

Hypnosis II: Theories and Research on Hypnotic Analgesia and Posthypnotic Amnesia

In this chapter I will go into more detail on the two most influential contemporary hypnosis theories—Hilgard’s neodissociation theory and Spanos’s social-psychological theory—and I will discuss key research on the two topics that have played the greatest role in theoretical debates: hypnotic analgesia (pain reduction) and posthypnotic amnesia. The theories make more sense if you know about some of the research that supports them, and the research makes more sense if you know about the theory that motivated it and the rationale behind the research design. Therefore, I will interweave the topics of hypnosis theory, research design, and research on specific hypnosis topics, so that you can better appreciate their interrelationships.

HYPNOSIS THEORIES: OVERVIEW

Numerous characterizations and explanations of hypnosis have been offered over the last 200 years, including the ideas of animal magnetism (Mesmer, 1770s), artificial somnambulism (Puysegur, 1780s), lucid sleep (Faria, 1810s), nervous sleep (Braid, 1840s), nervous-system pathology (Charcot, 1880s), heightened suggestibility and imagination (Bernheim, 1880s), and dissociation (Janet, 1890s) or trance state (James, 1890). A major theme of the earlier period of hypnosis theory was the shift from physical explanations (such as magnetism and brain pathology) to psychological explanations emphasizing suggestibility and imagination (Sheehan & Perry 1976). In the

modern era of controlled research major ideas have included suggestibility (Hull 1933); altered state of consciousness (Orne 1972; Shor 1962); social role taking (Sarbin and Coe 1972); behavior change influenced by motivation, attitudes, and beliefs (Barber 1969); dissociation (Hilgard 1977); and strategic social enactment aided by cognitive strategies (Spanos 1986a). The importance of profound imaginative involvement is a potential unifying theme that runs through several contemporary approaches to hypnosis (Spanos & Barber 1974).

It is beyond the scope of this book to discuss the various historical theories of hypnosis in any detail (see Ellenberger 1970; Sheehan & Perry 1977). Instead I will briefly discuss the general issue of whether hypnosis is an altered state of consciousness, then concentrate on the two most influential contemporary approaches to hypnosis—the social-psychological viewpoint (as exemplified by Spanos 1982, 1986a) and the special-process viewpoint (as exemplified by Hilgard's neodissociation theory 1977).

Is Hypnosis an Altered State of Consciousness?

During the 1960s and 1970s there was a controversy among hypnosis researchers as to whether hypnosis is really an altered state of consciousness (ASC). Of course the answer depends partly on how ASC is defined and what criterion is used to identify hypnosis as an ASC. In Chapter 9 I defined ASC in terms of a dramatically altered pattern of subjective experience. There can be little doubt that some subjects experience hypnosis as an ASC in that sense. But in the earlier controversy it was assumed by state theorists such as Ernest Hilgard, Martin Orne, and Ronald Shor that hypnotic trance involves an altered state of psychological functioning, such that there are changes in processes of perception, memory, and thinking that are unique to hypnosis (Hilgard 1969).

Nonstate theorists such as T. X. Barber (1969) argued that the state viewpoint is circular. The unusual experiences and behaviors of hypnosis were used as *evidence* for an altered state, and then they were *explained* as being caused by a altered state. A circular argument does not lead to scientific progress. Furthermore, there was no evidence for a changed pattern of neurophysiological responses (such as brain waves) that could provide independent evidence for an altered brain state that presumably underlies the hypnotic state. Barber (1969) argued for a behavioral approach to hypnosis, where hypnotic behaviors—including verbal reports—were explained in terms of various situational and subject variables (motives, attitudes, and beliefs) without reference to altered states or mental processes.

In more recent years there has been some move toward rapprochement between state and nonstate views of hypnosis (Hilgard 1973; Kihlstrom 1985a; Spanos & Barber 1974). Nonstate theorists have acknowledged that important alterations in subjective experience—such as changes in imaginative experience—can occur during hypnosis (Barber, Spanos, & Chaves 1974). State theorists have acknowledged that the state concept does not explain anything, and they acknowledge the importance of the social-psychological variables (such as attitudes and expectancies) that have been stressed by nonstate theorists. The term “hypnotic state,” if it is used at all nowadays,

refers loosely to the altered subjective experiences that occur during hypnotic procedures (Hilgard 1969, 1973).

Though the old state-versus-nonstate controversy has largely been abandoned as unproductive, a complete rapprochement between the opposing camps is not in sight (Kihlstrom 1985a). Researchers friendly to the old state viewpoint (such as Hilgard, Orne, Kihlstrom) continue to argue that hypnotic procedures produce special effects—different from the normal waking state—in some individuals. From this viewpoint, the unusual phenomena of hypnosis (such as posthypnotic amnesia) result from altered cognitive processes in hypnosis—thus, Spanos (1986a) called this the “special process viewpoint.” However, modern special-process theorists do not claim that the altered cognitive processes that occur in hypnosis are necessarily unique to hypnosis. They may also occur in nonhypnotic contexts, particularly among highly hypnotizable people. On the other hand, researchers who take the nonstate, social-psychological approach (such as Spanos, Coe, Lynn, Wagstaff) argue that the behaviors and experiences characteristic of hypnosis do not represent any sort of changed cognitive processes. Rather, they reflect the operation of normal cognitive processes in a special social situation defined as hypnosis.

Are Hypnotic Responses Real?

The hallmark of the hypnotic phenomenon is not the willingness of the subject to do what he is requested to . . . nor that the subject's behavior appears trance-like to the observer. Rather it is the nature and quality of the concomitant subjective events (Orne 1972, p. 421).

Much of the controversy in hypnosis theory boils down to the question of whether hypnotic responses are real. But what does the question mean? From the altered-state or special-process viewpoint, the essence of hypnosis is the alteration of conscious experience in response to suggestions, including altered perceptions, thinking, memory, and feelings of control of one's actions. Hypnotist/experimenters cannot directly observe subjects' conscious experiences. They can know only subjects' overt behaviors, including their verbal reports on subjective experiences. The question of the reality of hypnotic responses is the question of whether subjects' behaviors and verbal reports that seem to indicate altered conscious experiences do, in fact, represent authentic altered conscious experiences.

The difficulty of discovering whether hypnotic responses are real is that overt behaviors that are supposed to indicate subjective responses might be misleading. If they are motivated to do so, subjects can deliberately fake their overt responses to suggestions. For example, in 1850 when he was fifteen years old, Mark Twain volunteered to be the subject for a stage demonstration of mesmerism (hypnosis). Years later he wrote about how he had deliberately faked his way through a demonstration of what we now call hypnotic analgesia:

The professor made passes over [me] and said “his whole body is without sensation now—come forward and test him, ladies and gentlemen” . . . Those were dear good people but they must have carried simplicity and credulity to the

limit. They would stick a pin in my arm and bear on it until they drove it a third of its length in, and then be lost in wonder that by a mere exercise of will power the professor could turn my arm to iron and make it insensible to pain. Whereas it was not insensible at all; I was suffering agonies of pain . . . I didn't wince; I only suffered and shed tears on the inside. The miseries that a conceited boy will endure to keep up his "reputation"! (adapted from DeVoto 1940, pp. 118–29; reprinted in Sarbin & Coe 1972, pp. 11–15).

In general, faking hypnotic responses involves falsely representing one's subjective experiences in response to suggestions. Overt responses (such as ideomotor actions) might be made deliberately rather than with a feeling of involuntariness, felt pain might be denied, or recalled words might go unreported in a test of amnesia. In principle, any overt hypnotic response—either muscle movement or verbal report—*could* be faked. It is usually obvious from the wording of the hypnotic suggestion what sort of response the hypnotist expects. Hypnosis does not give people any extraordinary abilities, such as superior strength, that they would not have if they were sufficiently motivated without hypnosis (see Chapter 7 in Sheehan and Perry 1976).

The possibility that hypnotic responses are not what they appear to be on the surface is a major theme of the social-psychological approach to hypnosis. Rather than being genuine, spontaneous, involuntary responses to suggestions, hypnotic responses are thought to be either deliberately faked or, more often, produced by voluntary cognitive strategies that allow subjects to delude themselves, and the hypnotist, into thinking that the responses are spontaneous and automatic.

State or special-process theorists have several arguments against claims that hypnotic responses are faked. (1) Some hypnotic responses are unlikely to be faked, in particular, hypnotic analgesia during major surgery that involves making large incisions in the skin (such as Caesarean sections). Though Mark Twain could fake insensitivity to pinpricks, it is unlikely that surgical patients could fake insensitivity to pain caused by a surgeon's incision—nor is there any reason why they would want to fake it under such circumstances (Bowers 1976). (2) Following hypnosis, some subjects have reported dramatic alterations of subjective experience (for example, in response to age regression suggestions). When such reports are made outside of the original test situation, to people other than the hypnotist or experimenter, it seems plausible that they are authentic, honest reports of altered subjective experience during hypnosis. (3) Though many hypnotic responses can be faked, it is beyond belief that over the last 200 years tens of thousands of medical and psychotherapy patients and research subjects have been motivated to fake hypnosis and fool their doctors, therapists, and experimenters.

Nonetheless, a small minority of subjects admit to faking some of their responses—that is, making voluntary responses—to suggestions during hypnotic susceptibility testing (Farthing, Brown, & Venturino 1983a). The fact that some subjects might fake their responses has made it necessary for researchers to develop special methodologies to discover whether hypnotic re-

sponses are genuine, that is, whether they represent authentic altered subjective experiences in response to hypnotic procedures *per se*, rather than being behaviors produced by other, nonhypnotic factors.

HYPNOTIC ANALGESIA AND HYPNOSIS RESEARCH METHODOLOGIES

In this section we will consider two experimental designs that have been widely used in hypnosis research: the high-low design and the real-simulator design. Both are intended to help researchers distinguish "true" hypnotic responses—that is, overt responses that depend upon authentic subjective experiences occurring in response to hypnotic suggestions—from responses that can be attributed to nonhypnotic psychological processes. The examples will be drawn from research on *hypnotic analgesia*: the use of hypnotic suggestions to control pain. Besides describing the experimental designs and their rationale, this section will describe procedures for studying pain in the laboratory, and it will provide essential background for understanding Hilgard's research on the "hidden observer" effect, to be discussed in the following section. (See Sheehan & Perry 1976, for more details on hypnosis research methodologies.)

The High-Low Method

The high-low experimental design involves comparing two groups of subjects: high hypnotizables and low hypnotizables. This method has been used extensively by Hilgard and his followers. For them the issue is not whether there is a special hypnotic state of consciousness, but rather, assuming that there is a hypnotic state, what are its subjective and behavioral characteristics. The logic of the high-low method is as follows: if you want to find out about authentic hypnotic responses, compare subjects who have been treated identically in all respects except that some are in the hypnotic state and some are not. This can be accomplished by giving hypnotic inductions to both high and low hypnotizable subjects. Presumably, subjects who have previously been classified as highly hypnotizable ("highs") on a standard hypnosis scale (such as SHSS:C) will reliably enter a hypnotic state following the induction, whereas those low in measured hypnotic susceptibility ("lows") will not. Sometimes "mediums" are also included, in order to compare subjects of average hypnotizability with those who are highly hypnotizable.

Hypnotic analgesia in highs and lows. Hilgard (1967, 1969) studied pain responses in the *cold pressor test*, where the subject's hand and forearm are immersed in circulating ice water (about 1°C). During the immersion the experimenter periodically says "Report!" and the subjects respond with a number that rates their pain on a scale that can range from zero to ten or more, where "ten" is defined as severe pain. The advantage of the cold pressor test for laboratory research is that it can produce intense pain in a short

period of time without doing any actual damage to the subjects' tissues. (People with blood circulation problems or hypertension are not used as subjects in this sort of research.)

In Hilgard's experiment high- and low-hypnotizable subjects (preselected on SHSS:C) were tested under each of three conditions: (1) *waking control condition* (baseline measure), with no hypnotic induction and no analgesia suggestion; (2) *hypnosis alone*, where prior to hand immersion they heard a hypnotic induction but no analgesia suggestion (the purpose of this condition was to determine whether relaxation during hypnosis could, by itself, reduce pain); and (3) *hypnotic analgesia*, where subjects heard a hypnotic induction followed by an analgesia suggestion. The analgesia suggestion involved telling the subject that his or her hand and arm were numb and insensitive, as if they were made of rubber. Each of the three test immersions lasted for forty seconds, with pain reports being made every five seconds. For all subjects the waking condition was given on the first day, and the hypnosis-alone and hypnotic-analgesia conditions were counterbalanced between the second and third days. (That is, half of the subjects had hypnosis-alone on the second day with hypnotic analgesia on the third day, and half had the reverse sequence.)

Figure 15.1 shows the mean pain ratings under the three test conditions. Two results are important here: (1) Pain in the hypnosis-alone condition was essentially identical to pain in the waking condition. Thus, relaxation during hypnosis is not sufficient to reduce pain by itself. (2) In the group of highly hypnotizable subjects, hypnotic analgesia reduced pain ratings dramatically, compared to both the waking and hypnosis-alone conditions. But hypnotic analgesia had a negligible effect on the low-hypnotizable subjects' pain ratings. These results show that hypnotic analgesia suggestions can reduce pain only among highly hypnotizable subjects—presumably because only “highs” are in a hypnotic state following the hypnotic induction.

Another laboratory procedure for producing pain is the *muscle ischemia test*, in which blood circulation to one arm is cut off by a tourniquet around the upper arm and the subject rhythmically squeezes a rubber bulb to remove oxygen from the blood remaining in the arm. Pain builds more slowly with the ischemia procedure than with the cold pressor procedure, but after a few minutes ischemic pain reaches very high levels. One advantage of ischemia pain is that it resembles clinical pain more than cold pressor pain does, and ischemic pain is sensitive to morphine (Hilgard & Hilgard 1983). Knox, Morgan, and Hilgard (1974) had subjects rate *sensory pain* and *suffering* separately during an ischemia test, and found that both were reduced by hypnotic analgesia suggestions among highly hypnotizable subjects.

The ischemia procedure has also been used to study factors that affect the *pain threshold* (the time until pain is felt) and *pain tolerance* (the time until the subject can no longer endure it and wants to quit). McGlashan, Evans, and Orne (1969) found that hypnotic analgesia suggestions increased both the pain threshold and pain tolerance more in highs than in lows. Also, among highs (but not lows) the analgesia suggestion was more effective than a placebo drug in reducing pain, which suggests that the response to the analgesia suggestion was not merely a placebo effect.

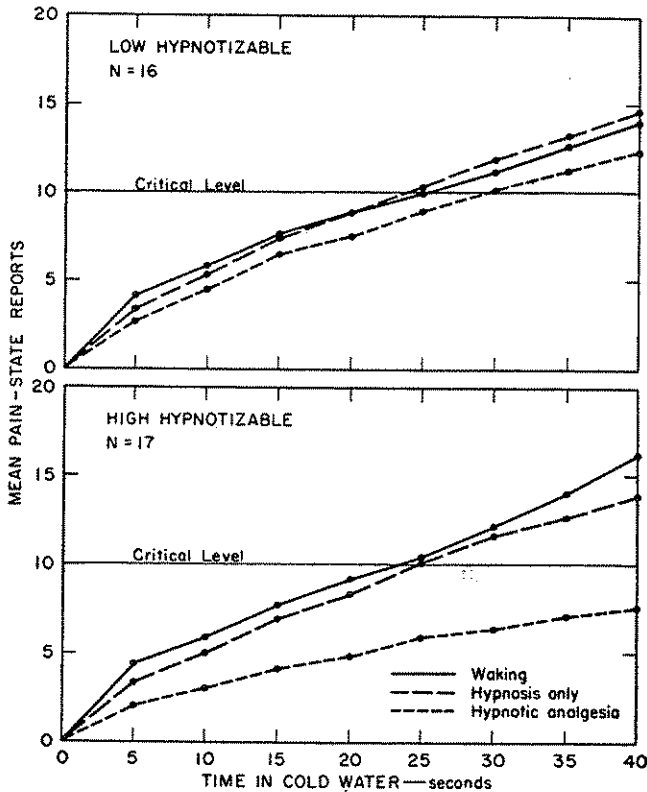


FIGURE 15.1. Pain reports in the cold pressor test as a function of time with hand immersed in ice water (0–1°C). All subjects were tested in the baseline (no hypnosis) condition, with hypnosis only (no suggestion), and with hypnotic analgesia (hypnotic induction followed by analgesia suggestion). [From Hilgard, E. R. (1969). *Pain as a puzzle for psychology and physiology*. *American Psychologist*, 24, 103–13. Copyright 1969 by the American Psychological Association. Reprinted by permission.]

The Real-Simulator Method

Martin Orne (1959) pointed out that in many types of psychological research there is a danger that misleading results will be obtained because subjects are motivated to try to be helpful and give the experimenter the results that they believe the experimenter expects. The *demand characteristics* of experiments are the situational cues that communicate to subjects—either intentionally or unintentionally—the experimenter’s hypothesis or expected results. Demand characteristics may be a particularly serious problem in hypnosis research, insofar as hypnosis may increase subjects’ motivation to conform to the perceived wishes of the experimenter. Orne discussed the problem of separating *artifact* from *essence* in hypnosis research. The es-

sence of hypnosis is altered subjective experiences and responses that follow naturally (automatically) from hypnotic inductions and suggestions. Major artifacts include demand characteristics and subjects' motives to respond like good hypnotic subjects.

In order to control for demand characteristics and motivation, Orne (1959, 1972) developed the *real-simulator design*. In this experimental design the hypnotic behavior of real hypnotic subjects is compared with the behavior of un hypnotized subjects who have been instructed to simulate hypnosis, that is, to act as if they are really hypnotized. The rationale is that if simulators behave exactly like "reals" during hypnosis, then the responses of the reals *might* be due to artifacts of demand characteristics, rather than representing the essence of hypnosis. On the other hand, if reals and simulators behave differently, then the difference presumably reveals something of the essence of hypnosis, rather than artifacts of demand characteristics or motivation.

To carry it out properly, the real-simulator method requires at least two experimenters, and several steps must be carefully followed: (1) The first experimenter pretests the volunteers to select groups of high- and low-hypnotizable subjects. Subsequently the highs are the "real" hypnosis subjects, while lows are used as simulators so that the simulators will not accidentally become hypnotized during the main experiment. (2) Just before the main experiment, the first experimenter instructs the simulators on several points: (a) They are to resist becoming hypnotized, but (b) they are to pretend that they are hypnotized, and do or say whatever they believe a truly hypnotized person would do or say in that situation, using their prior knowledge of hypnosis and the hypnotist's cues to figure out how a truly hypnotized person would respond. Also, (c) if the hypnotist detects the fact they are faking, then he or she will immediately stop the experiment. (In fact, hypnotists can rarely distinguish between reals and simulators under ordinary hypnosis test conditions.) Reals are simply told that they will be hypnotized again and that they should respond naturally. (3) The subjects are then turned over to the second experimenter, who does not know which subjects are reals and which are simulators. The second experimenter treats all subjects the same way, giving a standard hypnotic induction followed by whatever special suggestions are appropriate to the problem being studied in that particular experiment (such as hypnotic analgesia, amnesia, hallucination, or posthypnotic suggestions). (4) The main experiment should be followed by a *postexperimental inquiry*, where the subjects return to the *first* experimenter, who tells them that the experiment is over and then asks them to give an honest, accurate description of their subjective experiences during the main experiment. The postexperimental inquiry is important because even if the reals and simulators make identical overt responses to suggestions, their subsequent verbal reports on their subjective responses to the suggestions could reveal a genuine difference between real hypnosis and simulated hypnosis. After all, subjective responses are the essence of hypnosis, according to Orne.

Hypnotic analgesia and the real-simulator design. Hilgard et al. (1978b) studied pain reduction with hypnotic analgesia suggestions, using

the procedure for the real-simulator design, as described above. Each group was first given a baseline (waking) cold pressor pain test, followed by hypnotic induction, an analgesia suggestion, and a second pain test.

Two aspects of the results are of interest: (1) Comparing reports in hypnotic analgesia to baseline reports, average pain ratings were reduced 90 percent among simulators, compared to a 77 percent reduction by reals. Thus, situational cues were sufficient to tell the simulators that reduced pain ratings were expected; in fact, some of them overfaked. But can we necessarily conclude that the reduced pain reports of the *real* hypnotic subjects were merely faked in response to the demand characteristics of the experiment? No, because (2) in the postexperimental inquiry the reals confirmed that their previous pain reports were accurate (77 percent reduction from baseline), whereas the simulators reported that they had really felt much more pain than they had previously reported (only 18 percent reduction).

Hilgard et al. interpreted the postexperimental inquiry reports as indicating that pain was truly reduced during hypnotic analgesia in the real hypnotic subjects, but not in the simulators. A skeptical interpretation is that only the simulators had been told to fake reduced pain, so they could later admit faking without losing face; reals might have faked pain reduction, but since they had not been instructed to fake, they continued to fake during the postexperimental inquiry in order to avoid losing face (Spanos 1989, personal communication).

Physiological responses as pain indicators. At this point you might ask, "Why go to all of the trouble of the real-simulator method to find out if hypnotic analgesia works? Why not use a physiological measure (such as heart rate or blood pressure) to find out what subjects are *really* feeling during the pain tests?" If a valid physiological measure of pain was available, then it would be unnecessary to trust subjects' verbal pain reports during hypnosis or in a postexperimental inquiry. But the conclusion from several experiments on this issue is that there is, in fact, no known physiological response that is a valid and reliable measure of subjective pain. Some measures, such as heart rate and blood pressure, tend to increase along with verbal pain reports under normal waking test conditions. But physiological measures do not necessarily decrease when drugs or hypnotic suggestions reduce subjective pain reports. Whether physiological measures and pain reports correlate reliably depends on the particular combination of pain-producing method and physiological measure used (Bowers 1976). After doing several experiments on this problem, Hilgard (1969) concluded that verbal pain ratings (or their equivalent) are, in fact, the most reliable and valid measure of felt pain.

With some of the basics of hypnosis research methods behind us, we are now ready to consider contemporary hypnosis theories in more detail.

HILGARD'S NEODISSOCIATION THEORY

As explained in Chapter 1, Ernest Hilgard (1977) drew parallels between hypnosis and certain other psychological conditions. The other condi-

tions—including multiple personality, fugue, and functional amnesia, along with functional paralysis, blindness, and anesthesia (numbness)—were classified as *hysterical syndromes* by the nineteenth-century French psychologist Pierre Janet (1907). The functional disorders mimic neurological disorders, though there is nothing neurologically wrong with the patients. Janet introduced the concepts of *dissociation* and *subconscious* to help account for hysterical syndromes. He hypothesized that in hysterical cases, ideas, memories, or mental functions that are normally associated or connected with each other have become disconnected or dissociated. Thus, the multiple-personality patient has two sets of memories, and the main personality cannot retrieve the alternate personality's memories; and the "glove anesthesia" patient cannot consciously feel anything with her right hand, though there is nothing neurologically wrong with it. The *subconscious* refers to the set of memories and psychological functions that operate outside of consciousness in these syndromes, though under some conditions subconscious knowledge can become conscious.

Janet's ideas did not attain the prominence that they might have because they were overshadowed by Freud's psychoanalytic theory, which appeared at about the same time. Freud's theory was richer, it seemed to have more relevance to ordinary people, and his concept of the repressed unconscious received more recognition than Janet's concept of the dissociated subconscious. Also, Janet's theory was interpreted as predicting that subconscious processes can carry out mental operations (such as mental arithmetic) without interfering with conscious processes. When this prediction was not supported by research, Janet's theory was discredited (Hilgard 1977). Freud's theory, on the other hand, was not precise enough to make any research predictions, so it could not be discredited by research!

Hilgard (1977) noted the similarities between hypnosis—particularly phenomena such as hypnotic amnesia and analgesia—and the hysterical syndromes, and he argued that the concept of dissociation is useful in accounting for hypnotic phenomena. It is noteworthy that hysterical patients typically are highly hypnotizable, and that hypnotic procedures are often effective in treating them (Frankel 1976). Hilgard called his theory *neodissociation theory* to emphasize the point that he was abandoning the claim that subconscious processes would not interfere with conscious processes and to acknowledge that his theory was designed under the influence of modern cognitive psychology theories, rather than the older association theories of learning.

Hilgard argued that the human mind can be characterized as a set of semi-independent specialized cognitive structures or subsystems that operate under the influence of a central regulating system. The central regulating system, which can be identified with consciousness, has two aspects: (1) the *executive function*, which sets short-term and long-term goals, determines their relative priorities, and plans and initiates actions suitable for reaching those goals; and (2) the *monitoring function*, characterized by selective attention, which scans the environment for information pertinent to the goals, as well as being vigilant for unexpected signals from the environment or body that are pertinent to the individual's safety. The executive system can activate various specialized subsystems that control psychological activities such as

memory, belief systems, habits, skills, and social roles suitable for particular occasions. The subsystems can regulate their own inputs and outputs (responses) to a large degree. In the case of well-learned habits or skills the subsystems may, once activated, operate in a largely automatic manner with little or no conscious awareness of their activities by the executive system.

Hilgard (1977) suggested that hypnosis involves temporary dissociations or disconnections between various parts of the mind system that are normally well integrated. Depending upon the type of suggestions, there may be dissociations between the executive and the monitoring functions, or specialized subsystems may act independently of the executive function, or the executive or monitoring functions themselves may be divided into two parts that can operate independently of each other. For example, hypnotic analgesia may occur because of a dissociation between pain perception systems and the conscious monitor, whereas hypnotic amnesia is a dissociation between the memory system and the executive system. Hypnotic hallucinations may be due to a dissociation between conscious image-generating mechanisms and reality-oriented judgment processes.

In neodissociation theory the emphasis is on modification of controls over thought and action, rather than on alterations of the quality of conscious experience. Hilgard (1979) suggested that an altered state in the sense of altered quality of conscious experience may be characteristic only of very deeply hypnotized subjects. At the more moderate depths of hypnosis with which researchers and clinicians normally deal, alterations of control may occur without there necessarily being any profound alteration of subjective experience.

The Hidden Observer

The discovery. A serendipitous discovery made during a class demonstration of hypnosis influenced Hilgard's development of the neodissociation theory (Hilgard 1977). While hypnotic deafness was being demonstrated with a highly hypnotizable subject, a student asked whether there might be some part of the subject's mind that could hear. Hilgard tested the idea by suggesting to the subject that there might be some part of him that was aware of what was going on, and if there was, then he (Hilgard) would be able to talk to it when he put his hand on the subject's arm. Subsequently, with Hilgard's hand on his arm, the subject was able to identify sounds and report what people said, but with the hand removed he was unable to do so. (This is an "automatic-talking" procedure, analogous to the "automatic-writing" procedure sometimes used to study unconscious processes.)

Hilgard coined the metaphor *the hidden observer* to describe the subsystem that has knowledge not available to the hypnotized subject's consciousness, but which can be accessed through special methods such as automatic writing and automatic talking. In terms of neodissociation theory, Hilgard suggested that the monitoring system is divided, such that one part feeds information to the hypnotized subject's consciousness, whereas another part registers and retains certain information that is not made available to consciousness. The dissociated part (the "hidden observer") of the monitoring system becomes a separate subsystem that can control responses such as writ-

ing and talking. Thus, in the “hand-on-the-arm” method with the hypnotically deaf subject, Hilgard was talking with the subject’s hidden observer. It is important to note that the hidden observer is not an alternate personality, nor is it an enduring part of the person. Rather, the hidden observer seems to appear in response to certain kinds of suggestions, such as hypnotic deafness, analgesia, and amnesia. Its function is limited to dealing with the information excluded from consciousness by the suggestion. Some writers use the term *subconscious mind* for the dissociated information system; information in that system is subconscious information (Kihlstrom 1984). Hilgard regards the barrier between consciousness and the hidden observer (or subconscious) as an amnesia barrier, which can be reversed, in contrast to the relatively impermeable repression barrier that separates the conscious and unconscious mind in Freud’s psychoanalytic theory.

The hidden observer in hypnotic analgesia. The hidden-observer effect in hypnotic deafness has been confirmed in a systematic study (Crawford, Macdonald, & Hilgard 1979; Hilgard 1977). It has also been demonstrated in hypnotic analgesia in several experiments by Hilgard and his colleagues. Hilgard, Morgan, and Macdonald (1975) tested twenty highly hypnotizable subjects with cold pressor pain. An automatic key-pressing method (analogous to automatic writing) was used to signal hidden-observer pain reports. Following a waking baseline pain test without hypnosis, subjects were hypnotized and given an analgesia suggestion before the second pain test. In addition it was suggested that while they were making their verbal pain reports, a hidden part of their mind would be able to report the true state of affairs by pressing telegraph keys with the opposite hand. (The left key signaled tens while the right key signaled single digits.) Then an amnesia suggestion for the key-pressing instruction was given, so that the subjects would make the key-pressing responses outside of conscious awareness.

Of twenty subjects, eight showed the *hidden-observer effect*, with “covert” pain reports (hidden reports, made by key pressing) being substantially higher than “overt” pain reports (open reports, made verbally). The mean pain ratings for these eight subjects are shown in Figure 15.2. Here the overt report is the report of the hypnotized conscious mind, as in typical hypnotic analgesia situations. Note that the covert reports were somewhat lower than the waking pain reports, but markedly higher than the overt reports. Knox, Morgan, and Hilgard (1974) obtained similar hidden-observer results using the muscle ischemia pain procedure and the automatic-talking (“hand-on-the-shoulder”) method of obtaining covert pain reports.

Hilgard (1977) argued that hidden-observer pain reports indicate that pain is perceived at a subconscious level during hypnotic analgesia, and an amnesia-like barrier prevents the conscious hypnotized mind from being aware of the pain. The subconscious pain can be reported only through a special procedure—the hidden-observer suggestion.

Simulator test of the hidden observer. Taking a critical view, you might ask whether hidden-observer reports occur merely in response to the demand characteristics of the test situation. Perhaps subjects figure out what responses the experimenter expects and respond accordingly. The question

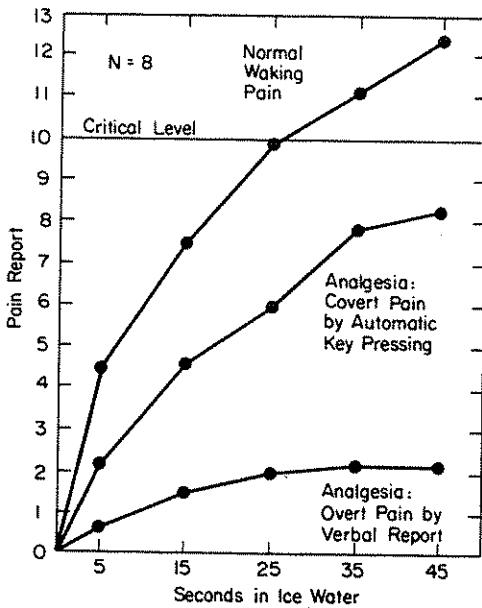


FIGURE 15.2. The “hidden observer” effect in cold pressor pain testing. In the baseline test (normal waking pain), reports were made verbally. Subsequently, subjects made two types of pain reports during hypnotic analgesia: “overt” reports, made verbally (standard procedure); and “covert” reports, made by key pressing (hidden-observer report). Overt and covert reports were made concurrently. The hidden-observer effect refers to the finding that overt pain ratings are higher than covert ratings. [From Hilgard, E. R., Morgan, A. H., & Macdonald, H. (1975). Pain and dissociation in the cold pressor test: A study of hypnotic analgesia with “hidden reports” through automatic key pressing and automatic talking. *Journal of Abnormal Psychology*, 84, 280-89. Copyright 1975 by the American Psychological Association. Reprinted by permission.]

of experimental demands was tested directly in an experiment using Orne’s real-simulator experimental design (Hilgard et al. 1978a). First, subjects made pain ratings during a baseline cold pressor test without hypnosis. Second, they made overt verbal pain ratings during cold pressor testing under hypnotic analgesia. Immediately afterward the hidden-observer suggestion was given, and subjects were asked for covert (hidden-observer) reports of

the highest level of pain that they had felt during the second test. Finally, in another room, a different experimenter interrogated the subjects and asked them to honestly report the highest levels of pain that they had felt overtly (consciously) and covertly during the second test.

The results of this experiment are shown in Table 15.1. Here the real and simulator groups are divided into two subgroups: those that showed a hidden observer (HO) effect (covert pain exceeds overt pain) and those that did not. Several aspects of the data are important: (1) All of the simulators successfully faked hypnotic analgesia (overt reports prior to honesty interrogation). Not only were their pain ratings low; they also maintained a stoic expression, without grimacing or fidgeting. (2) Nine simulators successfully faked the hidden observer effect (covert pain higher than overt pain, prior to honesty). (3) During the postexperimental honesty interrogation, none of the reals changed their pain reports; that is, they maintained that their prior overt and covert reports were true reports of what they had felt. (4) During honesty interrogation all simulators reported that their overt pain had really been much higher than previously reported. (5) During honesty interrogation, for those subjects who had previously shown a hidden-observer effect, simulators no longer claimed that their overt pain had been lower than their covert pain, whereas reals continued to maintain that this had been the case. In other words, during honesty interrogation the simulators denied that the hidden-observer effect was authentic, while reals maintained that it was authentic. Hilgard et al. (1978a) interpreted the data as indicating that the hidden-observer effect can be faked by simulators, but the six real hypnotized subjects had in fact experienced the hidden-observer effect and had not faked it.

TABLE 15.1 Overt and Covert Pain in Hypnotic Analgesia in Hypnotic (Reals) and Simulator Subjects

	N	MEAN MAXIMUM PAIN AS A PERCENT OF WAKING BASELINE PAIN			
		PRIOR TO HONESTY INTERROGATION		DURING HONESTY INTERROGATION	
		OVERT	COVERT	OVERT	COVERT
<i>Reals</i>					
H.O. effect	6	18	81	18	81
No H.O.	6	15	15	15	15
<i>Simulators</i>					
H.O. effect	9	6	70	70	75
No H.O.	3	21	21	102	102

From Hilgard, E. R., Hilgard, J. R., Macdonald, H., Morgan, A. H., & Johnson, L. S. (1978). Covert pain in hypnotic analgesia: Its reality as tested by the real-simulator design. *Journal of Abnormal Psychology, 87*, 655-63. Copyright 1978 by the American Psychological Association. Adapted by permission.

Subjective experience of the hidden observer. Here are some introspective verbal reports on the hidden-observer experience, made by several subjects after hypnosis was terminated.

- The hidden part doesn't deal with pain. It looks at what is, and doesn't judge it. It is not a hypnotized part of the self. It knows all the parts.
- The hidden observer seemed like my real self when I'm out of hypnosis, only more objective. When I'm in hypnosis, I'm imagining, letting myself pretend, but somewhere the hidden observer knows what's really going on. I think this is part of the same process as the tendency in hypnosis to stand back and say: "Look what's happening to you. You're slowly going under hypnosis."
- The hidden observer was an extra, all-knowing part of me. I was not at all aware of it when I blotted out the hearing. It was not there until it was told to be there. [From an experiment on hypnotic deafness.] (Hilgard 1977, pp. 207-8)
- I can separate my mind and my head from the rest of my body. The hidden part—reporting on the keys—was controlling my body. My mind was not counting key pressing. My mind was reporting what it felt, verbally. I've always been aware of the difference between the mind and the body when I've been hypnotized.
- It's as though two things were happening simultaneously; I have two separate memories, as if the two things could have happened to different people. The memory of the hidden part is more intellectual, but I can't really comprehend or assimilate the two. (Hilgard et al. 1975, p. 286; Hilgard et al. 1978a)

The point that comes through in many of the descriptions is that the hidden observer is relatively objective and analytical. This was revealed also in subjects' straightforward, unemotional, matter-of-fact ways of speaking during hidden-observer reports. Postexperimental reports also showed that experiencing the hidden observer (reals) did not depend upon subjects' prior beliefs that the hidden observer was plausible. Three of eight subjects who experienced the hidden observer had not thought that it was a plausible idea. And some subjects who had thought that the hidden observer was plausible did not subsequently experience it (Hilgard et al. 1978a).

Comment. If taken at face value, the hidden-observer effect supports Hilgard's neodissociation theory of hypnosis. It appears that hypnotic analgesia or deafness suggestions can produce functional dissociations between perceptual monitoring processes and consciousness. It is noteworthy that Hilgard (1977) does not claim that dissociation effects are unique to hypnosis. They may also occur in nonhypnotic situations, such as narrowly focused attention with deep imaginative involvement, particularly in hypnotizable subjects. But Hilgard says that dissociation effects are characteristic of deep hypnosis, and hypnosis is an ideal procedure for studying them. One puzzle for neodissociation theory is why only about half of the highly hypnotizable subjects have experienced the hidden-observer effect when tested for it.

On the negative side, neodissociation theory can be criticized for not providing clear criteria for identifying dissociative processes in normal and abnormal states. The theory is not stated precisely enough to make it possi-

ble to derive specific hypotheses that can be experimentally tested (Farthing 1980). Rather, tests of the theory have often had to be based on plausible interpretations of the theory and extrapolations from it, where it was not sufficiently detailed. One plausible interpretation, for example, is that high hypnotic responsiveness should be correlated with superior abilities on laboratory tests of divided attention, though this prediction has not fared well in experimental tests (Stava & Jaffa 1988). Furthermore, the dissociation theory interpretation of the hidden-observer effect is controversial. An alternative interpretation has been proposed from the social-psychological viewpoint, as we will see in the next section.

THE SOCIAL-PSYCHOLOGICAL APPROACH TO HYPNOSIS

Psychologists who take the social-psychological (or social-cognitive) approach to hypnosis argue that hypnosis is not an altered state of consciousness or cognition, nor does it involve dissociation of mental subsystems. Rather, it involves normal thinking and behavior processes occurring in a special social situation identified as hypnosis (Barber 1969, 1972; Sarbin & Coe 1972; Wagstaff 1981, 1986). The social-psychological approach is sometimes called the "contextualist" approach, referring to the idea that subjects' behaviors are influenced by the current social context, where they play a social role (hypnotized subject) according to their knowledge, beliefs, and expectations and the implicit and explicit demands of the situation (Coe & Sarbin 1977; Coe 1978; Coe & Sluis 1989).

Nicholas Spanos is currently the most prolific hypnosis researcher in the social-psychological camp. I will be emphasizing the work of Spanos and his colleagues because it presents a coherent body of research and theory on a wide variety of hypnotic phenomena. Spanos (1986a) pointed out that contemporary hypnosis research is organized around two broadly defined viewpoints: the state or special-process view and the nonstate or social-psychological view. According to Spanos, the special-process view is based on the (often implicit) assumption that genuine hypnotic responses are automatic or involuntary, rather than voluntary, responses. Thus, theorists in that camp have postulated special processes, such as dissociation, to explain how normally voluntary responses occur involuntarily during hypnosis. In contrast, the social-psychological approach argues that hypnotic phenomena are similar to other forms of social behavior, and they can be explained without postulating special processes such as trance or dissociation. Spanos explained:

According to [the social-psychological] view, hypnotic behavior is purposeful, goal-directed action that can be understood in terms of how the subjects interpret their situation and how they attempt to present themselves through their actions. This view acknowledges that "good" hypnotic subjects frequently behave *as if* they have lost control over their behavior. However, these aspects of behavior are interpreted as voluntary rather than automatic. Responsive hypnotic subjects behave as involuntary because their preconceptions about hyp-

nosis and the persuasive communications they receive in the hypnotic test situation define acting that way as central to the role of being hypnotized (Spanos 1986a, p. 449).

Spanos explained hypnotic behaviors in terms of two factors: (1) subjects are motivated to present themselves to the hypnotist as good hypnotic subjects; and (2) they use cognitive strategies to meet the requirements of the suggestions while enabling themselves to view themselves as good hypnotic subjects. Cognitive strategies can enable subjects to respond appropriately while interpreting their responses as involuntary, thus maintaining their subjective impressions that they are good hypnotic subjects. Thus hypnotic responses are voluntary *strategic enactments* to meet the social demands of the situation. The social-psychological view sees hypnotic responsiveness as a learnable cognitive skill, rather than a stable personality trait. (Hypnotic skill training was discussed in the last chapter.) Spanos now calls his theory the *social-cognitive theory*, to emphasize the idea that both the social context and cognitive strategies are important factors in hypnotic responding.

The Social-Cognitive View of Hypnotic Analgesia

In the social-cognitive view, hypnotic analgesia is a strategic social enactment where subjects use cognitive strategies such as diversion of attention away from pain stimuli.

Is hypnotic induction necessary for hypnotic analgesia? One implication of the social-cognitive viewpoint is that if a hypnotic induction does not really produce an altered state of consciousness or special process (such as dissociation), then it should not be necessary to have a prior hypnotic induction in order for an analgesia suggestion to be effective in reducing pain.

Spanos, Radtke-Bodorik, et al. (1979a) tried to separate the effects of the hypnotic induction and the analgesia suggestion by using a between-subjects experimental design, where separate groups of high and low hypnotizables were given the cold pressor pain test under each of four conditions following the baseline immersion: (1) *hypnotic analgesia*: hypnotic induction followed by analgesia suggestion; (2) *hypnosis alone*; (3) *analgesia suggestion alone* ("waking analgesia"); and (4) *control*: no hypnosis, no suggestion. The results indicated significant pain reduction only among highs who were given an analgesia suggestion (conditions 1 and 3); the reduction was no greater with than without a prior hypnotic induction. This is a rather surprising result: Hypnotic susceptibility makes a difference, but hypnotic induction does not.¹ The implication is that individual differences in response to hypnotic suggestions involve something other than an ability to enter a special trance or dissociative state following a hypnotic induction.

Suggestion and distraction. How does an analgesia suggestion work? Hilgard (1977) argued that two processes are involved: (1) a nonhypnotic component that involves attention diversion, relaxation, and reduced anxiety—this component can be effective for both lows and highs, and does not

require a prior hypnotic induction—and (2) a hypnotic component that involves a dissociation or amnesia-like process and is possible only for highs who are in a hypnotic state. According to Hilgard, the nonhypnotic component alone can reduce pain by about 20 percent, but major reductions in pain are available only to those who can use the hypnotic component.

The social-cognitive view is that suggested analgesia is produced by cognitive strategies, particularly by subjects diverting their attention away from the painful stimulus, aided by belief in the efficacy of the attention-diversion strategy. Perhaps high hypnotizables can use analgesia suggestions (both hypnotic and waking) more effectively than lows because highs are better at focusing attention on the suggested images (such as “your hand will become numb and insensitive, like a piece of rubber”), thus making the suggestion an effective distractor.

An implication of the attentional distraction hypothesis is that other sorts of distractors besides suggestions should be effective in reducing pain, at least among highly hypnotizable subjects. Several studies have found other distractors besides suggestions to be effective. Spanos et al. (1984c) tested independent groups of high and low hypnotizables in the cold pressor situation under three conditions (without hypnosis) following the baseline immersion: (1) waking analgesia suggestion; (2) external distraction by a shadowing task (a list of words was read at a rapid rate, and subjects had to pay attention and repeat back each word immediately); and (3) control (no treatment). The result was that for highs the analgesia suggestion and external distraction were equally effective in reducing pain ratings, whereas for lows only the external distraction was effective. Farthing, Venturino, and Brown (1984) obtained similar results, where the external distraction task involved listening to a list of words and trying to memorize them for a subsequent recall test.²

The difference between highs and lows in these studies suggests that highs may be better than lows at using imagination strategies (such as suggestions) to distract themselves from pain, whereas lows are as good as highs at reducing pain by attending to external distractors. This interpretation is consistent with interpretations of hypnotic susceptibility in terms of imagination ability. An alternative interpretation is that highs—but not lows—know how to interpret passively worded suggestions to use them effectively as distractors, whereas both highs and lows can use external distractors because they require no special interpretation (Spanos & Katsanis 1989; Spanos, Kennedy, & Gwinn 1984b).

The distraction hypothesis is consistent with Spanos's (1986a) general approach to hypnosis as a social-cognitive phenomenon, in which subjects use whatever cognitive strategies are available to them to meet the requirements of the testing situation. When given permission to do so, subjects will devise their own pain-coping strategies, when they are not given explicit suggestions or distraction tasks (Spanos et al. 1984a). Several experiments have demonstrated the effectiveness of nonhypnotic pain-coping strategies (reviews in Spanos 1986a; Turk, Meichenbaum, & Genest 1983).

In reply to Spanos's explanation of hypnotic analgesia as a distraction effect, critics have pointed out that, like Barber (1969) before him, Spanos is using the logic of equivalence, claiming that where different methods pro-

duce the same degree of pain reduction, both methods must be using the same underlying cognitive process. That argument is not necessarily valid (Sheehan & Perry 1976). The question whether hypnotic analgesia suggestions invoke some special process, at least in some highly hypnotizable subjects, is still a matter of controversy.

The Hidden Observer Examined

In view of Spanos's skepticism about other claims by special-process theorists, it comes as no surprise that he disputes Hilgard's interpretation of the hidden-observer effect in terms of a dissociation process. In contrast, Spanos (1986a) argued that hidden-observer reports are—like other hypnotic responses—behaviors made by people who are trying to be good hypnotic subjects and behave according to their interpretations of the hypnotist's instructions and suggestions. In support of his argument, Spanos offered two experiments that showed that "covert" (hidden observer) pain reports could be either higher or lower than "overt" (standard procedure) pain reports, depending on the nature of the hidden-observer suggestion.

Spanos and Hewitt (1980) compared the effects of "more aware" and "less aware" hidden-observer suggestions on covert pain reports in the cold pressor test. As in Hilgard et al.'s (1975) procedure, subjects received hypnotic analgesia and hidden-observer suggestions, then made periodic overt verbal pain ratings, followed shortly by covert ratings made by key-pressing responses. Following Hilgard's procedure, it was suggested to the "more aware" subjects that there was a "hidden part" of themselves that knew that "things are going on in your body, things unknown to the part of you to which I am now talking" (Knox, Morgan, & Hilgard 1974, p. 842). Subjects in the "less aware" group received the suggestion that the hidden part would "know even less about things going on in your body than the hypnotized part of you to which I am now talking" (Spanos & Hewitt 1980, p. 1206).

The result was that the "more aware" group showed the typical hidden observer effect, with covert (key press) pain reports being markedly higher than overt (verbal) pain reports. Conversely, the "less aware" group made covert pain reports that were significantly lower than their overt pain reports, and markedly lower than the covert reports made by the more aware group. Spanos and Hewitt argued that their results showed that the hidden observer is not so much a discovery as an experimental creation: subjects made "covert" responses that were consistent with the behaviors implied by the hidden-observer suggestions. Furthermore, their responses were not necessarily just a matter of voluntarily faking. In Spanos's view, subjects want not only to be good hypnotic subjects in their overt responses; they also want to be good subjects by having the subjective experiences implied by the suggestions, and they devise cognitive strategies in order to have those experiences. Thus, they might shift their attention toward or away from the pain stimuli, in order to feel more or less pain in accordance with the demand characteristics of the experimental suggestions.

Spanos and Hewitt's (1980) conclusions were criticized on several grounds by Laurence, Perry, and Kihlstrom (1983; reply in Spanos 1983). Laurence et al. argued, in effect, that a "genuine" or "more aware" hidden

observer is a natural occurrence during hypnotic analgesia, representing a dissociation process. But the "less aware" hidden observer found in Spanos and Hewitt's less aware group was a response to specific suggestions for a hidden part that would be less aware of the pain than was the hypnotized part.

Spanos, Gwynn, and Stam (1983a) replied to the above argument with an experiment in which the hidden observer was tested in a neutral way, without indicating to subjects whether the hidden observer would be more aware or less aware of pain than the conscious hypnotized part. The result was that covert pain reports did not differ from overt reports. This finding is contrary to the neodissociation theory prediction of higher covert than overt pain reports.

In conclusion, research by Spanos and his colleagues raises serious questions about the proper interpretation of the hidden-observer effect. Spanos's results cannot be readily accounted for by the neodissociation theory (see also Spanos *al.* 1985). It may be the case that Hilgard's hidden observer effect is a response to a particular hypnotic suggestion given in a particular context. The ball is now in the neodissociation theory's court, so to speak. The neodissociation theory needs to be stated in more precise terms that enable it to be tested, and theorists need to specify the boundary conditions (such as the subject's prior beliefs and expectancies, and the experimental demands) that affect its predictions. Spanos and others have shown convincingly that social-psychological factors have a strong impact on hypnotic behavior. Nonetheless, the alterations in subjective experience in deep hypnosis suggest that something special is going on, perhaps some special process that goes beyond hypnotic role playing.

POSTHYPNOTIC AMNESIA

The procedure for posthypnotic amnesia suggestions and amnesia testing was explained in the last chapter. While not as dramatic as age regression or as practical as hypnotic analgesia, posthypnotic amnesia is perhaps the most theoretically important hypnotic phenomenon, for several reasons (Kihlstrom 1977, 1985b). On hypnotic susceptibility tests, the amnesia item is the one that correlates most consistently with other items, suggesting that something about the cognitive process in hypnotic amnesia is involved also in other types of hypnotic performance. Hilgard (1977) sees amnesia as the prototype case of dissociation in hypnosis. Also, the retrieval problems in posthypnotic amnesia may be related to both clinical functional amnesias and retrieval problems in normal, everyday forgetting. Thus, an understanding of posthypnotic amnesia is critical for understanding hypnosis, and it may have implications that reach beyond the domain of hypnosis.

Explanations of Posthypnotic Amnesia

What is going on during posthypnotic amnesia? Is the information really forgotten? One thing we know for sure is that the information has not

been permanently lost from memory. The fact of amnesia reversibility proves that point.

If the information is still in memory, then why don't subjects report it? There are two alternatives (Table 15.2): subjects do not *retrieve* the information from memory (left column); or subjects retrieve the information but do not *report* it (right column). In the latter case, if subjects retrieved the information, why wouldn't they report it? Either they are *unable* to report it (cell B), or they are *unwilling* to do so (cell D). The same possibilities apply also to retrieval failure: either subjects are unable to retrieve the information (cell A), or they are unwilling to do so (cell C) (Kihlstrom 1977).

In Table 15.2, the only situation that we would call *true amnesia* is if subjects are actually unable to retrieve the required information from memory (cell A). Other situations would be *pseudoamnesia*—they look like amnesia on the surface, but the reason for nonreporting is something other than inability to retrieve the information. When subjects retrieve the information but are unwilling to report it, it is a case of faked amnesia or “keeping secrets” (cell D) (Kihlstrom 1977).

The cells in Table 15.2 are only the first step in explaining posthypnotic amnesia. Theorists need to explain *why* subjects are unable (or unwilling) to retrieve (or report) the required information.

According to Hilgard's (1977) neodissociation theory, amnesia suggestions establish (in highly hypnotizable subjects) a temporary dissociation or disconnection between consciousness and the part of the memory-storage system where the amnesic (to be forgotten) items reside. Thus, conscious control processes for memory retrieval are unable to gain access to the amnesic items. The inability to retrieve is involuntary; subjects may honestly try to retrieve the information, but they cannot do it.

According to Spanos's social-cognitive theory, posthypnotic amnesia does not involve an inability to retrieve the information. Instead, amnesia is accomplished through voluntary response strategies aimed at meeting the demands of the test situation. There are two response strategies: voluntary nonreporting—faking amnesia (cell D in Table 15.2), and voluntary nonretrieval (cell C). Retrieval can be avoided by not trying to retrieve the information and by deliberately shifting one's attention to something else. Spanos (1986a; also Coe 1978) argued that voluntary nonretrieval is the most

TABLE 15.2 Explanations of Posthypnotic Amnesia

		REASON FOR NONREPORTING OF INFORMATION	
		RETRIEVAL FAILURE	REPORT FAILURE*
<i>Reason for retrieval or report failure</i>	Unable (involuntary)	(A) True Amnesia	(B) Response Inhibition
	Unwilling (voluntary)	(C) Retrieval Avoidance	(D) Faked Amnesia

*“Report failure” means that the subject successfully retrieved the required information but did not report it.

common strategy. By voluntarily avoiding retrieval, subjects comply with the suggestion and appear to the hypnotist/experimenter to be good hypnotic subjects, while at the same time maintaining the self-delusion that they are good subjects. Now let us consider some research relevant to the theories of posthypnotic amnesia.

Breaching Posthypnotic Amnesia

Kihlstrom et al. (1980) argued that if amnesia is voluntary, it should be possible to breach (reverse) amnesia by some means besides giving the prearranged reversal cue. They gave subjects a hypnotic susceptibility test with a standard amnesia suggestion to forget the test items, followed by arousal from hypnosis and the first recall attempt. Then, to try to breach amnesia, three experimental groups were given different instructions ("report honestly," "try harder," or "try to recall the sequence of events"), followed by the second recall attempt. A control group was told simply to "try again" before the second recall attempt. Finally, the prearranged reversal cue was given ("Now you can remember everything . . ."), followed by the third recall attempt. Two results were important: all four groups showed small and equal gains on the second (prereversal) recall attempt; and all four groups showed additional and equal gains on the third (postreversal) recall attempt. Kihlstrom et al. concluded that there was no evidence of breaching, insofar as none of the experimental groups recalled more items than the control group on the second attempt. Gains on the second recall attempt were apparently just a result of being given a second recall opportunity. The additional gains on the third recall attempt show that amnesia had not been completely overcome during the second attempt.

Several other experiments have tried to get subjects to breach amnesia without the reversal cue, some successfully. For example, some subjects breached amnesia when tested after they had viewed a videotaped playback of their hypnosis session (Sheehan & McConkey 1982). Howard and Coe (1980) found that subjects who experienced an earlier amnesia response as voluntary would breach amnesia on a second test if they thought that they were being monitored by a "lie-detector" machine.

Special-process theorists have pointed out that in all of the breaching experiments, some of the high hypnotizables have not breached amnesia, so for them amnesia must be an involuntary response. Spanos (1986a) argued that even the nonbreachers do not experience a truly involuntary amnesia. Rather, the nonbreachers interpret the situation as calling for continued amnesia, so they continue to avoid retrieving or reporting the items in order to present themselves as good subjects. Some subjects need more compelling instructions than others to convince them that the hypnotist/experimenter truly desires that they report the items, prior to the prearranged reversal cue. Coe and Sluis (1989) were able to get nineteen of twenty subjects—both voluntary and involuntary amnesics—to breach amnesia with sufficient pressure, which included a combination of honesty instructions, lie-detector test, and videotaped playback of the hypnosis session.

Spanos, Radtke, and Bertrand (1985) arranged a convincing scenario for breaching amnesia, using a variation of the hidden-observer procedure.

The subjects were eight high hypnotizables who had been very amnesic on a previous test and had said that their amnesia was involuntary. They were told that during hypnosis "hidden parts" of their mind know things that their conscious mind cannot remember. Then during hypnosis they learned a list of words that included both concrete nouns (names of objects) and abstract nouns. Half of the subjects were told that abstract nouns are stored in the left cerebral hemisphere, and concrete nouns in the right hemisphere; half were told the opposite. Next, all subjects were given an amnesia suggestion, followed by a recall test. All subjects showed a strong amnesia effect, reporting few or none of the words. Then, without giving the amnesia reversal cue, the hypnotist contacted each subject's left and right "hidden parts" by touching the left or right shoulder. Subjects who had been told that the left side stores abstract nouns and the right side concrete nouns reported abstract nouns when the left hidden part was contacted, and concrete nouns when the right hidden part was contacted (and vice versa for subjects told that the left side stores concrete nouns). According to Spanos, these results indicate clearly that hypnotic amnesia is a strategic enactment. Good hypnotic subjects maintain the appearance of being good subjects by maintaining voluntary control of memory and behaving as if voluntary control had been lost, in order to meet the demand requirements of the hypnotic test situation. In this experiment, subjects inferred that breaching hypnosis (via the "hidden part") was consistent with being a good hypnotic subject.³

Lazar (1989) found that amnesia could be breached by a paraphrase of the reversal cue or by a polite request to report what had happened during hypnosis, regardless of whether the paraphrase or request was given by the hypnotist in the original experimental context or by someone else in a different room after the experiment was over. Lazar concluded that subjects will reverse hypnosis whenever they believe that they have permission to do so.

In conclusion, breaching experiments provide more support for the social-psychological view than for the special-process view. Depending on which breaching method is used, either a minority or a majority of subjects will reverse amnesia without the prearranged reversal cue. It appears that, *for subjects who breach*, amnesia is voluntary. However, it is still uncertain what is going on with those who do not breach. Either they are truly unable to retrieve the critical information, as special-process theorists assert, or they are simply not yet willing to retrieve or report the information, in the social-psychological view. Different subjects may interpret the amnesia suggestion and breaching instructions in different ways. Conceivably, some subjects who are truly amnesic interpret the breaching instruction as the reversal cue. If this is the case, then for those subjects breaching is not critical evidence against the special-process view.

Disorganized Retrieval in Posthypnotic Amnesia

Tests of posthypnotic amnesia use a *free recall* procedure, in which subjects may report items in any order they choose. Several studies have found that when amnesic subjects recall a few items, the organization of items during free recall is disrupted, compared to nonamnesic subjects. Disrupted organization of recall has been found for temporal sequencing of hypnotizabil-

ity test items (Evans & Kihlstrom 1973), category clustering of semantically related words (Radtke-Bodorik, Planas, & Spanos 1980), and subjective organization of items originally presented in random sequences (Tkachyk, Spanos, & Bertrand 1985), though there have been some exceptions (Spanos 1986a; Wilson & Kihlstrom 1986).

Kihlstrom (1977, 1985b) argued that amnesia suggestions make hypnotizable subjects unable to recall specified information by disrupting the retrieval processes for episodic memory. Disrupted retrieval is shown by reduced temporal organization, category clustering, and subjective organization. Kihlstrom suggested that posthypnotic amnesia appears to represent a "temporary dissociation of episodic features from memory traces, so that the subject has difficulty in reconstructing the context in which the target events occurred" (1980, p. 227).

Spanos (1986a) disagreed. He argued that recall failure and disorganization during amnesia result from subjects deliberately diverting attention away from the recall task. To test the plausibility of this explanation, Spanos and D'Eon (1980) compared category clustering during posthypnotic amnesia with clustering during a distraction task, in which subjects were required to count backwards by threes (in writing) at the same time that they tried to recall words memorized during hypnosis. Semantic organization was disrupted as much by the attentional distraction task as it was by the amnesia suggestion. Similar results were obtained for subjective organization (Tkachyk et al. 1985). Thus, since deliberate distraction can disrupt the organization of items during retrieval without amnesia, it is plausible that disrupted organization during posthypnotic amnesia is due to subjects deliberately distracting themselves during the recall test, as a cognitive strategy to appear amnesic and meet the experimental demands.

Conclusions Regarding Posthypnotic Amnesia

How do the experimental results relate to Table 15.2 on explanations of hypnosis? First, we can reject the response inhibition interpretation of amnesia (cell B). Tests of semantic memory during posthypnotic amnesia (Kihlstrom 1980; Williamsen, Johnson, & Eriksen 1965) show that subjects are able to say or write the critical words in tests—such as word associations or completion of partial-words—similar to the methods used to test implicit memory in brain-damaged amnesic patients (see Chapter 6). Second, the breaching studies make it clear that some subjects fake amnesia by deliberately failing to report retrieved items (cell D); for example, Howard and Coe's (1980) finding that reporting was increased when subjects thought that they were being monitored by a lie-detector apparatus. However, it appears that only a small minority of subjects fake amnesia in this way (Kihlstrom 1985b). Thus, the main controversy is between the true amnesia (cell A) versus the retrieval avoidance (cell C) interpretations of amnesia responses.

In most breaching studies there are some subjects who do not breach amnesia. What is going on with those subjects? Kihlstrom (1977, 1985b) argued that they are experiencing true amnesia—they are *unable* to retrieve the critical items. Spanos (1986a) disagreed and argued that amnesia is voluntary nonretrieval, and whether subjects breach or not depends upon their

interpretation of what is expected of good hypnotic subjects in the context of the particular test situation. The critical question is whether the subjects *could have* recalled the items. Was their failure to recall voluntary or involuntary? When apparently amnesic subjects are subsequently asked whether their amnesia was voluntary or involuntary, most of them reply that it was involuntary. Spanos (1986a) argued that claiming involuntary amnesia is part of the whole process of voluntarily presenting oneself as a good hypnotic subject. It would be inconsistent to fail to report the critical items, then admit "Yes, I could have recalled them but I didn't try." The issue of voluntary versus involuntary retrieval failure in hypnotic amnesia still has not been settled. The critical difficulty is deciding whether to take subjects' introspective reports of involuntariness at face value.

Up to this point it is clear that the social-psychological (social-cognitive) approach presents a serious challenge to special-process theories of hypnosis, though the issues are not yet settled. In the next chapter I will continue the theoretical debate with research on age regression and trance logic. Then I will discuss the question of hypnotic hypermnnesia—whether memory can really be enhanced through hypnosis, and the related question of whether pseudomemories can be implanted during hypnosis. These questions have theoretical implications, as well as practical implications in the domains of psychotherapy and criminal interrogation. Finally, I will make some general concluding remarks about hypnosis and hypnosis theories.

SUMMARY

The question of whether hypnotic responses are real is the question of whether they represent authentic changes in subjective experience or merely compliant behavior to meet the social demands of the situation. Two research designs have been used to try to discover the characteristics of authentic hypnotic responses: (1) the high-low method, where highly hypnotizable subjects are compared with low hypnotizables under identical conditions; and (2) the real-simulator method, where hypnotized subjects are compared with low hypnotizables who have been instructed to fake being hypnotized.

According to special-process theories, hypnosis involves an altered state of consciousness or cognitive processing. It is assumed that true hypnotic responses occur with a feeling of involuntariness, and that they reflect changes in underlying cognitive processes that are characteristic of hypnosis (though not necessarily unique to hypnosis). Hilgard's neodissociation theory states that hypnotic responses such as analgesia (pain reduction) and posthypnotic amnesia involve temporary dissociations or disconnections between cognitive subsystems, such that stimuli and responses that normally occur with awareness and control can occur without conscious awareness and control. The "hidden-observer" effect, involving reports of hidden pain during hypnotic analgesia, was offered in support of the neodissociation theory.

In contrast, the social-psychological approach says that hypnosis involves ordinary thinking and behavior processes operating in a special social

situation identified as hypnosis. In this approach, subjects' verbal reports of subjective experiences are treated as a type of behavior to be explained. Spanos's social-cognitive theory explains hypnotic behaviors in terms of two factors: (1) subjects are motivated to present themselves to the hypnotist as good hypnotic subjects; and (2) they use cognitive strategies to meet the requirements of the suggestions while enabling themselves to view themselves as good hypnotic subjects. Thus hypnotic responses are voluntary strategic enactments to meet the social demands of the situation. Spanos argued that hypnotic analgesia involves an attention-diversion strategy and that the hidden-observer effect is a strategic social enactment under voluntary control, rather than a spontaneous dissociation in response to hypnotic suggestions.

Posthypnotic amnesia is seen by special-process theorists such as Kihlstrom as a case of disrupted retrieval from episodic memory, whereas semantic-memory retrieval is not normally affected. Spanos explained amnesia in terms of strategic enactment and attention diversion, such that amnesic subjects do not really try to retrieve the critical information. In both analgesia and amnesia, cognitive strategies may enable subjects to interpret their responses as involuntary, thus maintaining the subjective impression that they are good hypnotic subjects.

ENDNOTES

¹In an earlier experiment Hilgard et al. (1978b) had found hypnotic analgesia to be more effective than waking analgesia. The different conclusions from the Hilgard et al. and Spanos et al. (1979a) studies appear to be due to the use of within-subject (repeated measures on the same subjects) versus between-subjects (independent groups) designs, respectively. Stam and Spanos (1980) confirmed this interpretation by showing that in a within-subjects design they could make waking analgesia (suggestion-alone) more effective, less effective, or equally as effective as hypnotic analgesia, depending upon different expectations induced by different treatment sequences used for different groups of subjects.

²Note that the subjects were not hypnotized in these studies, so the question of whether hypnosis might change the relative effectiveness of suggestion versus external distraction for highs, or make external distraction more effective for highs than for lows, remains open.

³To be consistent with the hidden-observer procedure, Spanos et al. (1984d) tested amnesia within hypnosis, rather than posthypnotically. It is assumed that their results are relevant to the explanation of posthypnotic amnesia, though so far there has been little research to compare hypnotic versus posthypnotic amnesia.