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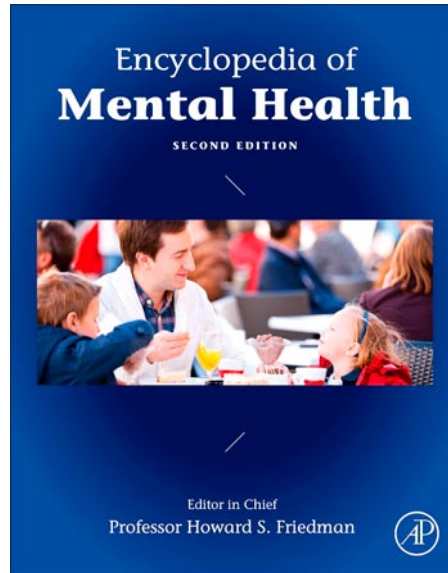
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## Hypnosis

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### Glossary

**Age regression** Induced by hypnotic suggestion, the imagined experience of being a child again, or reliving an experience from an earlier period of life.

**Factor analysis** A statistical technique that provides a concise summary of the correlations among a large number of variables.

**Hypermnnesia** Enhancement of memory, over normal levels of recall or recognition.

**Hypnotic analgesia** Reduction or abolition of sensory pain and suffering by hypnotic suggestion.

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

**Posthypnotic amnesia** After hypnosis, a suggested, temporary inability to recall events and experiences which transpired during hypnosis.

**Psychosomatic effect** An effect on bodily function of a person's attitude.

### Introduction

Hypnosis is a social interaction in which one person (the subject) 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 case, these responses are associated with a degree of subjective conviction bordering on delusion, and an experience of involuntariness bordering on compulsion.

### History of Hypnosis

The origins of hypnosis extend back to the ancient temples of Aesculapius, where advice and reassurance uttered by priests to sleeping patients was interpreted by the patients as the gods speaking to them in their dreams. However, the more recent history of hypnosis begins with Franz Anton Mesmer (1734–1815), who theorized that disease was caused by imbalances of a physical force, called animal magnetism, affecting various parts of the body (Gauld, 1992). Accordingly, Mesmer thought that cures could be achieved by redistributing this magnetic fluid – a procedure which typically resulted in pseudoepileptic seizures known as ‘crises.’ In 1784, a French royal commission chaired by Benjamin Franklin concluded that the effects of mesmerism, although genuine in many cases, were achieved by means of imagination and not any physical force. In the course of their proceedings, the commissioners conducted what may well have been the first controlled psychological experiments.

Mesmer's theory was discredited, but his practices lived on. A major transition occurred when one of Mesmer's followers magnetized a young shepherd on his estate. Instead of undergoing a magnetic crisis, the shepherd fell into a somnambulistic state in which he was responsive to instructions, and from which he awoke with an amnesia for what he had done. Later in the nineteenth century, some physicians reported the successful use of mesmeric somnambulism as an anesthetic for surgery (although ether and chloroform soon

proved to be more reliably effective). James Braid, a British physician, speculated that somnambulism was caused by the paralysis of nerve centers induced by ocular fixation, and renamed the state ‘neurohypnotism’ (nervous sleep), a term later shortened to hypnosis. Later, Braid concluded that hypnosis was due to the subject's concentration on a single thought (monoideism) rather than physiological fatigue.

Interest in hypnosis was revived in France in the late 1880s by Jean Charcot, who thought hypnosis was related to a form of hysteria, both reflecting a disorder of the central nervous system. In opposition to Charcot's neurological theories, other French physicians, such as A.A. Liebeault and H. Bernheim, emphasized the role of suggestibility in producing hypnotic effects. Pierre Janet and Sigmund Freud also studied with Charcot, and Freud began to develop his psychogenic theories of mental illness after observing the suggestibility of hysterical patients when they were hypnotized.

In America, William James and other early psychologists became interested in hypnosis because it seemed to involve alterations in conscious awareness and will. The first systematic experimental work on hypnosis was reported by P.C. Young in a doctoral dissertation completed at Harvard in 1923, and by Clark Hull in an extensive series of experiments initiated at the University of Wisconsin in the 1920s. Also at Wisconsin during Hull's time was Milton Erickson, whose provocative clinical and experimental studies stimulated interest in hypnosis among psychotherapists. In England, Hans Eysenck studied hypnosis and suggestibility as part of his classic explorations of personality structure.

After World War II, interest in hypnosis rose rapidly after Ernest Hilgard established a laboratory for hypnosis research at Stanford University. Hilgard's status as one of the world's most distinguished psychologists helped establish hypnosis as a legitimate subject of scientific inquiry. Also important in this revival were Theodore Sarbin, Martin Orne, Theodore Barber, and Erika Fromm. Hypnosis is now a thriving topic for both scientific inquiry and clinical application (Nash and Barnier, 2008), and is represented by such professional organizations as the Society for Clinical and Experimental Hypnosis, the

American Society of Clinical Hypnosis, and other affiliates of the International Society of Hypnosis. The *International Journal of Clinical and Experimental Hypnosis*, the *American Journal of Clinical Hypnosis*, the *Australian Journal of Clinical and Experimental Hypnosis*, and *Contemporary Hypnosis* (formerly the *British Journal of Experimental and Clinical Hypnosis*) are among the leading journals publishing hypnosis research.

### Individual Differences

Hypnosis has little to do with the hypnotist's technique, and very much to do with the subject's capacity, or talent, for experiencing hypnosis (Hilgard, 1965). Individual differences in hypnotizability are measured by standardized performance-based psychological tests such as the Stanford Hypnotic Susceptibility Scale or the Harvard Group Scale of Hypnotic Susceptibility. These instruments begin with a hypnotic induction in which subjects are asked to focus their eyes on a fixation point, relax, and concentrate on the voice of the hypnotist. The hypnotist then gives suggestions for further relaxation, focused attention, and eye closure. After the subjects close their eyes, they receive further suggestions for various imaginative experiences: for example, to imagine a heavy object pushing their extended hand and arm down; or that a voice is asking them questions over a loudspeaker; or that when they open their eyes they will not be able to see an object placed in front of them. Posthypnotic suggestions may also be given for responses to be executed after hypnosis has been terminated, including posthypnotic amnesia, the inability to remember events and experiences which transpired during hypnosis. Response to each of these suggestions is scored in terms of objective behavioral criteria – do the subjects' arms drop a specified distance over a period of time, do they answer questions realistically, do they deny seeing the object, etc.?

Hypnotizability, so measured, yields a roughly normal (i.e., bell-shaped) distribution of scores. Most people are at least moderately responsive to hypnotic suggestions, whereas relatively few people are refractory to hypnosis and relatively few (so-called hypnotic virtuosos) fall within the highest level of responsiveness. Cross-sectional studies of different age groups show a developmental curve, with very young children relatively unresponsive to hypnosis, and hypnotizability reaching a peak at about the onset of adolescence; scores drop off among middle-aged and elderly individuals. Hypnotizability assessed in college students remains about as stable as IQ over a period of 25 years.

While hypnotizability is generally assessed in terms of a single sum score, factor-analytic studies reveal a degree of multidimensionality. Hypnotic suggestions can be classified roughly as ideomotor (involving the facilitation of motor responses), challenge (involving the inhibition of motor responses), and cognitive (involving alterations in perception and memory). These factors are themselves intercorrelated, so that a general dimension of hypnotizability emerges at a higher level, much like Thurstone's solution to the structure of intelligence in terms of primary mental abilities and a superordinate general intelligence.

Even though hypnosis is a product of suggestion, it is a mistake to identify hypnotizability with suggestibility. In fact,

suggestibility itself is also factorially complex. Eysenck distinguished among primary (e.g., direct suggestions for the facilitation and inhibition of motor activity), secondary (implied suggestions for sensory-perceptual changes), and tertiary (e.g., attitude changes resulting from persuasive communications) forms of suggestibility; a further form of suggestibility is the placebo response. Hypnotizability is correlated only with primary suggestibility, and this is carried mostly by the relation between primary suggestibility and the ideomotor and challenge components of hypnotizability.

There is some controversy over whether hypnotizability can be modified. Some clinical practitioners believe that virtually everyone can be hypnotized, if only the hypnotist takes the right approach, but there is little evidence favoring this point of view. As with any other skill, 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 hypnotic virtuosity.

The role of individual differences makes it clear that, in an important sense, all hypnosis is self-hypnosis. The hypnotist does not hypnotize the subject. Rather, the hypnotist serves as a sort of coach, or tutor, whose job is to help the subject become hypnotized. Although it takes considerable training and expertise to use hypnosis appropriately in clinical practice, it takes very little skill to be a hypnotist. Beyond the hypnotist's ability to develop rapport with the subject, the most important factor determining hypnotic response is the hypnotizability of the individual subject.

### Correlates

Hypnotizability is not substantially correlated with most other individual differences in ability or personality, such as intelligence or adjustment, conformity, persuasibility, or response to other forms of social influence. However, in the early 1960s, a number of investigators found that hypnotizability was correlated with subjects' tendency to have hypnosis-like experiences outside of formal hypnotic settings, such as imaginative involvement in reading or drama. The most reliable correlate of hypnotizability is 'absorption,' or the tendency to have subjective experiences characterized by the full engagement of attention (narrowed or expanded), and blurred boundaries between self and object. By contrast, vividness of mental imagery is essentially uncorrelated with hypnosis. However, the relation between absorption and hypnotizability is too weak to permit confident prediction of an individual's actual response to hypnotic suggestion. There is no substitute for performance-based measures such as the Stanford and Harvard scales.

Absorption seems to be a heretofore unappreciated aspect of individual differences. The scales of the Minnesota Multiphasic Personality Inventory, California Psychological Inventory, and other such instruments do not contain items related to absorption, which may explain their failure to correlate with hypnotizability. However, absorption is not wholly unrelated to other individual differences in personality. Recent multivariate research has settled on five major dimensions – the 'Big Five' – which provide a convenient summary of personality

structure: neuroticism (emotional stability), extraversion, agreeableness, conscientiousness, and a fifth factor often called 'openness to experience.' Absorption is one facet of openness, along with intellectance (or culturedness) and sociopolitical liberalism. In fact, hypnotizability is correlated with the absorption component of openness, but not with liberalism or intellectance.

Although hypnosis is commonly induced with 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, with the left hemisphere geared to analytic and the right hemisphere to non-analytic tasks, led to the speculation that hypnotic response is somehow mediated by right-hemisphere activity. However, studies employing both behavioral and electrophysiological paradigms have been interpreted as indicating increased activation of the right hemisphere among highly hypnotizable individuals, but positive results have proved difficult to replicate and interpretation of these findings remains controversial. Because hypnosis is mediated by verbal suggestions, which must be interpreted by the subject in the course of responding, the role of the left hemisphere should not be minimized. One interesting proposal is that hypnotizable individuals show greater flexibility in deploying the left and right hemispheres in a task-appropriate manner, especially when they are actually hypnotized. Because involuntariness is so central to the experience of hypnosis, it has also been suggested that the frontal lobes (which organize intentional action) may play a special role.

## Experimental Studies

Right from the beginning of the modern era, a great deal of research effort has been devoted to claims that hypnotic suggestions enable individuals to transcend their normal voluntary capacities – to be stronger, see better, learn faster, and remember more. However, many early studies, which seemed to yield positive results for hypnosis, possessed serious methodological flaws such as the failure to collect adequate baseline information. In general, it appears that hypnotic suggestions for increased muscular strength, endurance, sensory acuity, or learning do not exceed what can be accomplished by motivated subjects outside hypnosis.

A special case of performance enhancement has to do with hypnotic suggestions for improvements in memory – what is known as hypnotic hypermnesia. Although some practitioners have claimed that hypnosis can powerfully enhance memory, their mostly anecdotal reports have not been duplicated under laboratory conditions. To make things worse, any increases obtained in valid recollection are met or exceeded by increases in false recollections. Moreover, hypnotized subjects (especially those who are highly hypnotizable) may be vulnerable to distortions in memory produced by leading questions and other subtle, suggestive influences.

Similar conclusions apply to hypnotic age regression, in which subjects receive suggestions that they are returning to a previous period in their lives. Although age-regressed subjects may experience themselves as children, and may behave in a 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 subjects experience the revivification of forgotten memories of childhood.

One phenomenon which has received a great deal of attention is hypnotic analgesia – in large part because of the obvious clinical uses to which it can be put. A comparative study of experimental pain found that, among hypnotizable subjects, hypnotic analgesia was superior to morphine, diazepam, aspirin, acupuncture, and biofeedback. Hypnotic analgesia relieves both sensory pain and suffering. It is not mediated by relaxation, and the fact that it is not reversed by narcotic antagonists would seem to rule out a role for endogenous opiates. There is a placebo component to all active analgesic agents, and hypnosis is no exception; however, hypnotizable subjects receive benefits from hypnotic suggestion that outweigh what they or their unsusceptible counterparts achieve from plausible placebos.

Psychological explanations of hypnotic analgesia come in two primary forms. On the one hand, it is argued that hypnotized subjects employ such techniques as self-distraction, stress-inoculation, cognitive reinterpretation, and tension-management. While there is no doubt that cognitive strategies can reduce pain, their success, unlike the success of hypnotic suggestions, is not correlated with hypnotizability, and thus is unlikely to be responsible for the effects observed in hypnotizable subjects. Rather, hypnotic analgesia seems to be associated with a division of consciousness which prevents the perception of pain from being represented in conscious awareness, without altering the physiological effects of the pain stimulus.

A great deal of research has also been devoted to the posthypnotic amnesia frequently displayed by hypnotizable subjects. This form of forgetting does not occur spontaneously, and may be reversed by administration of a prearranged signal without the reinduction of hypnosis, so it does not represent a form of state-dependent learning. However, the reversibility of amnesia does indicate that its mechanisms may be located at the retrieval stage of memory processing, rather than at the encoding or storage stages. Posthypnotic amnesia disrupts episodic, but not semantic or procedural memory. Although posthypnotic amnesia disrupts explicit expressions of episodic memory (such as recall), it spares implicit expressions of memory, in the form of priming effects, retroactive interference, savings in relearning, or source amnesia.

Other phenomena of hypnosis can also be understood in terms of the explicit–implicit distinction. For example, hypnotizable subjects given suggestions for deafness deny hearing anything, yet they show speech dysfluencies under conditions of delayed auditory feedback. And when given suggestions for blindness they deny seeing anything, yet show priming effects from stimuli presented in their visual fields. Based on an analogy between explicit and implicit memory, we may say that hypnotic suggestions for blindness, deafness, and the like impair explicit perception, while sparing implicit perception.

## Clinical Applications

Hypnosis has been employed in the clinic for both medical and psychotherapeutic purposes (Lynn *et al.*, 2010). By far the

most successful and best documented of these has been hypnotic analgesia for the relief of pain. Clinical studies indicate that hypnosis can effectively relieve pain in patients suffering from burns, cancer and leukemia (e.g., bone marrow aspirations), childbirth, and dental procedures. In such circumstances, as many as half of an unselected patient population can obtain significant, if not total, pain relief from hypnosis. Hypnosis may be especially useful in cases of chronic pain, where chemical analgesics such as morphine pose risks of tolerance and addiction. Although it seems unlikely that more than about 10% of patients can tolerate major surgical procedures with hypnosis alone, clinical studies show that the adjunctive use of hypnosis decreases the need for chemical analgesia, reduces negative side-effects, and reduces the cost of care.

Hypnotic suggestion can have psychosomatic effects. For example, 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. Although there is some evidence that hypnosis can have effects on immunological processes, more research in this area is needed, and hypnosis should never be substituted for conventional medical treatments in such cases.

Hypnosis has also been used in psychotherapy, whether psychodynamic or cognitive-behavioral in orientation. In the former case, hypnosis is used 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 non-hypnotic forms of the same treatment. By contrast, several meta-analyses have found a significant advantage when hypnosis is used adjunctively in cognitive-behavioral therapy for a number of problems. In an era of managed mental health care, it will be increasingly incumbent on practitioners who use hypnosis to document, quantitatively, the clinical benefits of doing so.

Hypnosis is sometimes used therapeutically to recover forgotten incidents, as for example in cases of child sexual abuse. Although the literature contains a number of dramatic reports of the successful use of this technique, most of these reports are anecdotal in nature and fail to obtain independent corroboration of the memories which emerge. Given what we know about the unreliability of hypnotic hypermnesia, and the risk of increased responsiveness to leading questions and other sources of bias and distortion, such clinical practices are not recommended. Similar considerations obtain in forensic situations. In fact, many legal jurisdictions severely limit the introduction of memories recovered through hypnosis, out of a concern that such evidence might be tainted. The Federal Bureau of Investigation has published a set of guidelines for those who wish to use hypnosis forensically, and similar precautions should be employed in the clinic.

Returning to strictly therapeutic situations, an important but unresolved issue is the role played by individual differences in the clinical effectiveness of hypnosis. Unfortunately, clinical practitioners are often reluctant to assess hypnotizability in their patients and clients, out of a concern that low scores might reduce motivation for treatment. This danger is probably exaggerated. On the contrary, assessment of

hypnotizability by clinicians contemplating the therapeutic use of hypnosis would seem to be no different, in principle, than assessing 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 – practices which tend to support the hypothesis that whatever effects they achieve through hypnosis are related to its placebo component. There is nothing particularly ‘hypnotic,’ for example, about having a patient in a smoking-cessation treatment rehearse therapeutic injunctions not to smoke and other coping strategies while hypnotized. It is likely that more successful use of hypnosis as an adjunct to the cognitive-behavioral treatment of smoking, overweight, and similar habit disorders would be to use hypnotic suggestions in order to control the patient’s awareness of cravings for nicotine, sweets, and the like. Given the ability of hypnotic suggestions to control conscious perception and memory, such strategies might well have therapeutic advantage – but only, of course, for those patients who are hypnotizable enough to respond positively to such suggestions.

Individuals contemplating hypnosis for medical treatment of psychotherapy should seek referral through their general practitioners or health plans. Individuals who lack proper professional credentials should be avoided. Put bluntly: no one should treat a problem with hypnosis who is not otherwise qualified to treat that same problem without hypnosis.

## Theories

The dual nature of hypnosis – in which alterations in consciousness occur in an interpersonal context – has meant that theoretical attempts to understand the phenomenon have been entangled in dichotomies. Mesmer thought his effects were due to a magnetic fluid, whereas the French royal commission attributed them to imagination. Charcot thought hypnotizability was a matter of neurology, while Liebeault and Bernheim emphasized suggestion. Braid began with ideas about the paralysis of nerve centers, and ended up emphasizing attention, imagination, expectation, and personality.

In the modern era these dichotomies are still visible, if somewhat obscured by theoretical nuance. Thus, the traditional (if perhaps somewhat tacit) view that hypnosis involves a ‘special’ or ‘altered’ state of consciousness, is opposed by a variety of social-psychological or cognitive-behavioral views which assert that hypnotic behavior is a result of processes that are in every sense ordinary (Jamieson, 2007). However, there is considerable heterogeneity of viewpoint within each camp, which is sometimes ignored by the other side. Among those sometimes labeled state theorists are cognitive psychologists who think that hypnosis involves dissociative processes, psychoanalysts who invoke adaptive regression in the service of the ego, and neuroscientists who emphasize the inhibition of cortical structures. Among the critics of the state view are found some who claim that hypnotic effects can be produced in anyone who is appropriately motivated and instructed; others who emphasize the importance of prescriptive social roles played out by both hypnotist and subject; others the self-fulfilling effects of expectancies; and others the role of

attributional processes and self-deception. While some social-psychological and cognitive-behavioral theorists have spent a great deal of time debunking exaggerated or erroneous claims about hypnosis, this has been no less true for some state theorists.

Although it is sometimes popular to portray this theoretical dispute as a kind of enduring debate, in the final analysis most hypnosis research is designed more to illuminate the nature of specific hypnotic phenomena such as analgesia or amnesia than to provide evidence for any overarching theory of hypnosis. Nevertheless, scientists are trained to test hypotheses derived from theories, and if possible to test single hypotheses that will decide between competing theories, so that any empirical evidence obtained tends to be construed as evidence for one view or another.

In the early 1960s, J.P. Sutcliffe published a pair of seminal papers which contrasted a credulous view of hypnosis, which holds that the mental states instigated by suggestion are identical to those that would be produced by the actual stimulus state of affairs implied in the suggestions, with a skeptical view which holds that the hypnotic subject is acting 'as if' the world were as suggested. This is, of course, a version of the familiar dichotomy, but Sutcliffe also offered a third view: that hypnosis involves a quasi-delusional alteration in self-awareness – a delusion that is constructed out of the interaction between the hypnotist's suggestions, and the subject's interpretation of those suggestions. Hypnosis is

simultaneously a state of (sometimes) profound cognitive change, involving basic mechanisms of perception, memory, and thought, and a social interaction, in which hypnotist and subject come together for a specific purpose within a wider sociocultural context. A truly adequate, comprehensive theory of hypnosis will seek understanding in both cognitive and interpersonal terms.

*See also:* Cognitive-Behavioral Psychotherapy. Dissociative Disorders. Learning from the Past to Understand the Origins of Acute and Chronic Pain. Posttraumatic Stress Disorder. Unconscious Mental Life

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