

Evidence Based Research Findings as to Efficacy of Hypnosis in Medicine

Evidence based research findings as to efficacy of hypnosis in medicine – a paper by Ken Murray

Research on the medical effectiveness of hypnosis has a relatively long history Franz Anton Mesmer (1734-1815) became a medical doctor in 1768 practicing in Vienna, his “mesmerism” involved a combination of ‘animal magnetism’, whereby he ‘infused’ the patient with a mysterious ‘magnetic fluid’ deriving from holding magnets (what would probably be called ‘Chi’ by complementary therapists today). Combined with a very engaging authoritative, dramatic style it brought him great renown in Vienna and Paris. His work is considered to be the foundation of modern day hypnosis for suggestive aspects of his work and may well be quoted in due course by Reiki practitioners as a western forerunner to its practice for the ‘magnetic fluid’ aspects.

John Elliotson (1791-1868) Professor of theory and practice at University Hospital London began experimenting with ‘magnetism’ in 1837 and found that he was able to perform major surgery without pain using what would now be termed hypnosis.

The term wasn’t coined till 1843 in his *Neurohypnology, or the Rationale of Nervous sleep* by Edinburgh surgeon James Braid (1795-1860) who while initially sceptical decided to experiment and concluded magnetism to be ‘a peculiar condition of the nervous system, induced by a fixed and abstracted attention’ (Ambrose and Newbold 1980).

In the 20th century by far the most prolific practitioner and author has been Dr Milton Erickson who while struck down with a bout of polio early in his life and told that he would never walk again was up and walking within a year on crutches. Such determination preceded a lifetime of research and practice as psychiatrist and psychologist and he is regarded as the pre-eminent figure in modern day hypnotherapy.

Nowadays there is quite a lot of empirical research of differing quality investigating the application in medicine of hypnosis. The following represents only a sample of some of the many studies (Pinnell 2000). We will consider the following areas of application:

1. Anxiety related to Medical procedures and preparation for surgery

From personal experience working as a health care assistant in the Bristol Royal Infirmary it is apparent that being in hospital for medical or surgical reasons can be a particularly stressful time. Hypnotic interventions have been used to alleviate patients’ anxieties related to medical procedures, as adjuncts to analgesic agents and to teach patients how to cope better with their treatment. A review by Blankfield (1991) of 18 case, randomised and non randomised studies conducted over 20 years found that in all but 2 cases, there was overwhelming empirical data to support psychological treatments by means of hypnosis, suggestion and relaxation.

In a study by Lang et al (1996) thirty surgical patients undergoing painful procedures were randomised into control or hypnosis groups, when painful stimuli were imminent, competing suggestions of fullness, numbness, coolness or warmth were suggested. Outcome measures of linear pain rating scale, blood pressure, heart rate, and intravenous patient controlled analgesia (PCA). Results showed seven times less clinician-administered drugs and significantly less PCA medication.

Lambert (1996) studied the efficacy of pre operative hypnosis in 52 children presenting for elective surgery. The children were matched for age, gender and diagnosis into control and treatment groups. While the control group discussed ideas related to surgery the treatment group received one 30-minute session one week prior to treatment during which time they practiced relaxation and received instruction in guided imagery relating to pleasant scenes previously chosen by the children with mental rehearsal of the surgical procedure. Outcome measures included hourly postoperative pain ratings, an anxiety inventory and quantity of pain medication given. The results showed that the children in the treatment group had significantly lower postoperative pain ratings and interestingly from a NHS finances viewpoint, significantly shorter post operative stays in hospital than the control group.

2. Respiratory ailments

Given the complex nature of asthma, the interplay of autonomic nervous system, immune system and the role of psychological stress in initiating attacks it would appear a fertile area for research in the role of

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hypnosis. The British Tuberculosis Association (1968) conducted a study of 252 patients. Two groups received either monthly hypnosis treatment with suggestions that their breathing would become free and remain so (with home based self hypnosis consolidation) or instruction in progressive muscle relaxation. The outcome measures were: reduction of symptoms as measured by independent physician ratings, pulmonary function, diaries of medication use and frequency of wheezing. Results showed that both interventions reduced symptoms of asthma while the hypnosis treatment group showed significantly less medication use and wheezing.

A study in 1986 in which 39 adults with mild or moderate asthma were randomised to either hypnosis treatment or attention control conditions was conducted by Ewer and Stewart (1986). Treatment with hypnosis consisted of a weekly 30-minute session every week for six weeks of guided imagery and self-hypnosis. The attention control group consisted of the same number and duration of sessions with a nurse who reviewed the patients breathing diaries. Outcome measures were self reported symptoms, bronchodilator usage and pulmonary function. Results showed that subjects achieved significant improvement in all outcome measures and interestingly were able to overcome a respiratory challenge by methacholine (its an agonist to parasympathetic muscarinic receptors thereby causing bronchoconstriction) after hypnosis training.

3. Dermatological disease

If one thinks of the way in which skin develops in the embryo, that area which becomes the neural tube and future brain is essentially an in pouching of ectoderm, which becomes the outer covering of the body. Thus the nervous system and skin, at least the epidermis are derived from the same embryological tissue. Given also the enormous number of sensory receptors in the dermis and epidermis, it would seem possible that psychological treatment may be effective in changing the operating parameters of the integumentary system.

Psoriasis is a chronic inflammatory immune mediated disease characterised by scale covered lesions and plaques, commonly on the scalp and joints such as the knee and elbow. It is thought to have strong psychoneuroimmunologic involvement given that stress is a strong exacerbating factor.

A study by Zachariae et al (1996) studied 51 patients diagnosed with Psoriasis Vulgaris. Treatment groups received seven 90 minute sessions (involving a combination of cognitive behavioural therapy, relaxation and imagery of symptom control) over a 12 week period with back up audiotapes to use at home. Outcome measurements of psoriasis activity were taken at baseline 4, 8 and 12 weeks and results showed that such treatment was effective at reducing symptoms.

Spanos et al (1988) studied hypnosis in the treatment of warts. 180 patients (with 10 to 24 warts each) were randomly assigned to treatment or hypnosis groups. Treatment consisted of an hypnotic induction followed by direct suggestion for wart removal and instructions to imagine tingling sensations and warmth in their warts followed by images of them shrinking and falling off. The control group received cold laser treatment placebo. Outcome measures were number and percentage of warts lost at 6-week follow up. Results reported a 50% cure rate in wart removal following treatment by hypnosis, significantly higher than the control group.

4. Gastro Intestinal Disorders

***'Gastro intestinal function is under an elaborate control system involving the autonomic nervous system, enteric nervous system and gastro intestinal hormones secreted from the stomach and small intestine. The enteric nervous system consists of its own sensory neurons, motor neurons and interneurons. Influences of the autonomic nervous system on GI functions is generally indirect mediated via communication to the enteric nervous system.'* German and Stanfield (2005)**

There is a growing body of evidence to suggest that hypnotherapy may be particularly efficacious in the treatment of IBS. IBS is characterised by non-organic abdominal pain, distension, constipation, distension and a feeling of urgent need to evacuate the bowels.

Whorwell et al (2003) studied 204 patients over the course of 6 years. A prospective questionnaire was completed to score symptoms, quality of life, anxiety and depression before immediately after and for up to 6 years following hypnotherapy. The results showed that 71% initially responded to treatment, or these 81% continued to experience improvement with 19% claiming slight deterioration in symptoms. All items

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previously scored were significantly improved at follow up ($p < 0.001$) regardless of whether the follow up was 1, 2, 3, 4, or 5+ years post treatment. There were also significant reductions in medication use and consultation rates.

Another study by Whorwell et al (2006) trialled Hypnotherapy for the treatment of non-cardiac chest pain. This is a debilitating condition with high psychological morbidity. The study looked at these sufferers of angina like chest pain in whom coronary angiography and oesophageal reflux were not factors. Twenty-eight patients received 12 sessions of hypnotherapy or placebo medication plus supportive therapy over a 17-week period. The primary measured outcome measured was a global assessment of chest pain improvement; additionally scores were recorded for quality of life, pain severity and frequency, anxiety, depression and the use of medication. The results showed that 12 of 15 (80%) of treatment group and 3 of 13 (23%) ($p = 0.008$) of the control group experienced global improvements in pain with significant reduction in intensity of pain ($p = 0.046$). The secondary outcomes of general wellbeing and reduction in medication usage also showed significantly greater improvement.

5. Haemorrhagic disorders

Haemorrhage during surgery

60 surgical patients having maxillofacial surgery were studied by Enqvist, Von Konow and Bystedt (1995) in order to examine whether hypnosis could be useful in reducing blood loss and improving healing post operation. The subjects were randomly assigned to three treatment conditions, preoperative, perioperative (during surgery and while under general anaesthetic) and a combination of both. Treatment was via audiotape containing suggestive metaphors focussing on improving healing, maintaining low blood pressure and reducing bleeding during the intervention. The perioperative patients listened to suggestions also on audiotape during the operation. Results show qualified support that treatment is effective in reducing blood loss and speeding recovery.

Interesting studies have been done to see if psychological treatments can be effective as treatments for haemophilia. Swirsky-Sachetti and Margolis (1986) studied 30 male haemophiliacs who were randomised to treatment and waiting list control groups. During treatment over six weeks patients were taught hypnotic strategies for the reduction of stress and suggestions for reduced bleeding. Follow up audiotapes and education regarding the relationship between stress and bleeding were also delivered. Results indicate that significantly less blood factor concentrate was infused in the treatment groups.

6. Post Operative Nausea and Vomiting

Postoperative nausea and vomiting (PONV) commonly occurs following surgery. Enquist et al (1997) studied the use of hypnosis to treat 50 female surgical patients. Randomisation into control and treatment groups was carried out, with the treatment group receiving, via audiotape, suggestions for relaxation and postoperative hunger and thirst. They were to listen to these everyday for the week prior to surgery (6-8 days) and to practice self-hypnosis in relaxation and pain reduction. Outcomes were measured via analgesic use, postoperative nausea, vomiting and reports of wellbeing from nurses' records and patient questionnaires. The results showed that patients reported significantly less PONV and made fewer requests for medication.

It would seem logical that the powers of imagination of children would predispose them to being good hypnotic subjects. Zeltzer et al (1991) studied 54 children with cancer who were prone to nausea and vomiting and other disruption in their life following cancer treatment. They were randomly assigned to hypnosis, distraction or casual conversation treatment groups, the children and their parents were interviewed over the phone after treatment. Although the authors were keen to note that within group variance in hypnotisability and pharmacological treatments had not been taken account of, the hypnosis group achieved the greatest reduction of anticipatory nausea and vomiting.

7. Obstetrics and Gynaecology

There have also been some studies which have investigated the use of hypnosis to reduce labour duration and pain. Given the number of factors that might influence these outcomes such as previous deliveries and medication it was indicated by Brann and Guzvica (1987) that a sample size of about 100 is necessary to control for such variability. Their study of 96 first time and second child pregnant women was not randomised as participants could choose hypnosis or prophylactic intervention, (which involved breathing exercises and cognitive distraction training). Suggestions in the treatment group consisted of soothing imagery to associate uterine contractions to a sensation of smooth waves rolling on the sea in

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order to promote feelings of wellbeing and accelerate the delivery. Results showed that the duration of delivery was shorter for mothers in the hypnosis group with the primagravid mothers shorter by an average 98 minutes. The authors noted that the prophylactic group were on average 1.5 years younger, which may have some bearing on the time difference.

A study by Jenkins and Pritchard (1993) of 262 pregnant women (126 first time, 136 second time) investigated the duration of labour and consumption of analgesic medicine during normal childbirth. The women were age matched with 300 first time and 300 second time controls. The treatment consisted of six sessions from a trained Hypnotherapist. The results showed that first time mothers spent significantly less time than the matched controls in the first and second stages of labour on a par in fact with the second time mothers. All of the hypnosis participants used significantly less analgesics than the control group.

8. Posttraumatic stress disorder

Brom et al (1989) conducted a large scale of the effectiveness of psychotherapeutic methods for the treatment of Posttraumatic Stress Disorder (PTSD). 112 subjects diagnosed on the DSM-III scale consisted of 19 people who had suffered a violent crime, 4 a traffic accident, 83 bereaved of an immediate family member by murder/suicide, traffic accident, acute or chronic illness. 6 subjects presented with miscellaneous trauma.

Subjects were treated in 3 groups with trauma desensitisation (14 sessions), hypnotherapy (15 sessions) or psychodynamic therapy (18sessions) in comparison to a waiting list control group. The outcomes measured before, after and 3 months after were defined as;

- a) Social Inadequacy (inadequacy in social relationships, negative frame of mind, sense of inferiority)
- b) Somatization (physical complaints)
- c) Agoraphobia (fear of open space)
- d) Hostility (symptoms of aggression)
- e) Psychoneuroticism
- f) Trauma symptoms -27 items relating to fears, negative emotional experiences, tensions, concentration and memory disturbances, lack of interest in outside world and sleep disturbances.
- g) State-Trait anxiety and anger Inventories.

The results indicated statistically significant reductions in all three treatment groups across all outcome measures with the exception of State-Trait anger inventory while controls showed non-significant reductions in all treatment groups.

Discussion

This paper is far from an exhaustive assessment of the current applications of hypnotic treatment in medicine and hasn't even mentioned its application in dentistry [for which see Simons (1985), Tobey (1996) and Patel et al (2000)] in which currently it probably has more acceptance as an analgesic, anxiolytic and adjunct sedative (Woolley 2006). Nor has this paper considered its applications in the more ambiguous realms of mental health given the difficulties in agreement in the first place of what is meant by depression or psychotic disorders and whether or not their origins are biological, psychological or spiritual.

Instead this paper has deliberately focused on hypnotic treatments as applied to the 'harder' and more empirically testable aspects of medicine as a measure of 'something going on'. It is clear from the examples presented that there are strong indications that treatment with hypnosis is effective across a range of conditions. While acknowledging the complex psychological and spiritual processes that are going on when someone is in a deeply hypnotised state (which is beyond the scope of this paper) the question arises, can we start to get an idea of what is happening neurophysiologically in the hypnotic state to induce the effects outlined above? Woolley summarises work by Gruzelier (1998) in saying

“Brain studies are shedding light on the neurophysiology of hypnosis. Blood flow studies, Positron Emission Tomography (PET) imaging, and Electroencephalograms (EEGs) have demonstrated the involvement the anterior cingulate cortex (ACC), the thalamus and the (ponto-

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mesencephalic) brainstem in the production of hypnotic experiences. The ACC is used in weighing of cognitive functions, error and novelty detection and dissociation from sensory input"

He notes;

"A conceptual framework has been proposed which integrates neurophysiology, systems thinking and psychology, as complementary factors in hypnosis (citing Hasegawa and Jameson, 2002)

Elenkov et al (2000) discuss the interface between the brain and the immune system;

"During an immune response the brain and the immune response 'talk to each other' and this process is essential for maintaining homeostasis. Two major pathways systems are involved in this cross talk; the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system (SNS).

In other words there is a connection between what you are consciously and unconsciously receiving (in the brain) and how the bodys' immune system is responding via the endocrine system (HPA) and the sympathetic nervous system (SNS). In more detail Elenkov goes on:

"Primary and secondary lymphoid organs receive extensive sympathetic/noradrenergic (NA) innervation...under stimulation NA is released from the sympathetic nerve terminals and immune cells express adrenoreceptors. Catecholamines released by the HPA or the SNS affect lymphocyte proliferation, modulate cytokine production and the functional activity of different lymphoid cells. Substantial sympathetic innervation also exists in the bone marrow and mucosal tissues."

"Noradrenaline (through stimulation of the B2 adrenoceptor-cAMP-protein kinase -A pathway,) inhibits the production of type 1 proinflammatory cytokines, (such as interleukin -12, tumour necrosis factor-a, interferon-y) by antigen presenting cells and T-helper cells.

Whereas it stimulates the production of type 2 anti-inflammatory cytokines (such as Interleukin-10 and transforming growth factor B.)

Thus endogenous neurotransmitters may cause a selective suppression of type 1 cellular response immunity and a shift toward type 2 humoral immunity. On the other hand in certain local responses under certain conditions neurotransmitters may actually boost regional immune responses through induction of Interleukin-1, Interleukin-8 and tumour necrosis factor-a."

In essence then we are seeing that neurotransmitters produced in the central and peripheral nervous system are having a direct effect on the way the immune system is functioning through stimulation of immune system organs causing generation of new white blood cells and changes in the expression of the 'immune system transmitters', the cytokines, thus changing the way the immune cells present are behaving. This provides us with an avenue of enquiry as to how some of the responses described above (such as in irritable bowel syndrome) may be being coordinated by the brain and nervous system.

The neurological PET and EEG studies are also showing us that something distinct is happening to the physiology of the brain during treatment through hypnosis specifically to the anterior cingulate cortex, the thalamus and in the higher regions of the brainstem.

In the case of disorders with large immune system components such as IBS, asthma, and psoriasis, specific suggestions received under hypnosis could be being transmitted by the autonomic nervous system to the immune system and producing specific localised responses which are significantly affecting the course of the disorders.

This has exciting implications for many fields of healthcare given the relative simplicity of the techniques and ease of training for those with little medical training in its use.

Furthermore in many of the studies, the use of audiotapes for home use was mentioned. In current settings with so many hospital wards installing bedside television-internet-telephone units it would be quite feasible to have an audio library of hypnotic recordings available for inpatients to listen to, to reduce anxiety, pain and promote recovery. Indeed a case study of a patient receiving treatment with 3-

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dimensional virtual reality audio-visual hypnosis while enduring painful wound care in an intensive care ward following severe burns showed measures of pain and anxiety dropping by 40% (worst pain) and 60% (average pain) with 30% reduction in opioid use after treatment.(Patterson et al 2004).

It is interesting to note the involvement of SNS innervation to the bone marrow and blood vessels, which perhaps goes some way to explain the results of the study on haemophilia and the changes in blood clotting factor consumed. Explanations of how hypnosis effects Post traumatic stress disorder takes us into psychological realms, Newton (2007) would explain the effect as result of the effects of relaxation and suggestion returning the focus of attention from the emergency reactive centres of the primitive mind, amygdala and hippocampus to the prefrontal cortical regions of conscious innovative control where solutions may be generated and allow choice of response to recurrent painful memories.

Conclusion

In conclusion it is evident that through the complex communication between the nervous system and the immune system, homeostasis, in the sense of healthy functioning of the body, is being directed. Therefore we may suppose that in so much as external psychological interventions of a trained hypnotherapist are influencing the nervous system of the client they are indirectly influencing his state of health through the modified actions of his immune system.

In any event it is fair to say that the exact mechanisms of action be they physiological, psychological or spiritual are complex and will yield their secrets slowly.

Perhaps then time to go back to the hammock, lie back, relax, listen to the sound of the waves on the shore and wonder what's for lunch...