



Hypnosis

John F. Kihlstrom

University of California, Berkeley, California, USA

1. Hypnotizability and Its Correlates
 2. Pain and Analgesia
 3. Other Clinical Applications
 4. Sensorimotor Performance Enhancement
 5. Learning and Memory
 6. Risks of Hypnosis
 7. Conclusion
- Further Reading

GLOSSARY

age regression In hypnosis, an experience in which the hypnotized person returns to a scene or an event experienced in the past.

analgesia A reduction in pain.

anesthesia A reduction in tactile sensation; in surgery, this is often accompanied by a general loss of consciousness.

conscious sedation A surgical technique in which the patient remains conscious during a procedure but receives analgesic drugs to reduce pain as well as sedative drugs to reduce anxiety and induce amnesia for the procedure.

false alarms In memory testing, an instance where the person incorrectly identifies an item as having appeared on a previously studied list.

hemispheric specialization The idea that the right and left hemispheres of the cerebral cortex are specialized for different psychological functions.

hyperesthesia Enhancement of sensory acuity and other perceptual abilities; it is the opposite of anesthesia.

hypermnnesia Enhancement of memory; it is the opposite of amnesia.

hyperpraxia Enhancement of muscular strength, endurance, and motor ability; it is the opposite of apraxia.

hypnotizability Individual differences in response to hypnosis, as measured by standardized psychological tests such as the Stanford Hypnotic Susceptibility Scales.

openness to experience A "Big Five" personality trait characterized by richness in fantasy life, aesthetic sensitivity, awareness of inner feelings, need for variety in actions, intellectual curiosity, and liberal values.

psychodynamic Broad label for a class of theories of personality and psychotherapy based on Freud's idea that behaviors are motivated by unconscious conflict.

psychosomatic The term applied to medical illnesses and other physical conditions that appear to be caused by mental states such as particular beliefs and attitudes.

self-fulfilling prophecy A situation in which a person's beliefs and expectations lead him or her to behave in such a manner as to make the expectations come true, thereby confirming the person's initial beliefs.

Hypnosis is a social interaction in which one person responds to suggestions given by another person (the hypnotist) for imaginative experiences involving alterations in perception, memory, and the voluntary control of action. In the classic instance, these suggested experiences are associated with a degree of subjective conviction bordering on delusion and an experience of involuntariness bordering on compulsion. Hypnosis has its origins in the "animal magnetism" promoted by Franz Anton Mesmer, an Austrian physician, for the treatment of medical illnesses.

Mesmer's theories were discredited in 1784 by a French royal commission chaired by Benjamin Franklin, but interest in his technique persisted. Over the years, animal magnetism was transformed into "mesmerism," then "artificial somnambulism," then "neurohypnotism," and finally hypnosis as we know it today. Since the time of William James and Ivan Pavlov, hypnosis has been of interest to psychologists and other scientists and philosophers for the insights it can yield about perception, memory, consciousness, and other basic psychological functions. However, it has also found its way into practical applications of various sorts.

1. HYPNOTIZABILITY AND ITS CORRELATES

It is important to understand that not everyone responds positively to hypnotic suggestions. Individual differences in hypnotizability are measured by performance-based tests such as the Stanford Hypnotic Susceptibility Scale and the Harvard Group Scale of Hypnotic Susceptibility. Some researchers and clinicians use alternative scales, such as the Hypnotic Induction Profile, but the Harvard scale is the most popular choice for this purpose and the Stanford scale remains the "gold standard" for measuring hypnotizability. The hypnotizability scales consist of a standardized induction procedure accompanied by a set of representative hypnotic suggestions, the response to which is scored according to objective behavioral criteria. As measured by the scales, most people are at least moderately responsive to hypnotic suggestions; relatively few people are refractory to hypnosis, and relatively few "hypnotic virtuosos" fall within the highest level of responsiveness. Some theorists have argued that hypnotizability can be enhanced by developing positive attitudes, motivations, and expectancies concerning hypnosis. As with any other skilled performance, hypnotic response is probably a matter of both aptitude and attitude. Negative attitudes, motivations, and expectancies can interfere with performance, but positive ones are not by themselves sufficient to create high hypnotizability.

Hypnotizability is not substantially correlated with most other individual differences in ability or personality such as intelligence and extraversion. One exception is absorption, that is, the tendency to have subjective experiences characterized by the full engagement of attention (narrowed or expanded) and blurred

boundaries between self and object. Absorption, in turn, is a facet of the "openness to experience" dimension in the "Big Five" structure of personality. However, even these correlations are too weak to permit hypnotizability to be predicted in advance on the basis of the usual sorts of personality questionnaires.

Although hypnosis is commonly induced by suggestions for relaxation and even sleep, the brain activity in hypnosis more closely resembles that of a person who is awake. The discovery of hemispheric specialization led to the speculation that hypnosis was a "right-brain" function, but it is obvious that response to hypnotic suggestions also requires the verbal functions normally associated with the left cerebral hemisphere. Because the experience of involuntariness is a central feature of hypnosis, some theorists have proposed that the state entails alterations in functioning of the frontal lobes of the brain that are known to be involved in executive control. However, a better understanding of the neural substrates of hypnosis awaits studies of neurological patients with focalized brain lesions as well as brain-imaging studies (e.g., positron emission tomography [PET], functional magnetic resonance imaging [fMRI]) of normal individuals.

2. PAIN AND ANALGESIA

By far, the most successful clinical application of hypnosis involves suggestions for analgesia to relieve pain. As early as the 1840s, John Elliotson and James Esdaile each reported that they had performed a large number of surgeries painlessly with artificial somnambulism as the only anesthetic agent. However, beginning in 1846, the introduction of chemical anesthetics, such as ether and chloroform, quickly supplanted hypnosis. Nevertheless, when chemical analgesics or anesthetics were unavailable or contraindicated, physicians still sometimes turned to hypnosis. Between 1955 and 1974, more than two dozen cases in which hypnosis had been used as the sole analgesic or anesthetic agent in surgery were published. Of even greater importance was the publication, during the early 1960s, of extensive case series documenting the successful use of hypnosis in obstetrics and in the treatment of cancer pain. Other clinical studies found that hypnosis can effectively relieve pain in dental patients. One comprehensive review of the clinical literature estimated that approximately half of medical, dental, and surgical patients could obtain significant pain relief through hypnosis alone. More recent reviews confirm that even when patients are unselected for

hypnotizability, hypnotic suggestions can have quite substantial effects on both acute and chronic pain. Hypnosis may be especially useful in cases of chronic pain, where chemical analgesics such as morphine pose risks of tolerance and addiction, and in childbirth, where the active participation of the mother may be desirable.

In addition to replacing chemical analgesics when circumstances warrant, hypnosis can serve as a useful adjunct to more conventional medical treatment of pain such as "conscious sedation" for outpatient surgery. Careful clinical studies by at least three independent groups of investigators have shown that the addition of hypnosis reduces both pain and anxiety. Patients request, and receive, less pain medication than do controls. Hypnosis is associated with a decrease in interruptions and adverse events during surgery. The procedure takes less time, and patients recover faster, when patients receive both hypnosis and medication. Although hypnosis can rarely substitute for the chemical analgesia and anesthesia that is the standard of care in modern medicine, it is a cost-effective adjunctive treatment (a complement if not an alternative) that improves the quality of patient care.

In addition to this increasing body of clinical research, a large amount of laboratory research has shed light on the mechanisms by which hypnotic suggestions have their effects. Hypnotic analgesia is not mediated by mere relaxation or by the release of endogenous opiates (endorphins). It is not merely a placebo effect (although there is a placebo component in hypnotic analgesia, just as there is in chemical analgesics). Hypnosis can reduce both sensory pain and suffering; in fact, suggestions specifically targeting one or the other of these components of pain have selective effects on activity in the somatosensory and anterior cingulate regions of the brain. Psychologically speaking, hypnotic analgesia seems to go beyond self-distraction, stress inoculation, cognitive reinterpretation, and tension management. According to one prominent theory, hypnotic analgesia involves a dissociation, or a division of consciousness, that effectively reduces patients' awareness of pain.

3. OTHER CLINICAL APPLICATIONS

Hypnotic suggestion can have "psychosomatic" effects on aspects of bodily functioning other than pain, and these can also be useful in the practical sense. For example, it has frequently been observed that hypnotic suggestions can reduce bleeding from wounds and speed the healing of burns. However, these effects have not yet been subject to rigorous clinical and experimental study.

Several well-controlled laboratory and clinical studies have shown that hypnotic suggestion can affect allergic responses, asthma, and the remission of warts. Such successes have led some practitioners to offer hypnosis in the treatment of cancer, but there is no evidence that hypnosis affects tumors themselves as opposed to patients' quality of life.

Hypnosis has also been used in psychotherapy. Some psychodynamic theorists, working in the tradition of Sigmund Freud, consider hypnosis to be a form of "adaptive regression" or "regression in the service of the ego," and they use it to promote relaxation, enhance imagery, and generally loosen the flow of free associations. However, there is little evidence from controlled outcome studies that "hypnoanalysis" or "hypnotherapy" is more effective than nonhypnotic forms of the same treatment. In contrast, a recent review found substantial treatment gains when hypnosis was used adjunctively in cognitive-behavioral therapy for problems such as obesity, insomnia, anxiety, phobia, and hypertension. In view of the demands of managed medical and mental health care, it is important for practitioners who use hypnosis to document quantitatively the clinical (and economic) benefits of doing so.

An important but unresolved issue is the role played by individual differences in the clinical effectiveness of hypnosis. In the laboratory, as in the clinic, a genuine effect of hypnosis should be correlated with hypnotizability. Unfortunately, clinical practitioners are often reluctant to assess hypnotizability in their patients and clients due to a concern that low scores might reduce motivation for treatment. This danger is probably exaggerated. On the contrary, assessment of hypnotizability by clinicians who are contemplating the therapeutic use of hypnosis would seem to be no different, in principle, from assessment of allergic responses before prescribing an antibiotic. In both cases, the legitimate goal is to determine what treatment is appropriate for what patient.

It should be noted that clinicians sometimes use hypnosis in nonhypnotic ways, and these practices tend to support the hypothesis that whatever effects they achieve through hypnosis are related to its placebo component. For example, there is nothing particularly "hypnotic" about having a patient in a smoking cessation treatment rehearse therapeutic injunctions not to smoke and other coping strategies while hypnotized. It is possible that many clinical benefits of hypnosis are mediated by placebo-like motivational and expectational processes, that is, by the "ceremony" surrounding hypnosis rather than by hypnosis per se.

4. SENSORIMOTOR PERFORMANCE ENHANCEMENT

Much of the popular interest in hypnosis stems from claims that it permits people to transcend their normal voluntary capacities, yielding increased muscular power, endurance, resistance to fatigue, and sensory acuity as well as other special abilities. However, controlled research has largely failed to find evidence that hypnosis can enhance these and other aspects of human performance. Many early studies, which seemed to yield positive results for hypnosis, possessed serious methodological flaws such as the failure to collect adequate baseline information. For example, individuals may "hold back" on nonhypnotic trials so as to satisfy experimenters' implicit expectations that they show "improved" performance during hypnosis. Of course, in some situations, benefits may be achieved indirectly through suggestions for reduced awareness of pain. For example, hypnotized persons may experience themselves as stronger, but this is not the same as a direct enhancement of human performance capacities *per se*.

In general, it appears that hypnotic suggestions for increased muscular strength, endurance, sensory acuity, and/or learning do not exceed what can be accomplished by appropriately motivated persons outside of hypnosis. Nevertheless, the folklore surrounding hypnosis may lead hypnotized persons to achieve performance enhancements through a kind of self-fulfilling prophecy. For example, instead of giving suggestions for increased muscle strength, one intriguing study asked hypnotizable persons to imagine themselves becoming stronger. These individuals actually outperformed controls who were merely exhorted to maximize their performance. If hypnosis does enhance human performance, it may be by virtue of hypnotic alterations in individuals' self-concepts rather than by virtue of their skeletal musculatures.

Another highly intriguing line of research contends that hypnotic suggestions may enhance visual acuity in individuals with myopia (although not in individuals with normal vision). The research is especially intriguing because the investigators took special care to rule out "peripheral" factors, such as accommodation and other structural changes in the eyes, that might account for the effect. If hypnotic suggestions do in fact improve visual acuity in people with impaired vision (and this claim still must be confirmed by additional research), the effects appear to be mediated centrally, perhaps involving cortical centers associated with vision or visual attention.

It is sometimes claimed that hypnosis enhances "parapsychological" abilities such as clairvoyance, telepathy, and telekinesis. However, there is no good evidence that this is the case, not least because there is no good evidence of parapsychological effects in the first place.

5. LEARNING AND MEMORY

Similar conclusions apply to learning capacity. Many studies of hypnotically enhanced learning suffer from the same methodological defects as do the aforementioned studies of muscular performance and sensory acuity. One well-known line of research attempted to enhance learning by giving individuals hypnotic suggestions for time distortion. By extending the "subjective" interval of time devoted to studying the material, these investigators hoped to enable these individuals to learn more over short intervals of time. However, the promising results of early experiments have largely failed to be confirmed by more tightly controlled follow-up studies. Hypnotized persons may well experience time as flowing more slowly, or more rapidly, than it actually is, but this distortion in perception does not have positive consequences for learning.

A special case of performance enhancement pertains to hypnotic suggestions for improvements in memory or "hypnotic hypermnesia." Hypermnesia suggestions are sometimes employed in forensic situations, to help forgetful witnesses and victims remember, and in therapeutic situations, to help patients remember childhood sexual abuse and other traumatic personal experiences. Sometimes, suggestions for enhanced memory are accompanied by suggestions for age regression in which hypnotized persons are asked to return to a previous period in their lives. Although the clinical literature contains a number of reports claiming success, most of these are anecdotal in nature and fail to obtain independent corroboration of the memories that emerge. There is no clinical evidence that hypnotically enhanced memories are reliable, that is, that they can be taken as true without independent confirmation.

In fact, evidence from carefully controlled laboratory studies shows quite the opposite. Hypnosis does not appear to increase accurate recollection over and above what can be achieved under nonhypnotic circumstances. To make things worse, hypnosis appears to increase the likelihood of "false alarms" on recognition tests and to inflate individuals' confidence in their memories, independent of their accuracy. Moreover, by virtue of their

enhanced responsiveness to suggestion, hypnotized persons may be especially vulnerable to leading questions and other suggestive influences that might bias or distort their memories. Hypnotized persons may well believe that they are recovering forgotten memories, but that does not make the memories valid representations of the historical past. Any memories recovered by means of hypnosis must be subject to independent corroboration before they are taken seriously.

Similar considerations apply to hypnotic age regression. Although age-regressed individuals may experience themselves as children and may behave in a distinctly childlike manner, there is no evidence that they actually undergo either abolition of characteristically adult modes of mental functioning or reinstatement of childlike modes of mental functioning. Nor do age-regressed individuals experience the revivification of forgotten memories of childhood.

Given what we know about the unreliability of hypnotic hypermnnesia, the use of hypnosis to recover memories in clinical and forensic situations must be judged to be highly risky and not recommended. In fact, many legal jurisdictions severely limit the introduction of memories recovered through hypnosis due to a concern that such evidence might be tainted. The Federal Bureau of Investigation (FBI) has published a set of guidelines for those who wish to use hypnosis forensically, and similar precautions should be employed in the clinic. Although field studies have sometimes claimed that hypnosis can enhance memory in a powerful way, these anecdotal reports have not been duplicated under laboratory conditions.

6. RISKS OF HYPNOSIS

Hypnosis poses few risks to persons who are hypnotized. Because it requires the active participation of the hypnotized persons, people cannot be hypnotized unknowingly or against their will. Nor can even deeply hypnotized persons be led, by virtue of suggestion, to do something that they would not do under other circumstances. In experimental situations, the risks to individuals are usually limited to drowsiness or mild headache—no different in kind or severity from those that crop up when students take exams or listen to lectures. In most instances, these transient problems can be rapidly traced to some specific expectation on the part of the hypnotized persons, perhaps derived from inadvertent comments made by a stage performer or

television commentator seen recently. Occasionally, a hypnotized person actually dozes off during the procedure or rests his or her head in an uncomfortable position, leading to drowsiness or neckache on arousal. In any event, a few minutes of supportive interaction are usually sufficient to deal with the problem effectively. However, problems may be compounded when inexperienced experimenters find it difficult to cope with a minor problem and communicate their lack of competence and self-confidence to the hypnotized person, who may then proceed to make matters even worse. Problems may also occur in stage hypnosis, where the entertainment context has special effects on experience and behavior over and above the hypnotic context.

Untoward consequences are more likely to arise when hypnosis is employed during therapeutic, as opposed to experimental, procedures. A manipulative therapist who simply tries to “suggest away” symptoms may encounter problems that stem from his or her own therapeutic errors. When hypnosis is used to recover ostensibly forgotten memories, whether in therapeutic or forensic situations, the memories of the hypnotized person may be contaminated with information that is objectively false—with potentially serious negative consequences for other people. When hypnosis is used to control pain in athletic situations, competitors may ignore important information about the location and severity of bodily damage. In other cases of performance enhancement, it is possible that individuals will harm themselves through overexertion. Practitioners should not attempt to treat with hypnosis any condition that they are not qualified to treat without hypnosis.

7. CONCLUSION

Claims of hypnotically induced performance enhancement are nearly as old as hypnosis itself. In George DuMaurier's novel *Trilby*, published in 1895, Svengali transforms the eponymous heroine into an accomplished singer. And reviewing the hypnosis literature nearly half a century ago, F. L. Marcuse referred to “The Generation of Hypers,” that is, the notion that hypnosis could produce hyperpraxia, hyperesthesia, and hypermnnesia as well as other special effects. Aside from the ability of hypnotic suggestion to control pain—a genuine phenomenon of substantial practical importance—most claims for hypnotic performance enhancement are dubious at best. Hypnosis is fascinating to observe, is interesting from a theoretical standpoint, and has many actual and potential

applications as an adjunctive treatment in medicine and psychotherapy, but it will not make us better people.

Acknowledgments

The point of view represented in this article is based on research supported by Grant MH-35856 from the National Institute of Mental Health.

See Also the Following Articles

Learning ■ Pain Management ■ Psychoneuroimmunology
■ Psychotherapy in Older Adults

Further Reading

Bowers, K. S. (1976). *Hypnosis for the seriously curious*. Pacific Grove, CA: Brooks/Cole.
Fromm, E., & Nash, M. R. (Eds.). (1992). *Contemporary hypnosis research*. New York: Guilford.

Gauld, A. (1992). *A history of hypnotism*. Cambridge, UK: Cambridge University Press.
Hilgard, E. R. (1965). *Hypnotic susceptibility*. New York: Harcourt, Brace, & World.
Hilgard, E. R., & Hilgard, J. R. (1975). *Hypnosis in the relief of pain*. Los Altos, CA: Kaufman.
Kihlstrom, J. F., & Barnhardt, T. M. (1993). The self-regulation of memory: For better and for worse, with and without hypnosis. In D. Wegner, & J. W. Pennebaker (Eds.), *Handbook of mental control* (pp. 88–125). Englewood Cliffs, NJ: Prentice Hall.
Kihlstrom, J. F., & Eich, E. (1994). Altering states of consciousness. In D. Druckman, & R. A. Bjork (Eds.), *Learning, remembering, believing: Enhancing human performance* (pp. 207–248). Washington, DC: National Academy Press.
Kirsch, I., Montgomery, G., & Sapirstein, G. (1995). Hypnosis as an adjunct to cognitive-behavioral psychotherapy: A meta-analysis. *Journal of Consulting and Clinical Psychology*, 63, 214–220.
Nash, M. R. (2001, July). The truth and the hype of hypnosis. *Scientific American*, pp. 47–55.
Patterson, D. R., & Jensen, M. P. (2003). Hypnosis and clinical pain. *Psychological Bulletin*, 129, 495–521.