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SALIENT FINDINGS: A Potentially Groundbreaking Study on the Neuroscience of Hypnotizability, a Critical Review of Hypnosis’ Efficacy, and the Neurophysiology of Conversion Disorder

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SALIENT FINDINGS: A Potentially Groundbreaking Study on the Neuroscience of Hypnotizability, a Critical Review of Hypnosis’ Efficacy, and the Neurophysiology of Conversion Disorder

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Abstract: Three papers of special interest to researchers and clinicians alike have recently appeared in the general scientific and medical literatures. Two of these papers are original research studies that employ brain-imaging technologies, one using Magnetic Resonance Imaging (MRI), the other position emission tomography (PET). A third paper is a comprehensive review of the empirical findings on the clinical use of hypnosis in pediatric oncology. The research study using MRI technology is extraordinary, because it is the first to document differences in brain morphology between high hypnotizable and low hypnotizable individuals. Arguably, if its findings replicate, the study could be one of the most important developments in scientific hypnosis since the genesis of the Stanford scales 45 years ago. The PET study notes differences in brain activation during intentionally simulated and hypnotically experienced paralysis. The review article examines empirical work addressing the efficacy of hypnosis for procedural pain in pediatric oncology.

The Salient Findings section of the International Journal of Clinical and Experimental Hypnosis features summaries on very important and very recent articles about hypnosis that have appeared in the general medical, general psychological, and broad scientific literatures. Although the article section of the Journal itself remains the primary professional venue for important findings in the field, it is helpful for readers to be apprised of emerging developments published elsewhere. Entries in Salient Findings are highly selective. Inclusion means that the editorial staff believes the article should not be missed by anyone.

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Three especially interesting hypnosis articles have appeared in the scientific and medical literatures over the past few months. They are in the finest tradition of our field (Kihlstrom, 2003). Two papers are empirical studies from the neuroscience laboratory, and one is a review of the clinical efficacy literature. The first empirical study could well be groundbreaking. It is a functional magnetic resonance imaging (MRI) examination of whether the brains of low hypnotizables and high hypnotizables might be morphologically different in areas known to mediate attentional processes (Horton, Crawford, Harrington, & Downs, 2004). The second paper is a positron emission tomography (PET) examination of differential brain activations during suggested versus faked paralysis (Ward, Oakley, Frackowiak, & Halligan, 2003). The third paper reviews the empirical evidence regarding the efficacy of hypnosis in the treatment of procedural pain with children suffering from cancer (Wild & Espie, 2004).

Hypnotizability and Brain Morphology


Hilgard and others have posited that highly hypnotizable subjects possess exceptional sensory and perceptual gating abilities, enabling them to efficiently inhibit or bracket off from awareness the experience of unwanted stimuli, cognitions, and memories (Barnier & McConkey, 2003; Barnier, McConkey, & Wright, 2004; Hilgard, 1992; Nash, 1992; Vermetten & Bremner, 2004). From this point of view, highly hypnotizable subjects are in some sense exceptionally competent in gating perceptual, emotional, and cognitive experience (Rainville & Price, 2003; Ray & De Pascalis, 2003; Ray & Oathes, 2003; Sharav & Tal, 2004; Woody & McConkey, 2003; Woody & Szechtman, 2003). Interestingly, there is a portion of the brain, the anterior corpus callosum, which is known to bridge different areas of the prefrontal cortices and to play a substantial role in this kind of cognitive flexibility and executive control. As one might expect, this area is decreased in size among children with diminished attentional abilities. The authors reasoned that if very highly hypnotizable individuals possess formidable abilities to flexibly allocate attentional and cognitive resources, these individuals might also have a larger rostrum in the anterior corpus callosum when compared to low hypnotizables. The researchers screened what appears to have been hundreds of university students (aged 19–29) to find 8 highly hypnotizable individuals who scored in the highly hypnotizable range on both the Harvard Group Scale of Hypnotic Susceptibility.
(Shor & Orne, 1962) and the Stanford Hypnotic Susceptibility Scale, Form C (Weitzenhoffer & Hilgard, 1962). Plus, all 8 subjects were able to use hypnosis to “eliminate” cold-pressor pain. Another group of 10 low hypnotizable subjects were identified as well. These low hypnotizable subjects scored in the low range on both of the above screening protocols, and they gained no significant relief from cold-pressor pain during hypnosis. All subjects underwent a routine anatomical MRI. Rostrum volume in the corpus callosum for highly hypnotizable individuals was 31.8% greater than that for low hypnotizable individuals—a substantial effect size and statistically significant (the low sample size notwithstanding). The authors conclude quite rightly that these findings support the notion that highly hypnotizable individuals have more effective frontal attentional systems that enable enhanced control and support strategic gating of affect, cognition, and sensation.

**Brain Activations During Simulated Versus Hypnotic Paralysis**


In a nice example of instrumental hypnosis research, the authors used hypnosis to study the nature of another phenomenon, in this case conversion paralysis. The question at issue: Are the patterns of brain activation associated with subjectively experienced paralysis different from those associated with faked paralysis? The means of eliciting “subjectively experienced paralysis” was, of course, hypnosis. Twelve highly hypnotizable, normal males were gleaned from an undisclosed number of subjects who earlier had been administered the Harvard Group Scale of Hypnotic Susceptibility (Shor & Orne, 1962). These same 12 subjects had passed all ideomotor items on the Harvard and made no observable movement in response to subsequent hypnotic suggestions for leg paralysis. The researchers used PET to examine brain activation during hypnosis under two paralysis conditions: (a) hypnotic suggestions for left-leg paralysis; and (b) intentionally simulated left-leg paralysis. Order was counterbalanced. Each subject was told that if (during the intentional simulation condition) he successfully deceived an expert observer into believing that the left leg was actually paralyzed, the subject would receive £10 sterling. PET results indicated that: (a) both simulated paralysis and subjectively experienced paralysis appear to be achieved not by attenuation of movement preparation but inhibition of movement initiation; and (b) intentionally simulated paralysis compared to subjectively experienced paralysis is associated with greater activation of the ventrolateral
prefrontal cortex, an area involved with volitional inhibition of response. The authors note that the findings support the notion that during the subjectively experienced condition, subjects could not, rather than would not, move their leg.

Efficacy of Hypnosis in the Reduction of Procedural Pain in Pediatric Oncology

**JOURNAL:** *Journal of Developmental and Behavioral Pediatrics*


This is a review of the nine research articles specifically addressing the empirical evidence regarding the efficacy of hypnosis in reducing the pain of medical procedures endured by children who have cancer. The authors’ approach to the review is rather boilerplate in nature and woefully uninformed by the broader hypnosis research literature on pain and hypnosis (Finkelstein, 2003; Liossi & Hatira, 2003; Montgomery, 2004). Still, the reality is that this is precisely the type of relatively unsophisticated accounting that is current in contemporary national health services and managed-care contexts. For this reason alone, the review is instructive for clinical researchers seeking to establish efficacy in these venues. Like it or not, this is how the bar is set. The authors conclude that there is not currently enough evidence to support the notion that hypnosis is efficacious for pediatric cancer patients undergoing spinal taps and bone marrow aspirations. They do conclude that there is enough evidence to justify larger-scale studies. Nine helpful recommendations for the design of future studies are rendered, but these are more restatements of research design aphorisms than they are thoughtful advice for the specific challenges faced by this literature.

**REFERENCES**


### Wichtige Befunde

Eine richtungweisende Untersuchung zur neurowissenschaftlichen Fundierung der Hypnosefähigkeit, eine kritische Übersicht über die Effektivität der Hypnose und eine Untersuchung zur Neurophysiologie der Konversionsstörung

**Michael R. Nash**

Zusammenfassung: Drei Artikel von besonderem Interesse für Forscher und Kliniker sind in der letzten Zeit in der wissenschaftlichen Literatur erschienen. Bei zwei dieser Artikel handelt es sich um Untersuchungen, welche bildgebende Verfahren einsetzen (eine Studie mit MRI, eine mit PET). Beim dritten Artikel handelt es sich um eine umfassende Übersicht der empirischen Befunde zum klinischen Einsatz von Hypnose in der

RALF SCHMAELZLE
University of Konstanz, Konstanz, Germany

Résultats importants : Une étude qui pourrait devenir une ‘première’ en matière de neurobiologie de l’hypnotisabilité, un rapport crucial sur l’efficacité de l’hypnose et un regard porté sur la neurophysiologie du syndrôme de conversion

VICTOR SIMON
Psychosomatic Medicine & Clinical Hypnosis Institute, Lille, France

Hallazgos notables: Un estudio potencialmente innovador en la neurociencia de la hipnotizabilidad, una revisión crítica de la eficacia de la hipnosis, y un análisis detallado del trastorno de conversión

Michael R. Nash

Resumen: Tres artículos de especial interés para investigadores y clínicos aparecieron recientemente en las literaturas generales científica y médica. Dos de estos artículos son estudios originales de investigación que emplean las tecnologías de imágenes cerebrales, uno utilizando el MRI, el otro la técnica de PET. El tercer artículo es una revisión completa de los hallazgos
empíricos en el uso clínico de la hipnosis en la oncología pediátrica. El estudio de investigación que utiliza la tecnología de MRI es extraordinario porque es el primero en documentar diferencias en la morfología cerebral entre sujetos de alta y baja hipnotizabilidad. Se puede argumentar que, si estos hallazgos se replican, éste podría ser el estudio más importante desde el desarrollo de las escalas de Stanford hace 45 años. El estudio de PET nota las diferencias en activación cerebral durante la parálisis intencionalmente simulada y la experimentada subjetivamente. El artículo de revisión examina críticamente el trabajo empírico enfocado en la eficacia de la hipnosis para el dolor procesal en la oncología pediátrica.

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