Review of International Literature

D. Corydon Hammond
Associate Editor

Barnier, A. J., & McConkey, K. M. (2001). Posthypnotic responding: The relevance of suggestion and test congruence. International Journal of Clinical & Experimental Hypnosis, 49(3), 207-219. Suggestions to respond to a cue or to respond when they heard a cue posthypnotically were given to 30 real, hypnotized subjects and to 34 simulating, nonhypnotized subjects. Half the subjects received the cue in hypnosis and all subjects received it after hypnosis. Subjects’s behavioral and subjective experience were influenced by the congruence between information that was conveyed by the suggestion and the test about when and how they should respond. Address for reprints: Kevin M. McConkey, School of Psychology, University of New South Wales, Sydney NSW 2052, Australia. E-mail: K.McConkey@unsw.edu.au.

Barber, J. (2001). Freedom from smoking: Integrating hypnotic methods and rapid smoking to facilitate smoking cessation. International Journal of Clinical & Experimental Hypnosis, 49(3), 257-266. The author reports a case series (without a control group) in which 39 of 43 patients remained abstinent from smoking at follow-ups ranging from 6 months to 3 years. The treatment approach consisted of multiple hypnosis sessions combined with a rather aversive behavioral approach of rapid smoking for 3 days prior to and again in the morning before the hypnosis appointment. In rapid smoking, the patient had to in the morning smoke continuously for 5 minutes precisely, inhaling every 4 seconds. The patient then had to write for 5 minutes describing how they felt right then, followed by a repetition of rapid smoking and then of writing again. Patients could then continue through the day to smoke as little or as much as desired. Following an intake appointment to assess history and motivation, educate the patient about hypnosis, and to give instructions for rapid smoking, many patients had two or more subsequent hypnosis appointments. The second hypnosis appointment was usually the very next day. The article includes practical suggestions, most of which appeared in Hammond (1990). Each of the 4 individuals who resumed smoking did so within 1 month of treatment in response to anxiety. Address for reprints: Joseph Barber, Depts. of Anesthesiology & Rehabilitation Medicine, University of Washington School of Medicine, 5738 35th Ave., NE, Seattle, WA 98105-2334, USA. E-mail: jbarber@u.washington.edu.

Bloom, P. B. (2001). Treating adolescent conversion disorders: Are hypnotic techniques reusable? International Journal of Clinical & Experimental Hypnosis, 49(3), 243-256. The author believes that clinicians need to act to restore function as rapidly as possible in adolescents hospitalized with conversion disorders. After seeking to rule out organic causes and to find persuasive psychological rationales that the patient will accept to resolve the disorder, the staff needs to seek additional approaches.
in caring for them. The author reports his experience in treating 2 young patients with hypnosis. He expresses his beliefs about the importance of the therapeutic relationship as the basis for healing. Address for reprints: Peter Bloom, 416 Riverview Ave., Swarthmore, PA 19081-1221. E-mail: pbloom@mail.med.upenn.edu.

Bryant, R. A., Guthrie, R. M., & Moulds, M. L. (2001). Hypnotizability in acute stress disorder. American Journal of Psychiatry, 158(4), 600-604. This study examined the relationship between acute dissociative reactions to trauma and hypnotizability. Traumatized patients (N = 61) with acute PTSD, subclinical acute stress disorder (no dissociative symptoms), and no acute stress disorder were given the Stanford Hypnotic Clinical Scale within 4 weeks of their trauma. Patients with acute stress disorder and patients with subclinical acute stress disorder displayed comparable levels of nondissociative psychopathology, but acute stress disorder patients had higher levels of hypnotizability and were more likely to display reversible posthypnotic amnesia than both patients with subclinical acute stress disorder and patients without acute stress disorder. The findings were interpreted as in light of a diathesis-stress process mediating trauma-related dissociation. Persons developing acute PTSD in response to traumatic events may have a stronger ability to experience dissociative phenomena than those who develop subclinical acute stress disorder or no acute stress disorder. Address for reprints: R. A. Bryant, School of Psychology, University of New South Wales, Sydney, NSW 2052 Australia. E-mail:

Bryant, R. A., & Kourch, M. (2001). Hypnotically induced emotional numbing. International Journal of Clinical & Experimental Hypnosis, 49(3), 220-230. This study evaluated the effects of hypnotic suggestions to inhibit emotional response. High and low hypnotizable subjects were divided and one half were given a suggestion for emotional numbing. All subjects were then shown slides of neutral or disfigured faces. Subjects where emotional numbing was suggested experienced less distress to the disfigured faces than control subjects and this effect was strongest in high hypnotizables. This paradigm may be useful for exploring processes in emotional numbing. This reviewer also wonders if such suggestions may have applicability to certain real life situations, such as where police officers or coroner’s office personnel are forced to encounter extreme conditions. Address for reprints: R. A. Bryant, School of Psychology, University of New South Wales, Sydney, NSW 2052 Australia. E-mail:

Burn, C., Barnier, A. J., & McConkey, K. M. (2001). Information processing during hypnotically suggested sex change. International Journal of Clinical & Experimental Hypnosis, 49(3), 231-242. Thirty-six real (24 high hypnotizables and 12 “virtuosos”) and 18 simulating low hypnotizable subjects were given suggestions of their sex changing. They then listened to a story that included a male and a female character, afterwards reporting their experience and recall of the story. Hypnotic virtuosos were less likely than high hypnotizables and simulators to identify with the character of their suggested sex. But, virtuosos could recall more information about the character who was consistent with their suggested sex than either highs or simulators. The findings are discussed in terms of selective processing of information and attention. It was concluded that character identification was not the factor influencing recall in virtuosos, but that they process information differently, in a more self-referential
Covino, N. A., & Bottari, M. (2001). Hypnosis, behavioral theory, and smoking cessation. *Journal of Dental Education, 65*(4), 340-347. Although nicotine replacement and other pharmacological treatments are popular for smoking cessation, hypnosis and behavior therapies have been studied for decades and contribute significantly to successful treatment outcome in smoking cessation. This article describes hypnotic and behavioral approaches to smoking cessation and critically reviews some of the findings from clinical and experimental research studies. Suggestions regarding treatment and future research are made. Address for reprints: Nicholas Covino, Department of Psychology, Harvard Medical School, Beth Israel Deaconess Medical Center, Boston, MA 02215, USA. E-mail:

Ffrench, C. (2000). The meaning of trauma: Hypnosis and PTSD. *Australian Journal of Clinical & Experimental Hypnosis, 28*(2), 188-199. Discusses how PTSD reactions may be viewed in light of the personal meaning of the trauma for the individual. In a case report of a PTSD reaction to an armed robbery, the use of hypnosis and cognitive behavior therapy is described. In hypnosis, the idiosyncratic nature of the patient’s reaction became apparent and he was able to abreact the affective component. Address for reprints: Christine Ffrench, Mirrool Counselling Centre, 110 Skye Road, Frankston, Victoria 3199, Australia.

Hannigan, K. (2000). Self-hypnosis revisited: Much ado about nothing. *Australian Journal of Clinical & Experimental Hypnosis, 28*(2), 138-149. With advances in psychoneuroimmunology and the ability to influence autonomic processes, there has come to be renewed interest in self-hypnosis and its ability to promote immune system enhancement and to support wellness. This article provides a good review of the self-hypnosis literature, particularly with regard to the issue of the similarities between self-hypnosis and heterohypnosis. It is concluded that existing research is unable to demonstrate that self-hypnosis is essentially different from heterohypnosis. Address for reprints: Karin Hannigan, 8 Marshall Lane, Kenmore, Queensland 4069, Australia.

Harasyhmczuk, M. (2000). Hypnosis as an adjunct to tinnitus retraining therapy in the treatment of persistent tinnitus. *Australian Journal of Clinical & Experimental Hypnosis, 28*(2), 169-175. A case report on successful treatment of persistent tinnitus. The hypnotic part of the treatment included two sessions involving ego-strengthening, imagining a symbol of peace, ideomotor signaling, positive suggestions regarding the woman’s hearing, and self-hypnosis training. The interventions reduced the patient’s tinnitus awareness from 20% to 5% of the time, and reduced the severity rating from 6 to 3 (on a 10 point scale). Address for reprints: Maria Harasyhmczuk, Hearing & Balance Centre, St. Vincent’s Hospital, Level 13, Aikenhead Building, Victoria Street, Darlinghurst, NSW 2010, Australia.

Healey, F., & Persinger, M. A. (2001). Experimental production of illusory (false) memories in reconstructions of narratives: Effect size and potential mediation by right hemispheric stimulation from complex, weak magnetic fields. *International Journal of Neuroscience, 106*(3-4), 195-207. This study examined the proportion of
false, inferential and verbatim memories that would be included in a memory reconstruction one week after of a 5-minute narrative containing ambiguous but emotional content about a little boy. Forty-eight subjects were administered the Hypnotic Induction Profile and then listened to the narrative, and were exposed to one of four applications of transcerebral weak, complex magnetic fields for 30 minutes. They were then given either an accurate or inaccurate short summary of the story. One week later the group that received the erroneous summary reported more false memories about the original story than did the reference group; this treatment accommodated about 40% of the variance in numbers of false memories. Only an indicator of electrical lability within the temporal lobes (but not hypnotizability) was strongly associated with the number of inferential memories, but not the numbers of false memories. The group that received right hemisphere transcerebral stimulation with a complex magnetic field and the erroneous summary reported three times the numbers of false memories compared to the other groups. Verbatim memories showed a strong primacy effect and inferential memories exhibited a strong recency effect.

Address for reprints: M. A. Persinger, Behavioral Neuroscience Laboratory, Laurentian University, Sudbury, Ontario, Canada.

Hofbauer, R. K., Rainville, P., Duncan, G. H., & Bushnell, M. C. (2001). Cortical representation of the sensory dimension of pain. Journal of Neurophysiology, 86(1), 402-411. Pain is a multidimensional experience, but little is known of how the brain represents these dimensions. The authors used positron emission tomography (PET) to indirectly measure pain-evoked cerebral activity before and after hypnotic suggestions were given to modulate the perceived intensity of a painful stimulus in a similar manner to that done in a previous study in which they gave suggestions to modulate the perceived unpleasantness of a noxious stimulus. Ten subjects were scanned while tonic warm and noxious heat stimuli were presented to the hand during four experimental conditions: alert control, hypnosis control, hypnotic suggestions for increased-pain intensity, and hypnotic suggestions for decreased-pain intensity. As found in previous brain imaging studies, noxious thermal stimuli presented during the alert and hypnosis-control conditions reliably activated contralateral structures, including primary somatosensory cortex (S1), secondary somatosensory cortex (S2), anterior cingulate cortex, and insular cortex. Hypnotic modulation of the intensity of the pain sensation led to significant changes in pain-evoked activity within S1 in contrast to their previous study in which specific modulation of pain unpleasantness (affect), independent of pain intensity, was found to produce specific changes within the anterior cingulate cortex. This double dissociation of cortical modulation seems to indicate a relative specialization of the sensory and the classical limbic cortical areas in the processing of the sensory and affective dimensions of pain. Address for reprints: R. K. Hofbauer, Department of Neurology and Neurosurgery, McGill University, Montreal, Quebec H3A 2B4, Canada.

clarified. Emotional states can conveniently be induced by hypnosis-based suggestions. These investigators studied brain electric activity during hypnotically induced anxiety and relaxation in 11 right-handed normals (5 males, 6 females, mean age 26.5+/−7.6 years). Unfortunately, hypnotizability was not measured. After induction of “light hypnosis,” anxiety and then relaxation were suggested using a standardized text (reverse sequence in half of the subjects). Nineteen-channel, eyes-closed EEG (20 artifact-free seconds/subject) was analyzed (source localization using FFT approximation and low resolution electromagnetic tomography [LORETA]). Global tests found the strongest difference (P < 0.005) between EEG source gravity center locations during the two emotional states in the excitatory beta-2 EEG frequency band (18.5-21 Hz). Post hoc tests revealed that the sources were located more right during anxiety than during relaxation (P = 0.01). LORETA specified that anxiety showed maximally stronger activity than relaxation in right Brodmann area 10 (around electrode site Fp2), and relaxation showed maximally stronger activity than anxiety in left Brodmann area 22 (around or just posterior to electrode site T3). Clearly, the two induced emotional states were associated with activity in different neural populations. The results agree with reports on brain activity shifted to the right hemisphere (especially the right fronto-temporal area) during negative compared with positive emotions, and support the role of beta-2 EEG frequency in emotional states. Address for reprints: I. Isotani, The KEY Institute for Brain-Mind Research, University Hospital of Psychiatry, Lenggstrasse 31, CH-8029, Zurich, Switzerland. E-mail: isotani@takii.kmu.ac.jp.

Jensen, M. P., & Barber, J. (2000). Hypnotic analgesia of spinal cord injury pain. *Australian Journal of Clinical & Experimental Hypnosis, 28*(2), 150-168. This study evaluated the efficacy of hypnotic analgesia for spinal cord injury related pain in 4 patients who received from 4-19 hypnosis sessions with suggestions for daily practice. Ratings of average pain intensity and sleep disturbance were obtained pre- and post-treatment and on two month and one year follow-ups. Daily records of pain intensity and sleep disturbance were obtained during a baseline, during treatment, and for a shorter time following treatment. One patient was moderately hypnotizable, scoring 3 of 5 on the Stanford Hypnotic Clinical Scale, and the other 3 patients were in the high hypnotizability range, scoring 4, 5, and 5. Each patient experienced a pre- to post-treatment decrease in pain, but only the 3 high hypnotizable patients maintained significant pain relief on two-month follow-ups, and only two patients maintained the same level of pain relief on one year follow-up, although the other patient was still experiencing less pain than before treatment. This case series suggests that hypnosis has good potential for pain control with spinal cord related pain in high hypnotizable subjects. Address for reprints: Mark P. Jensen, Dept. of Rehabilitation Medicine, Box 356490, University of Washington, Seattle, WA 98196-6490, USA.

Kinnunen, T., Zamansky, H. S., & Nordstrom, B. L. (2001). Is the hypnotized subject complying? *International Journal of Clinical & Experimental Hypnosis, 49*(2), 83-94. To study the role of compliance in hypnotic responses to suggestions, some suggestions were administered in a typical hypnotic manner, and also, while urging subjects to comply. Subjects’ overt behavior was recorded and they were questioned about their subjective responses. Electrodermal skin conductance responses were also done to provide a possible physiological measure of truthfulness. Although behavioral and verbal responses were consistent with the hypnotic suggestions, in both conditions, the standard hypnotic condition responses seemed to be experienced as genuine with subjective reports meeting the criterion of truthfulness, while suggestions for compliance yielded reports that did not meet the criterion for truthfulness. It appeared that subjects tend to comply when they are motivated to produce hypnotic responses beyond their cognitive skill capacity to do so during difficult suggestions. Milling, Kirsch and Burgess (1999) discovered that training low hypnotizables in a sociocognitive model to respond to standard scales did not reduce pain during hypnosis. These authors suggest that “it may very well be that the use of such sociocognitive hypnotic-enhancing procedures simply increases compliance rather than hypnotic responsiveness. Address for reprints: Taru Kinunen, Harvard School of Dental Medicine, Department of Oral Health Policy & Epidemiology, 31 State St., Boston, MA 02109, USA. E-mail:tara_kinnunen@hms.harvard.edu

Leavitt, F. (2000). Surviving roots of trauma: Prevalence of silent signs of sex abuse in patients who recover memories of childhood sex abuse as adults. *Journal of Personality Assessment, 74*(2), 311-323. This study explored whether victimization imagery is chronically accessible in sex-abused populations, and if it is helpful in distinguishing them from nonabused patients. Eight categories of victimization imagery were selectively activated by Rorschach stimuli in 265 women with or without history of sexual abuse. Eight sex-abuse signs were replicated in a new sample of 36 patients who had continuous memory of sex abuse. The classification accuracy was 83%. In contrast, the signs were present in only 4% of the protocols of nonabused patients. Together, the 2 studies confirm reasonably high sensitivity of the 8 signs for sex-abused populations and high specificity for nonabused populations. The 8 signs were also differentially salient for patients who recovered memory of childhood abuse as adults. There was no connection between therapy and recovered memory cases with and without sex-abuse signs and the emergence of trauma memories was not uniquely traceable to treatment. Memories arose outside of the context of therapy in over 56% of the cases. Implications for the false-memory debate are discussed. No address available for reprints.

Mannix, L. K., Chandurkar, R. S., Rybicki, L. A., Tusek, D. L., & Solomon, G. D. (1999). Effect of guided imagery on quality of life for patients with chronic tension-type headache. *Headache, 39*(5), 326-334. This study evaluated the effect of adjuvant guided imagery on patients with chronic tension headaches. One hundred and twenty-nine patients with chronic tension headaches completed the Headache Disability Inventory and the Medical Outcomes Study Short Form (SF-36) at their initial visit to a specialty headache center and again a month after the visit. In addition to individualized headache therapy, patients listened to a guided imagery audiocassette
tape daily during the month. A control group of 131 patients received individualized therapy without guided imagery. Controls and the patients who listened to the guided imagery tape improved in headache frequency, headache severity, global assessment, quality of life, and disability caused by headache. More guided imagery patients (21.7%) than controls (7.6%) indicated that their headaches were much better (P = .004). The guided imagery patients had significantly more improvement than the controls in three of the SF-36 domains: bodily pain (95% CI; guided imagery patients 11.0, controls 0.2), vitality (95% CI; guided imagery patients 10.9, controls 1.7), and mental health (95% CI; guided imagery patients 7.8, controls 0.4). It was concluded that guided imagery is an effective adjunct therapy for the management of chronic tension-type headache. Address for reprints: L. K. Mannix, Department of General Internal Medicine, Headache Wellness Center, Greensboro, NC, USA.

Matsuo, D. A., Barnier, A. J., & McConkey, K. M. (2000). Perceptions of alleged sexual assault during therapy. *Australian Journal of Clinical & Experimental Hypnosis, 28*(2), 127-137. This study examined how people perceive the relevance of different factors in situations of sexual assault during therapy. They investigated the extent to which the presence or absence of hypnosis, the use of force, and patient involvement influenced subject perceptions of constructed cases of sexual assault. Vignettes in which the presence or absence of these factors was manipulated were read by 64 subjects, who then made ratings and judgements about the responsibility, guilt, and control of both the patient and therapist. When hypnosis was part of the picture, subjects perceived the patient as being less responsible, having less control, and the therapist as being more responsible. The presence of force caused the patient to be perceived as less responsible, but when the patient was involved in the sexual activity, she was perceived as being more responsible and as having more control. These findings were discussed in terms of the general public’s perceptions and beliefs about hypnosis and sexual assault, and with regard to their views of the nature of the therapeutic relationship and the responsibilities of the therapist. Address for reprints: Kevin M. McConkey, School of Psychology, University of New South Wales, Sydney, NSW 2052, Australia. E-mail: K.McConkey@unsw.edu.au.

McConkey, K. M., Szeps, A., & Barnier, A. J. (2001). Indexing the experience of sex change in hypnosis and imagination. *International Journal of Clinical & Experimental Hypnosis, 49*(2), 123-138. A change of sex was suggested to high hypnotizables in hypnosis and imagination conditions. The subjects’ experiences were indexed with a continuous, concurrent behavioral measure of having them turning a dial as a way of indicating changes in the strength of the suggested effect. Researchers also indexed the subjects’ experiences through retrospective ratings of involuntariness, realness, and active thinking. The dial ratings showed that the onset of the experience was more rapid in the hypnotic and imagination condition. There were also differences in the relationship between dial ratings and retrospective ratings across the conditions as well as across the suggestion, test and cancellation phases of the suggestion. They recommend that future research examine the differential onset effect in more detail. It was believed that the retrospective ratings involved a more subjective averaging of the experience while the dial ratings gave a more detailed appreciation of the experience as it was ongoing. Address for reprints: Kevin M. McConkey, School of Psychology,
Miller, G. E, & Cohen, S. (2001). Psychological interventions and the immune system: A meta-analytic review and critique. *Health-Psychology, 20*(1), 47-63. This paper reviews evidence of psychological interventions modulating the immune response in humans and presents a series of models depicting the psycho-biological pathways through which this may occur. More than 85 trials have been conducted, but meta-analyses find only modest evidence that interventions can reliably alter immune parameters. However, the most consistent evidence emerges from hypnosis and conditioning trials. Disclosure and stress management demonstrate scattered evidence of success, and relaxation shows very little capacity to elicit immune change. Although these data provide only modest evidence of successful immune modulation, it is suggested that it would be premature to conclude that the immune system is unresponsive to psychological interventions. The literature has important conceptual and methodological issues that need to be further resolved before any definitive conclusions can be reached. Address for reprints: Sheldon Cohen, M.D., 40 Peachtree St. N.E., Suite 251-B, Atlanta, GA 30308, USA.

Murray, L. L., & Ray, A. J. (2001). A comparison of relaxation training and syntax stimulation for chronic nonfluent aphasia. *Communication Disorders, 34*(1-2), 87-113. This study evaluated the effects of relaxation training and syntax stimulation on the spoken language abilities of a 59-year-old male with chronic, nonfluent aphasia of moderate severity. Relaxation training used progressive muscle relaxation (PMR) and guided imagery (GI), whereas the syntax stimulation was a modified version of the Helm Elicited Program for Syntax Stimulation (HELPSS). These treatments were applied in the context of a single-subject alternating treatments plus baseline design. The results indicated that although both treatments produced improvements in spoken language, syntax stimulation was associated with larger improvements, particularly in terms of the proportions of grammatical utterances, correct information units (CIUs), and successful utterances produced by the patient. Analysis of treatment order, however, indicated that the participant’s best performances of the syntax treatment and of the probe tasks occurred when relaxation training had preceded syntax stimulation. The findings suggest that the simplicity and psychological benefits of relaxation training make it a complementary component to traditional linguistic programs for aphasia. Address for reprints: L. L. Murray, Department of Speech and Hearing Sciences, Indiana University, Bloomington, IN 47405, USA. E-mail:

Naring, G. W. B., Roelofs, K., & Hoogduin, K. A. L. (2001). The Stanford Hypnotic Susceptibility Scale, Form C: Normative data of a Dutch student sample. *International Journal of Clinical & Experimental Hypnosis, 49*(2), 139-145. Presents the norms from 135 students for a Dutch translation of the Stanford Hypnotic Susceptibility Scale, Form C. The psychometric properties were similar to other language versions of the scale, but the mean was somewhat lower than in students at Stanford. Address for reprints: Dr. G. Naring, Dept. of Clinical Psychology & Personality, University of Nijmegen, P.O. Box 9104, 6500 HE Nijmegen, The Netherlands. E-mail: narin@psych.kun.nl.
Page, S. J., Levine, P., Sisto, S., & Johnston, M. V. (2001). A randomized efficacy and feasibility study of imagery in acute stroke. *Clinical Rehabilitation, 15*(3), 233-240. The objective of this research was to compare the feasibility and efficacy of a program that combined imagery and occupational therapy with a program of only OT. The study used a randomized, controlled case series in a subacute outpatient clinic. The sample consisted of thirteen consecutively admitted patients between four weeks and one year post stroke who were exhibiting stable motor deficits in their affected upper limbs. All patients received an hour of therapy three times a week for six weeks which was administered by the same physical and occupational therapists. During the same period, eight patients participated in 10-minute guided imagery sessions after each therapy session, and they were instructed to practice imagery at home twice each week. Five patients participated in a control intervention consisting of exposure to stroke information. Outcome measures included the Fugl-Meyer Assessment of Motor Recovery (Fugl-Meyer) and Action Research Arm Test (ARA). After intervention, the Fugl-Meyer and ARA scores of patients in the therapy only group remained virtually the same, while the therapy plus imagery group scores improved by 13.8 and 16.4 points, respectively, on the Fugl-Meyer and ARA. It was concluded that imagery is a clinically feasible, cost-effective complement to therapy that may improve outcomes more than participation in physical and occupational therapy only. Address for reprints: S. J. Page, Kessler Medical Rehabilitation Research and Education Corporation (KMRREC), West Orange, New Jersey 07052, USA. E-mail: spage@kmrrec.org.

Peebles-Kleiger, M. J. (2001). Contemporary psychoanalysis and hypnosis. *International Journal of Clinical & Experimental Hypnosis, 49*(2), 146-165. This article discussed the relationship between hypnosis and psychoanalysis, past, present, and future. It begins by summarizing parallel developments in the two fields in the past 100 years. Drive theory, ego psychology, object relations theory, and self-psychology are discussed as major theoretical evolutions in psychoanalysis. Contemporary movements in psychoanalysis (postmodernism, spontaneity, pluralism, and integrationism) are described along with their impact on current and future practice in hypnosis, as well as the impact of managed care. It is suggested that hypnosis is uniquely positioned with its tradition of multitheoretically informed brief clinical interventions and research to provide psychoanalysis with a life raft in the future. Address for reprints: Mary Jo Peebles-Kleiger, 5404 Audubon Rd., Bethesda, MD 20814. E-mail: kleipebb@aol.com.

Thornton, J., Guz, A., Murphy, K., Griffith, A., Pedersen, D., Kardos, A., Leff, A., Adams, L., Casadei, B., & Paterson, D. (2001). Identification of higher brain centres that may encode the cardiorespiratory response to exercise in humans. *Journal of Physiology, 533*(Pt. 3), 823-836. Positron emission tomography (PET) was used to identify the neuroanatomical correlates underlying “central command” during imagination of exercise under hypnosis, in order to uncouple central command from peripheral feedback. Three cognitive conditions were used: condition 1 was imagining freewheeling downhill on a bicycle (no change in heart rate, HR, or ventilation, &Vdot; condition 2, imagining exercise, cycling uphill (increased HR by 12 % and &Vdot by 30 % of the actual exercise response): condition 3, volitionally
driven hyperventilation to match that achieved in condition 2 (no change in HR). PET subtraction methodology created contrast A (condition 2 minus 1) highlighting cerebral areas involved in the imagination of exercise and contrast B (3 minus 1) highlighting areas activated in the direct volitional control of breathing. Four subjects participated, with 8 scans per subject. End-tidal P(CO2) (P(ET,CO2)) was held constant throughout PET scanning. It was found that in contrast A, significant activations were seen in the right dorso-lateral prefrontal cortex, supplementary motor areas (SMA), the right premotor area (PMA), superolateral sensorimotor areas, thalamus, and bilaterally in the cerebellum. In contrast B, significant activations were present in the SMA and in lateral sensorimotor cortical areas. The SMA/PMA, dorso-lateral prefrontal cortex and the cerebellum are concerned with volitional/motor control, including that of the respiratory muscles. The neuroanatomical areas activated suggest that a significant component of the respiratory response to ‘exercise’, in the absence of both movement feedback and an increase in CO(2) production, can be generated by what appears to be a behavioral response. Address for reprints: J. Thornton, University Laboratory of Physiology, Parks Road, Oxford, UK.

**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 & Experimental Hypnosis, 49(3), 185-206.** Past EEG research has suggested the involvement of theta band frequencies in hypnotizability and hypnotic response, as well as gamma frequencies. There is conflicting data concerning the relationship between alpha and hypnotizability, likely resulting from poor research design and variability in experimental procedures and recording techniques. This study examined absolute power in high and low alpha and theta EEG frequency bands in relationship to hypnotizability and entering hypnosis. No differences were found between higher and lower hypnotizables in theta frequencies at prehypnotic baseline measurement, contrary to prior reports. However, both higher and lower hypnotizable subjects showed a significant increase in theta power between prehypnosis and hypnosis conditions, with the greatest increases being in the low theta (3.5-5.5 Hz). Low theta continued to increase after hypnosis in higher hypnotizables, perhaps suggesting that psychological or health benefits from hypnosis may be prolonged beyond hypnosis in more responsive individuals. It was believed that these changes in theta likely reflect an increase in relaxation since subjects lower in hypnotizability did not exhibit many behavioral characteristics associated with hypnosis. The increase in theta was also in posterior regions (O1 and O2) which would be anticipated to be more associated with relaxation than with cognitive processing, and in addition, hypnosis in the current study was passive, with a low cognitive load. There was a significant difference in the prehypnotic baseline in the alpha band frontally (F3, Fz, F4). Higher hypnotizables displayed higher alpha during hypnosis in the posterior cortex, which then decreased afterwards. In contrast, lower hypnotizables displayed a posterior alpha decrease during hypnosis and an increase after hypnosis. “These results suggest, first, that alpha rather than theta provides more information about trait differences in high and low susceptibles and, second, that whereas high susceptibles are able to ‘let go’ during hypnosis and maintain a state of quiescence with very little attentional or cognitive effort, low susceptibles use more cognitively active strategies despite the fact that they reached an increased level of relaxation” (p. 202). The data seem to suggest that theta represents...
an index of relaxation and alpha brainwave activity represents an index of hypnosis and hypnotic susceptibility. However, the study was limited by using only 5 electrodes and thus sampling limited cortical areas; by classifying high hypnotizables as the 67th percentile or above and lows as the 33rd percentile or below; perhaps by using the nose as a reference (which is different from other studies); and possibly by using the Barber Suggestibility Scale to measure hypnotizability. Address for reprints: John D. Williams, Psychology Group, School of Health & Social Sciences, Coventry University, Coventry, CV1 5FB, United Kingdom. E-mail: john.williams@coventry.ac.uk.

Williamson, J. W., McColl, R., Mathews, D., Mitchell, J. H., Raven, P. B., & Morgan, W. P. (2001). Hypnotic manipulation of effort sense during dynamic exercise: Cardiovascular responses and brain activation. *Journal of Applied Physiology, 90*(4), 1392-1399. This study hypnotically manipulated effort sense during dynamic exercise and to determine whether cerebral cortical structures previously implicated in the central modulation of cardiovascular responses would be activated. Six volunteer subjects who were highly hypnotizable were studied on 3 separate days during constant-load exercise under three hypnotic conditions involving cycling on a (1) perceived level grade, (2) perceived downhill grade, and (3) perceived uphill grade. Regional cerebral blood flow (rCBF) distributions for several sites and ratings of perceived exertion (RPE), heart rate (HR), and blood pressure (BP) were compared across conditions using analysis of variance. It was found that the suggestion of downhill cycling decreased both the RPE [from 13 +/- 2 to 11 +/- 2 (SD) units; P < 0.05] and rCBF in the left insular cortex and anterior cingulate cortex, but it did not alter exercise HR or BP responses. Under suggestions for perceived uphill cycling there were significant increases in RPE (from 13 +/- 2 to 14 +/- 1 units), HR (+16 beats/min), mean BP (+7 mmHg), right insular activation (+7.7 +/- 4%), and right thalamus activation (+9.2 +/- 5%). No differences were found in rCBF for leg sensorimotor regions across conditions. The findings indicate that an increase in effort sense during constant-load exercise can activate both insular and thalamic regions and elevate cardiovascular responses. However, decreases in effort sense do not reduce cardiovascular responses below the level required to sustain metabolic needs. Address for reprints: J. W. Williamson, Department of Physical Therapy, University of Texas Southwestern Medical Center, Dallas, Texas 75390-8876, USA. E-mail: jon.williamson@utsouthwestern.edu.

Wright, B. R., & Drummond, P. D. (2001). The effect of rapid induction analgesia on subjective pain ratings and tolerance. *International Journal of Clinical & Experimental Hypnosis, 49*(2), 109-122. The authors evaluated the influence of Joseph Barber’s Rapid Induction Analgesia (RIA) procedure on pain tolerance and ratings of induced pain in a pain-sensitized forearm in 50 subjects. The post-hypnotic procedure did not influence pain ratings or tolerance, although relaxation increased after RIA. If hypnosis was maintained during pain testing, ratings of pain unpleasantness decreased more in the RIA group than an attentional control condition, but RIA did not influence pain threshold or tolerance. They concluded that TIA is more likely to reduce subjective pain reports and the affective component of pain than in altering pain tolerance or the sensory aspects of pain. Address for reprints: Peter Drummond, School of Psychology, Murdoch University, 6150, Western Australia. E-mail: drummond@central.murdoch.edu.au.