training in self-hypnosis and Johrei, in preparation.*

#### **F# Stage Hypnosis & Unwanted Effects.**

- Concerns have been published about the ethical uses of hypnosis and the dangers of stage hypnosis.

*Gruzelier, J.H. (2000) Unwanted effects of hypnosis: A review of the evidence and its implications. Contemporary Hypnosis, 17, (4) 163-193.*

- Disinhibited and compliant behaviour is in keeping with the neurophysiological model.

*Gruzelier, J.H. (2004) Neurophysiologische erörterung der ungunstigen effekte der hypnose unter besonderer berücksichtigung der buhnen-hypnose.[Stage hypnosis from the perspective of altered frontal functions]. Hypnose und Kognition (HyKog) 21, (1 + 2), 225-259.*

#### **H# Multimodal Therapy.**

- Current investigations include combining hypnosis with other treatment approaches.
- One example involved physical therapy, self-hypnosis training and NLP in a ballet dancer with a right leg injury and loss of morale.

*Gordon, C-M. and Gruzelier, J.H. (2003) Self-hypnosis and osteopathic soft tissue manipulation with a ballet dancer. Contemporary Hypnosis, 20, 235-240.*

#### **H# Scientific Recognition.**

- Since 1982 presentations have been invited for national and international scientific meetings and training courses of the British Society for Medical and Dental Hypnosis. In recent years invitations have included the Waxman memorial lecture for the Royal Society of Medicine, Hypnosis and Psychosomatic Medicine section in 2001 and 2003; keynote presentations to the American Society of Clinical Hypnosis, Indianapolis, 2002, the American Society of Experimental and Clinical Hypnosis, Chicago, 2003, the European Society of Hypnosis in Psychotherapy and Psychosomatic Medicine, Rome, 2002, the International Society of Hypnosis, Singapore, 2004; and symposium presentations at the European Society of Hypnosis and Psychotherapy, Rome, 2002. In 1996 invitation of the Ciba Foundation to organise a one-day international meeting on 'The nature of the hypnotic state'.
- The fMRI study was presented at the Society for Clinical and Experimental Hypnosis, Chicago, 2003 British Society of Experimental and Clinical Hypnosis, 2004; British Association, 2004.
- The invited review for Contemporary Hypnosis was awarded the 'best clinical paper of 2001' prize from the Society for Clinical and Experimental Hypnosis

*Gruzelier, J.H. (2000) Unwanted effects of hypnosis: A review of the evidence and its implications. Contemporary Hypnosis, 17, (4) 163-193.*

- Editor of Contemporary Hypnosis from 2001, the international journal of the British Society of Experimental & Clinical Hypnosis.
- Awarded the Ernest R. Hilgard award of the International Hypnosis Society, 2004, for Scientific Excellence "Whose lifetime of published experimental work substantially advances the understanding of the process of hypnosis and the ability to predict the outcome of its applications."
- Appearances as expert witness in the High Court, in support of plaintiffs who developed chronic psychopathology after stage hypnosis. These included a case of schizophrenia, so diagnosed within a week of hypnosis, and a case of depression accompanied by all the clinical symptoms of PTSD where causation was acknowledged and a landmark decision made against a hypnotist defendant.

*Gruzelier, JH and Jamieson, G. A case of chronic depression with symptoms of PTSD following hypnosis for entertainment, in preparation.*

***I#.*** ***Societies*** Member of the Council of the British Society of Experimental and Clinical Hypnosis, as editor of the Society journal. Council member of the Section for Hypnosis and Psychosomatic Medicine, Royal Society of Medicine. Honorary member of the Italian Hypnosis Society.