

HYPNOSIS

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"I have been hypnotizing, on a large scale, the students, and have hit one or two rather pretty unpublished things of which I hope someday I may send you an account."

William James—Letter to Carl Stumpf, January 1, 1886

Hypnosis may be defined as a social interaction in which one person, designated the subject, responds to suggestions offered by another person, designated the hypnotist, for experiences involving alterations in perception, memory, and voluntary action. In the classic case, these experiences and their

accompanying behaviors are associated with subjective conviction bordering on delusion, and involuntariness bordering on compulsion.

ASSESSMENT OF HYPNOTIZABILITY

The signal event in the revival of hypnosis research in the late 1950s and early 1960s was the introduction of the Stanford Hypnotic Susceptibility Scales (SHSS) by Weitzenhoffer and Hilgard (E. R. Hilgard 1965; for recent reviews, see E. R. Hilgard 1978–1979). These scales consist of an induction of hypnosis accompanied by suggestions for a set of representative hypnotic experiences; response to each suggestion is scored in terms of objective behavioral criteria. The Stanford scales are available in a graded series: SHSS:A and SHSS:B are parallel forms emphasizing motor items, which makes test-retest studies possible; SHSS:C emphasizes cognitive alterations of various sorts and has come to serve as the standard against which all other scales are compared. At about the same time, the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A) was developed. Based on SHSS:A, it permits the economies of group testing. A “tailored” version of SHSS:C permits an individual suggestion of special interest to be substituted for one of the items in the published version without any sacrifice in terms of psychometric properties (E. R. Hilgard et al 1979). In addition, the Stanford Profile Scales of Hypnotic Susceptibility (SPSHS), available in two parallel forms (I and II), permit assessment of individual strengths and weaknesses within the general domain of hypnosis, somewhat in the manner of the profiles derived from subscales of the WAIS or MMPI.

Alternatives

While such a rigorous, systematic assessment program is desirable in principle, many clinicians (and some experimentalists) balk at it on the grounds that it takes a minimum of three hours to complete just HGSHS:A and SHSS:C. Accordingly, the Stanford laboratory recently introduced the Stanford Hypnotic Clinical Scale (SHCS) in two forms suitable for use with adults and children (Morgan & Hilgard 1978–1979a,b). These scales correlate highly with SHSS ($r = .72$ and $.67$ for the adult and child forms, respectively), require only 20 minutes for administration, and appear to be the procedure of choice for purposes of rapid clinical assessment.

Even 20 minutes seems to be too long for some clinicians and patients, and so there is a continuing interest in the development of even more rapid techniques for assessing hypnotizability. In particular, Spiegel (1977, Stern et al 1979) developed the Hypnotic Induction Profile (HIP), consisting of an eye-roll sign, accompanied by a very brief hypnotic induction and test, as a measure of hypnotizability. The eye-roll sign itself, independent of the hypnotic induction,

does not appear to correlate substantially with hypnotizability as measured by standardized laboratory procedures (Eliseo 1974, Orne et al 1979, Sheehan et al 1979, Switras 1974, Wheeler et al 1974). The correlation between the results of the brief induction and standardized scale scores also appears to be too low to serve the purposes of individual assessment and prediction. Orne et al (1979) found a correlation of .19 in the better of their two studies. However, a correlation of .63 has been reported between induction scores and SHSS:C (Frischholz et al 1980), so the actual relationship between the two scales remains somewhat controversial (Hilgard & Hilgard 1979, Hilgard 1981a,b, 1982, Frischholz et al 1981, Spiegel et al 1982). Even granting that the induction score is a valid measure of hypnotizability, the eye-roll score is not; and the induction component, for its part, contains too few items to provide a representative assessment of the individual's response to hypnotic suggestions.

A characteristic of the Stanford-type scales is that hypnotizability is typically measured in terms of objectively observable behavioral response. A radical departure from this practice is represented by the Creative Imagination Scale (CIS; Barber & Wilson 1977). This scale consists of 10 suggestions similar to those offered on the Stanford scales, with the exception that response is scored only in terms of the subjective reality of the suggested imagery. Two studies found correlations between CIS and HGSHS:A of .28 (McConkey et al 1979) and .55 (E. R. Hilgard et al 1981), and factor analyses found that the items of the two scales tend to load on different factors. The CIS may serve as an alternate measure of mental imagery ability, but probably not as an alternate measure of hypnotizability. Shor (1979b) has proposed a phenomenological method for assessing hypnotic response, which combines both objective and subjective indices.

Recently, Spanos and his associates introduced the Carleton University Responsiveness to Suggestion Scale (CURSS; Spanos et al 1983c,d). The CURSS consists of an induction and suggestions for seven representative experiences. When scored in terms of objective behavioral response, it has adequate psychometric properties of internal consistency and reliability, and a factor structure and score distributions roughly comparable to SHSS. The correlation between behavioral scores on CURSS and SHSS:C is .65. While the CURSS clearly taps the domain of hypnosis to some degree, it also tends to define hypnosis in terms of the subject's willingness to cooperate with the procedures rather than in terms of subjective experience, as is characteristic of the Stanford scales.

The Classic Suggestion Effect

Although hypnotizability is usually measured in terms of behavioral response to suggestions, hypnosis may be distinguished from voluntary or coerced behavioral compliance by the classic suggestion effect, in which hypnotic

responses are experienced as occurring involuntarily (Weitzenhoffer 1974). The effect may be related to the inability of some subjects to resist hypnotic suggestions (Zamansky 1977, Lynn et al 1983), and to the posthypnotic persistence of uncanceled suggestions (Duncan & Perry 1977, Perry 1977b). Recently, Weitzenhoffer (1980) criticized the Stanford scales because they measure only overt behavioral response and not involuntariness (for a convincing reply to these and other complaints, see E. R. Hilgard 1981c).

The problem of the classic suggestion effect was raised in a different way in the standardization of the CURSS by Spanos et al (1983d). In addition to objective behavioral scoring, the CURSS items are also evaluated in terms of the degree of subjective conviction and involuntariness associated with them. Thus, CURSS directly addresses the occurrence of the classic suggestion effect. However, the distribution of involuntariness scores yields a reverse-J rather than a more bell-like shape, which suggests that the behavioral response of most subjects to its items reflects overt compliance rather than the classic suggestion effect. (Unfortunately, Spanos et al do not report the correlation between CURSS behavioral and involuntariness scores.)

Spanos et al suggest, in apparent agreement with Weitzenhoffer (1980), that the Stanford scales are also highly contaminated with compliance, although neither Weitzenhoffer nor Spanos provide any empirical support for the claim. In fact, the available data suggest that this is not the case. Bowers (1981a), for example, scored the items of SHSS:A in terms of both overt behavior and experienced involuntariness. Within SHSS:A, the total behavioral score correlated .77 with the behavioral score of SHSS:C; and SHSS:A involuntariness correlated .85 with SHSS:C behavior (no involuntariness score was collected for SHSS:C). Similar findings were obtained with HGSHS:A (Farthing et al 1983). Thus, while the behavioral scores on CURSS may, as Spanos et al (1983d) suggest, be contaminated with overt behavioral compliance, this is not the case with the Stanford scales. Response to the Stanford scales seems to tap the classic suggestion effect and the experience of involuntariness that is central to hypnosis as it has been understood historically. Further support for this conclusion comes from an earlier study comparing the Stanford scales with the Barber Suggestibility Scale on which the CURSS is based (Ruch et al 1974).

Hypnotic Susceptibility vs Hypnotic Depth

Although the hypnotizability scales have achieved a position of dominance in the measurement of hypnosis, scales of hypnotic depth continue to be employed as an index of the individual's involvement in the hypnotic experience. A large number of such scales have been produced, and these were reviewed by Tart (1979). Subjective ratings of hypnotic depth typically correlate highly with objective measures of hypnotic susceptibility. In a recent study by Perry & Laurence (1980), for example, the correlations were .85 and .88 in two

samples. When collected under relatively neutral circumstances, depth reports may serve as useful correctives for overt behavioral compliance, in the same manner as the subjective scores collected on the CURSS and other hypnotizability scales.

An emerging question concerns the determinants of these subjective depth reports. Radtke & Spanos (1981b) offered an attributional interpretation of these reports, based on self-perception theory. They argue that subjects' experiences during hypnosis are typically ambiguous, forcing them to rely on contextual factors to make inferences concerning their internal states. Radtke & Spanos (1981b) note that self-reports of depth are influenced by the definition of the situation as hypnosis (as opposed to relaxation or imagination, for example), preexperimental and manipulated expectations concerning hypnosis, the expressed opinion of the hypnotist, and the wording of the scales on which subjects make their ratings. The attributional account is also consistent with the correlation between depth ratings and hypnotizability scores, given the assumption that subjects base their depth ratings in part on self-observations of their response to specific suggestions administered during hypnotizability scales—including those suggestions that are tested before hypnosis is induced or after it is terminated (Perry & Laurence 1980).

Correlates of Hypnotizability

The finding of stable individual differences in hypnotizability over intervals as long as two years (Morgan et al 1974) led to research designed to uncover personality and cognitive characteristics that might be related to this capacity. Unfortunately, hypnotizability has not been found to correlate with the sorts of "traits" measured by the common multidimensional personality inventories such as the MMPI and CPI. The strongest finding in all of this research is that hypnotizable individuals have a high capacity for involvement in imaginative activities outside hypnosis (e.g. J. R. Hilgard 1974, Tellegen & Atkinson 1974; for a review, see J. R. Hilgard 1979). Tellegen & Atkinson (1974) also performed a factor analysis showing that absorption was not represented on the two major factors of the MMPI. These findings suggest that the earlier attempts failed to discover significant personality correlates of hypnosis principally because the instruments used simply did not sample the kinds of cognitive skills and dispositions that are relevant to the experience.

More recent work yielded an interesting set of results. For example, the induction of hypnosis typically emphasizes the focusing of attention, and a number of studies found differences in attentional deployment between hypnotizable and insusceptible subjects (Graham & Evans 1977, Karlin 1979). Furthermore, many hypnotic phenomena involve the production of vivid mental images or other fantasies, and significant correlations are consistently obtained between hypnotizability and questionnaire measures of vividness of

mental imagery (Sheehan 1979, 1982); more mixed results are obtained with various measures of creativity (Bowers & Bowers 1979). P. Bowers (1978, 1979, 1982) gave a new perspective on these kinds of findings by showing that the degree to which involvements, images, or creative ideas occur effortlessly correlates more highly with hypnotizability than the simple level of absorption, vividness, or creativity.

In a series of papers, Crawford (1981, 1982a,b, 1983) argues that the common denominator of all these correlations is synthetic or holistic thinking. In one set of studies, she reported a number of significant correlations between hypnotizability and performance on Gestalt closure tasks (Crawford 1981). Converging evidence was obtained in another series of studies where the induction of hypnosis, in subjects known to be hypnotizable, facilitated performance on a successive visual discrimination task requiring the use of mental imagery, but not on a simultaneous discrimination task that did not require imagery (Crawford & Allen 1983). Moreover, on the successive discrimination task the hypnotizable subjects reported a strong shift to holistic as opposed to analytic strategies following the induction of hypnosis.

Other evidence in this regard comes from studies of hemispheric specialization. Thus, Gur & Gur (1974) reported that hypnotizable subjects are more likely to show reflective eye movement shifts to the left than insusceptible subjects; Graham (1977) found that the induction of hypnosis led to increases in autokinetic movement to the left, compared to the normal waking state. Sackeim et al (1979) reported that hypnotizable individuals tend to sit on the right side of classrooms. All three results seem to reveal a preference for processing information in the right hemisphere that is related to hypnotizability and/or hypnosis. More directly, MacLeod-Morgan & Lack (1982) found an apparent shift in cortical activation (as measured by EEG alpha density) from the left to the right hemisphere when hypnotizable individuals enter hypnosis. Similarly, Graham & Pernicano (1979) found that hypnotized individuals showed more autokinetic shifts to the left than their un hypnotized counterparts.

Modification of Hypnotizability

A number of investigators have taken the "skill" metaphor to mean that the ability to enter hypnosis is learned, and thus subject to improvement by means of training procedures. This position was expressed most forcefully by Diamond (1974, 1977), who lists a number of ostensibly effective modification procedures. However, Perry (1977a) offers a number of compelling criticisms of this position. In fact, very few studies of the modification of hypnotic susceptibility have met rudimentary conceptual and methodological requirements. In the one study that approaches all the standards, Gur (1974) observed persistent, generalized gains that were very small in magnitude and strongly correlated with baseline levels of hypnotic susceptibility.

Self-Hypnosis

Highly hypnotizable subjects show a tendency to have hypnotic-like experiences in the normal waking state, and there is some evidence that they may not always require a formal induction in order to experience hypnotic suggestions. These facts raise the question of self-hypnosis, and its comparison to more conventional hypnotic procedures (Johnson 1981, Orne & McConkey 1981). One line of research compared the two forms of hypnosis along phenomenological lines. Fromm and her colleagues (Fromm et al 1981) selected subjects on the basis of high scores on HGSHS:A and SHSS:C, familiarized them further with SPSHS:I, and then introduced them to hypnosis by having them complete the Inventory of Self Hypnosis (ISH), an adaptation of HGSHS:A. Thereafter, the subjects were asked to practice self-hypnosis one hour per day for four weeks, and to complete a questionnaire after each session in which they described their subjective experiences and compared them to heterohypnosis. Practiced in this manner, self-hypnosis apparently emphasized relaxation and reverie instead of the usual sorts of hypnotic suggestions, effectively precluding behavioral comparisons. Experientially, heterohypnosis was reported to involve steadier, more focused attention and diminished distraction.

Other investigators have reported behavioral comparisons between self-hypnosis and heterohypnosis. Self- and heterohypnosis commonly yield roughly equivalent sample means and variances on such scales and the order of item difficulties is roughly the same, but it is not clear that the experiences are equivalent in other respects. For example, Shor & Easton (1973) obtained correlations of only .33-.39 between HGSHS:A and two forms of the ISH; and Johnson (1979; reported also in Johnson & Weight 1976) obtained a correlation of .47 between those same scales. A later study obtained correlations of .51 and .62 (Johnson et al 1983). In all these studies, the subjects administered both the induction procedure and the test suggestions to themselves. In an experiment involving self-administration of the induction but tape-recorded administration of the test suggestions, Ruch (1975) obtained correlations of .61 between self-hypnotic and heterohypnotic versions of HGSHS:A, and .62 between corresponding versions of SHSS:C. Although self- and heterohypnosis have something in common, it also appears that the two experiences draw on somewhat different underlying processes.

INVESTIGATIONS OF SPECIFIC PHENOMENA

From the late 1950s to 1965, research on hypnosis was dominated by individual differences in hypnotizability, their measurement, correlates, and modification; the primary topic of the next decade was analgesia. Experimental investigation in the period under review has expanded to include other classic hypnotic phenomena, as well as newly discovered ones.

Analgesia

Numerous case reports of major and minor surgery and other medical procedures performed with hypnosis as the sole analgesic agent leave no doubt as to the effectiveness of the technique under certain circumstances (for a review, see Hilgard & Hilgard 1983). Experimental investigations have contributed detailed analyses of the parameters of the effect and its underlying mechanisms. Just how effective and dependable hypnosis can be was illustrated in an extraordinarily spartan laboratory study in which subjects were exposed to both ischemic and cold-pressor pain (Stern et al 1977). Overall, hypnosis proved to be more effective than any other challenging agent, including (among others) morphine, diazepam, and acupuncture. The results with hypnosis were especially favorable for those who were highly hypnotizable, although hypnotizability did not mediate response to any of the other procedures. Highly hypnotizable subjects respond differently to analgesia suggestions than insusceptible subjects who are simulating hypnosis (Hilgard et al 1978b). Other research confirms the superiority of hypnosis to acupuncture, and the lack of correlation between response to acupuncture and hypnotizability (Knox & Shum 1977, Knox et al 1978, 1979, 1981). In a careful clinical study, J. Hilgard & LeBaron (1982, 1984) found that hypnotizable children undergoing chemotherapy for cancer showed significantly more pain reduction during bone-marrow aspirations than did their insusceptible counterparts.

Laboratory research on the psychophysics of pain reveals that the experience has two components: (a) sensory pain, which informs the person of the location and extent of insult, injury, or disease, and (b) suffering, which has to do with the meaning of the pain to the person. An experiment with highly hypnotizable subjects showed equal and dramatic reductions in both sensory pain and emotional suffering (Knox et al 1974). Similarly, the discovery of endorphins prompted the speculation that the effect of hypnotic suggestion is somehow mediated by the release of endogenous opiates. However, naloxone, a morphine antagonist, does not affect hypnotic analgesia (Goldstein & Hilgard 1975).

A great deal of research in the past decade addressed the role of individual differences in the perception of pain, coping strategies, and response to hypnotic suggestions for analgesia (Chaves & Barber 1974, Spanos et al 1974, 1975, 1979b, 1981a,c). These studies show that successful response to hypnotic suggestions is often accompanied by the deliberate use of cognitive strategies such as distraction or pleasant imagery. Similarly, a dimension of coping vs catastrophizing style appears to be related in part to individual differences in pain perception in both hypnosis and the normal waking state. Hypnotic analgesia is not wholly mediated by such strategies, but the fact that coping can be taught leaves open the possibility for successful cognitive control of pain even in subjects who are insusceptible to hypnosis.

Amnesia

In the hypnotic context, amnesia refers to the subject's failure, following an appropriate suggestion, to remember events that occurred during the hypnotic session. A series of papers describe amnesia as it occurs on the standardized scales of hypnotic susceptibility (Evans et al 1973, Nace et al 1974, Kihlstrom & Evans 1976, 1977, 1978, Cooper 1979, McConkey 1980). The most salient property of hypnotic amnesia is that the target memories can be recovered following administration of a prearranged signal. Reversibility marks amnesia as a phenomenon of retrieval, rather than of encoding or storage. Among investigators of hypnosis, there is agreement on the basic observations, but considerable disagreement as to how to account for them (Coe 1978, Kihlstrom 1977, 1978, 1983, Spanos & Radtke 1982). From a cognitive point of view, amnesia is held to be a genuine disorder of memory retrieval analogous to ordinary forgetting and certain clinical amnesias. From an interpersonal point of view, amnesia is held to be a phenomenon of strategic social behavior analogous to the keeping of secrets.

Evidence bearing on the cognitive point of view is provided by studies employing concepts, principles, and methods familiar in memory research. For example, it appears that standard suggestions for amnesia affect episodic memory, as represented by recall of a wordlist memorized during hypnosis, but not semantic memory, as represented by the use of the same wordlist items as responses on word association and similar tasks (Evans 1979, Kihlstrom 1980, Spanos et al 1982b). As another example, it appears that free recall is much more affected by amnesia suggestions than either recognition (Kihlstrom & Shor 1978, McConkey & Sheehan 1981, McConkey et al 1980, St. Jean & Coe 1981) or retroactive inhibition (Coe et al 1973, 1976).

During the period under review, a great deal of research attempted to understand the role of organizational processes in the retrieval deficits observed during amnesia. Among subjects who recall at least some of their experiences despite a suggestion for complete amnesia, for example, hypnotizable subjects tended not to organize their output according to the temporal sequence in which the events occurred (Evans & Kihlstrom 1973, Kihlstrom & Evans 1979). This disorganization did not appear to be a state-dependent effect of hypnosis alone, or a product of some cognitive style correlated with hypnotizability (Kihlstrom & Evans 1979; but see Schwartz 1978, 1980). Similar disorganization effects are observed in conceptual replications involving category clustering in more conventional verbal-learning procedures (Radtke-Bodorik et al 1979, Spanos & Bodorik 1977, Spanos et al 1980a). One study failed to show a decline in clustering during amnesia (Coe et al 1973), but this was probably due to poor initial acquisition (Radtke-Bodorik et al 1980). The clustering effect is not consistently found in un hypnotized subjects who are strongly motivated to forget the critical material (Spanos & Bodorik 1977, Radtke-Bodorik et al

1979, 1980, Spanos et al 1980b); nor does it occur in subjects who have been instructed to simulate hypnosis and amnesia (Spanos et al 1980b). Somewhat paradoxically, two investigations largely failed to replicate the original temporal disorganization effect on which the clustering replications were based (Radtke & Spanos 1981, St. Jean & Coe 1981), but the effect was reconfirmed in studies employing both hypnotizability scales (Geiselman et al 1983) and wordlists (Kihlstrom & Wilson 1984).

Evidence bearing on the social-psychological point of view comes from a variety of experiments. For example, simulators typically present different patterns of performance on tests of source amnesia (Evans 1979), disorganized recall (Spanos et al 1980b), and recognition (McConkey et al 1980) compared to hypnotized subjects, which indicates that these effects are not due to the demand characteristics of the hypnotic situation. Furthermore, subjects' preexisting expectations concerning their hypnotic behavior are not particularly powerful determinants of their actual response to amnesia suggestions (Young & Cooper 1972, Ashford & Hammer 1978, Shor et al 1984). Although the deliberate suppression of memory reports is rather rare, hypnotic subjects often report engaging in cognitive strategies that might impair the retrieval of the critical material. However, the relationship between strategic helping of this sort and actual amnesia is weak (Kihlstrom 1977, Spanos & Bodorik 1977, Spanos et al 1980a,b Kihlstrom et al 1983,)

Additional relevant evidence is provided by experiments that vary the instructional demands placed on subjects during the time the amnesia suggestion is tested. In one experiment, subjects of moderate and high hypnotizability who met a criterion for initial amnesia did not respond differentially to the various instructions for effort, honesty, organization, or repeated recall. All conditions showed an increase in memory from the first to the second test of amnesia, however, an effect that may reflect the dissipation of the amnesic process over time (Kihlstrom et al 1983). Subsequent research by Coe and his colleagues found that insertion of a putative lie detector test or strong honesty demands could affect the memory reports of hypnotizable, amnesic subjects (Howard & Coe 1980, Schuyler & Coe 1981). However, these effects were found in those subjects who reported that their amnesic behavior was under voluntary control. In the absence of strong honesty demands, the amount of spontaneous recovery observed during amnesia is unrelated to reports of either subjective conviction or strategic helping (Kihlstrom et al 1983).

In contrast to the selective disruption in episodic memory observed in amnesia, hypnotic suggestions can also disrupt the functioning of the semantic memory system, as represented by a disruption in word-association performance as well, resulting in a kind of *agnosia* instead of amnesia (Spanos et al 1982b). Hypnotic agnosia has often been observed in the standardized scales of hypnotic susceptibility as an inadvertent consequence of suggestions for

nominal aphasia (E. R. Hilgard 1965, 1977a), but it has not yet been explored systematically.

Hypnotic suggestions can also alter memory performance in the absence of specific suggestions for amnesia. For example, Blum and his associates found that distinctive mental contexts suggested to subjects during an encoding phase served as effective memory cues during a retrieval phase, much in the manner of state-dependent retrieval (Blum 1967, Blum et al 1968b, 1971). More recently, Bower and his colleagues (Bower 1981, Bower et al 1978, 1981) found that hypnotically suggested mood states could, under some conditions, induce similar state-dependent effects on retrieval.

Hypermnesia

Many experienced clinicians contend that hypnosis can improve a person's memory for events experienced in the past, outside hypnosis. This effect has been employed to refresh the memories of witnesses, victims, and occasionally even suspects and defendants. Laboratory studies of hypnotic hypermnesia have a history extending back to the beginnings of the modern period of hypnosis research (Diamond 1980, Kihlstrom 1982, Orne 1979, Orne et al 1984, Smith 1983). The current burst of research on hypnotic hypermnesia began with a report confirming earlier observations that hypnotic suggestions facilitated the recall of linguistically meaningful material (in this case, prose) but not nonsense syllables (Dhanens & Lundy 1975). However, some earlier research indicated that any increases in valid memory obtained through hypnosis may be accompanied by corresponding increases in inaccurate recollection or confabulation. Dywan & Bowers (1983) found that hypnotic testing led to substantial increases in recall for pictorial material, even after the subjects reached a plateau in waking recall, and that this increase was correlated with hypnotizability. However, hypnosis also led to an increase in false recollection that was also correlated with hypnotizability, and the ratio of false to accurate memory was roughly 2:1.

The likelihood of memory distortion may be increased if leading questions are delivered while the subject is hypnotized (as compared to biased interrogation in the normal waking state) (Putnam 1979, Zelig & Beidelman 1981, Sanders & Simmons 1983; Sheehan & Tilden 1983), and confabulated memories produced through hypnotic means can be unshakable when subsequently cross-examined and contradicted in the normal waking state (Laurence & Perry 1983). In contrast to the situation in normal waking memory, there is not a positive relationship between accuracy and confidence in hypnotically elicited memory (Dywan & Bowers 1983, Sanders & Simmons 1983, Sheehan & Tilden 1983). Given these findings, it seems difficult to maintain the position that hypnosis yields meaningful increases in memory.

These laboratory reports are, of course, discrepant with the claims from the

field. For example, one report (Reiser & Nielson 1980) covering approximately 400 consecutive cases interviewed at the Los Angeles Police Department (LAPD) states that new information was elicited in 80% of the hypnotic interviews, and that for the 50% of these where independent corroboration was possible, the new information was at least "somewhat accurate" 91% of the time. However, the criterion for accuracy was not specified, so the results are difficult to evaluate objectively. Moreover, terms such as "somewhat accurate" suggest that the product of hypnosis was typically a mix of accurate and inaccurate memory reports, in a manner reminiscent of the Dywan-Bowers study. Recently, a remarkable and more definitive field study was reported, based on a consecutive sample of 44 cases seen at the LAPD just after the Reiser-Nielson study was concluded (Sloane 1981). Actual witnesses and victims were interviewed in the normal waking state, and then randomly assigned to one of four treatment conditions for a second interview. Half of these were conducted in hypnosis, and half in the normal waking state; within each of these conditions, half employed a conventional interrogation format, while the remainder employed special instructions for visual imagery (the "television technique"; Reiser & Nielson 1980). All interviews were conducted by police investigators specially trained in forensic hypnosis. The information obtained in both interviews was objectively recorded, and the police were given 60 days to verify each item. Contrary to the earlier report, and the enthusiastic claims of individual case studies, there were no effects of hypnosis on memory—overall productivity, accurate recollection, or error—either as a main effect or in interaction with interview technique.

Age Regression

In age regression a subject appears to relive an experience that occurred at an earlier point in his or her life; in the classic case of an adult regressed to childhood, the individual typically takes on a childlike demeanor. Upon superficial examination, the phenomenon appears to involve a constellation of ablation (the functional loss, similar to amnesia, of knowledge acquired after the age targeted by the suggestion), reinstatement (the return to developmentally previous modes of psychological functioning), and revivification (a recovery, similar to hypermnesia, of previously inaccessible memories). Past research has addressed all three facets of the phenomenon (Kihlstrom 1982, Orne et al 1984).

Little formal research has been done on revivification: while age regression is occasionally used in forensic hypnosis, the laboratory studies of hypnotic hypermnesia have all involved direct suggestions for enhanced memory instead of age regression. Experiments bearing on ablation often reveal apparent contradictions in behavior, as when a subject claiming to be young continues to draw upon knowledge and other resources available to him or her only as an

adult (Perry & Walsh 1978). Historically, most effort has been devoted to reinstatement. Wallace and his colleagues (Wallace 1978, Walker et al 1976) reported that age-regressed adults showed levels of eidetic imagery tasks characteristic of children, but Spanos et al (1979a) were not able to replicate this finding. In another study (Nash et al 1979), age-regressed subjects asked to imagine themselves in a moderately frightening situation behaved in a manner appropriate to the suggested age, whereas simulating subjects did not. To date, this is the only study that provides compelling evidence of reinstatement during age regression; all the others either could not be replicated, or the effects were manifested by simulating as well as hypnotic subjects.

Perceptual Effects

A variety of perceptual effects have been reported in hypnosis, especially in the context of suggestions for positive and negative hallucinations. In the former case, the subject claims to perceive an object that is not objectively present; in the latter, no perception is claimed for a stimulus that is present in the perceptual field. There are also occasional claims for increases in sensory acuity in hypnosis. The typical experiment attempts to assess the "reality" of the suggested effect by determining whether perceptual functions change in a manner appropriate to the claim. Thus, it was found that hypnotic suggestions led to improvements in visual acuity in myopic subjects that could not be accounted for by peripheral changes (Graham & Leibowitz 1972, E. P. Sheehan et al 1982), and that suggestions for color-blindness reduce (but do not eliminate) interference on the Stroop color-word test (Harvey & Sippelle 1978). On the other hand, subjects administered suggestions for unilateral deafness continue to show intrusions from the affected ear in a dichotic listening task (Spanos et al 1982a), and those who receive suggestions for color-blindness do not mimic the performance of the congenitally color-blind on the Farnsworth-Munsell 100-hues test (Cunningham & Blum 1982).

The most popular modality in which the perceptual effects of hypnosis are studied is vision. For example, hypnotizability was reported to be positively correlated with susceptibility to the autokinetic effect (Wallace et al 1974), the Ponzo illusion (Miller 1975), and reversible figures such as the Necker cube and the Schroeder staircase (Wallace et al 1976). Other studies examined the effects of specific visual alterations suggested in hypnosis. For example, Leibowitz and his colleagues examined the effects of hypnotic ablation of background on the perception of the Ponzo illusion (Miller & Leibowitz 1976), and suggestions for tubular vision on size constancy (Leibowitz et al 1980, 1981, Miller et al 1973). Sheehan & Dolby (1975, Dolby & Sheehan 1977) found that the hypnotized subjects countered the effect of recency on the perception of the wife/mother-in-law ambiguous figure, behaving instead in accordance with the expectations of the hypnotist.

A wealth of studies has been generated on visual effects of various sorts by Blum (1979) and his associates. In a case study, hypnotic suggestions for tubular vision led to restrictions in the visual field that remained constant over varying viewing distances, much in the manner of hysterical amblyopia (Blum 1975). Other studies have explored the effects of negative hallucinations for selected objects of the visual field, as opposed to simple suggestions for hypnotic blindness or reduced overall visual acuity (Blum et al 1978). For example, suggested blurring of form or color impaired the identification of these properties in tachistoscopically presented letters (Blum & Porter 1973). Other experiments have examined the effects of ablating the background on the magnitude of the Titchener-Ebbinghaus circles illusion (Blum et al 1981). Jansen, Blum & Loomis (1982) found that suggested ablation of slanted lines surrounding a slanted target line did not reliably alter the perception of slant in the target, but that *positive* hallucinations for slanted outer lines did so. Finally, MacCracken et al (1980) employed a combination of positive and negative hallucinations, altering the perceived distance between the subject and a point of light. Such suggestions altered estimated distance in the appropriate direction, but not the apparent motion of the target when the subject's head was moved from side to side.

In addition to these findings, Blum and his associates have used hypnosis as a technique for controlling cognitive arousal, as documented by EEG measures (Blum & Nash 1982). Hypnotically induced arousal can affect visual discrimination (Blum et al 1967b), reaction time in tachistoscopic identification (Blum & Graef 1971), selective attention (Blum & Porter 1973), and the "reverberation" of stimulus input in the cognitive system (Blum 1968, Blum et al 1967a, 1968a,c, Blum & Porter 1972). Yet other studies have explored the effects of specific hypnotically induced emotional states, such as anxiety and arousal, on perceptual identification (Blum & Barbour 1979) and cognitive reverberation (Blum & Green 1978, Blum & Wohl 1971).

Psychophysical studies employing the method of magnitude estimation show clear changes in auditory sensitivity following suggestions for partial hypnotic deafness (Crawford et al 1979), and suggestions for deafness reduce auditory interference on visual choice-reaction time (Blum & Porter 1974). One study reported changes in sensory acuity rather than response bias using a signal-detection paradigm (Graham & Schwartz 1973), but a more extensive study failed to confirm these findings (Jones & Spanos 1982). Suggestions for increased acuity had no effect on sensitivity, but did increase the tendency to report the signal in the presence of noise. On the other hand, suggestions for diminished acuity had no effect on either sensitivity or response bias. Assuming the subjects reported the changes that were suggested to them, this finding implies that signal detection may not be the procedure of choice for tapping the mechanism underlying hypnotic deafness.

While hypnotic analgesia represents the diminished perception of pain, hypnotic anesthesia represents the loss of touch and kinesthesia in the body part targeted by the suggestion. In an interesting series of studies, Wallace and his colleagues tested this effect with a number of different procedures derived from classical work in perception. They found, for example, that anesthesia disrupted perceptual adaptation to errors in visual location induced by distorting prisms (e.g. Wallace & Garrett 1973, 1975, Garrett & Wallace 1975). Other studies revealed that anesthesia disrupted the subjects' ability to touch their noses with their eyes closed (Wallace & Hoyenga 1980), and to perform a variety of other coordinated motor tasks requiring central processing of proprioceptive feedback (Wallace & Hoyenga 1981). All the results of these experiments appear to fit together nicely, but Spanos et al (1981b) reported a failure to replicate the adaptation effect. Although Wallace & Fisher (1982) suggested that this was due to procedural differences, Spanos et al (1983a) reported another failure to replicate even with an appropriately modified procedure.

Time perception has been studied in a variety of ways. Krauss et al (1974) reported that suggestions for distorted subjective time sense improved memory for a list of words studied during that time interval, which suggested that effective study time had been increased. These findings were not replicated by Johnson (1976) or St. Jean (1980), although subjects in the latter study reported high subjective conviction that the passage of time had changed. Bowers & Breneman (1979) reported that subjects generally underestimated the duration of a standardized test of hypnotic susceptibility, a finding confirmed by others (Bowers 1979, St. Jean et al 1982). In these studies, the effect was not clearly related either to hypnotic susceptibility or to the occurrence of posthypnotic amnesia. St. Jean & MacLeod (1983), however, found significant underestimations of the duration of an absorbing prose passage read during hypnosis, but only among hypnotizable subjects.

A phenomenon related to hypnosis and suggestion is the Chevreul pendulum illusion, in which a weight suspended from the hand moves in the direction of imagined motion, without any perception of motor control. In an elegant series of studies, Easton & Shor (1975, 1976, 1977) showed that the effect reflects skilled cognitive activity, and is mediated by visual capture.

Trance Logic

Many of the effects of hypnosis on perception and memory are characterized by a peculiar pattern of inconsistency and anomaly in the subject's response. In the case of the double hallucination, for example, the subject will see, and interact with, a confederate sitting in an empty chair. In a classic paper, Orne (1959) found that many hypnotic subjects reported that they could see through the (hallucinated) confederate to the back of the chair. Moreover, when their

attention was drawn to the real confederate, sitting quietly in a chair outside their field of vision, the subjects were typically able to maintain both the hallucination and the veridical perception, and reported confusion as to which was which. Simulating subjects typically failed to show these behaviors. Orne dubbed this response "trance logic," which he described as a form of thought that permits two mutually contradictory states of affairs to be represented simultaneously in awareness.

Orne's original report was impressionistic in nature, and later investigators tried to study the effect in a more quantitative fashion. An early study failed to confirm Orne's observations (Johnson et al 1972), but a critique and reanalysis by E. R. Hilgard (1972) showed that the findings were actually indeterminate (for a reply, see Johnson 1972). Later studies often found trends toward real-simulator differences on single indices of trance logic (usually the double hallucination), but these do not always reach statistical significance (McDonald & Smith 1975, Obstoj & Sheehan 1977, Perry & Walsh 1978, Peters 1973, Sheehan 1977, Sheehan et al 1976). Although the appearance of trance logic in hypnosis is not always apparent at the level of individual test items, it is clear when differences are assessed in terms of aggregate scores on a battery of tests relevant to trance logic. Peters (1973) showed a significant difference between real and simulating subjects with a battery of six such tests, although few of these discriminated between the groups at the level of the individual item. Even so, there is wide variability in aggregate trance logic scores among highly hypnotizable subjects, and trance logic is shown by hypnotizable individuals under circumstances other than hypnosis (Obstoj & Sheehan 1977). The nature of trance logic remains to be clarified by a definitive experiment.

The Hidden Observer

Along with trance logic, the most controversial hypnotic phenomenon is the "hidden observer." For example, after hypnotic analgesia has been successfully established, it may be suggested to the subject that there is a "hidden part" of the person that may have registered, and can report, the true level of pain stimulation. Under these circumstances, some (but not all) hypnotic subjects give pain reports that are comparable to those collected under normal waking conditions. The hidden observer is a metaphor for this continuing cognitive (but subconscious) representation of pain, and the method by which it may be accessed. First demonstrated in the context of hypnotic analgesia (Hilgard 1973a, Hilgard et al 1975, 1978a, Knox et al 1974), the effect has also been observed in hypnotic deafness (Crawford et al 1979).

Although the hidden observer effect has been replicated in other laboratories (Spanos & Hewitt 1980, Laurence & Perry 1981, Nogrady et al 1983, Spanos et al 1983b), its interpretation is controversial. Hilgard (1973a, 1977a,b, 1979) prefers a cognitive interpretation, in terms of an amnesia-like dissociative

process that prevents percepts and memories from being accessible to conscious awareness and control. From a social-psychological point of view, Coe & Sarbin (1977, Sarbin & Coe 1979) suggest that the hidden observer instructions give the subjects permission to report pain that they actually have felt all along. Similarly, Spanos and his colleagues (Spanos & Hewitt 1980, Spanos et al 1983b) reported studies in which the direction of the "hidden" pain reports can be influenced by the wording of instructions. These experiments, however, have been criticized on both conceptual and methodological grounds (Laurence et al 1983; but see Spanos 1983).

There are several reasons for thinking that the hidden observer effect is not entirely a product of social influence. For example, the effect is typically obtained in only about 50% of hypnotic subjects tested, despite the fact that all have been preselected on the basis of their very high level of response to other hypnotic suggestions. Moreover, the occurrence of the effect is not strongly correlated with subjects' expectations following administration of the hidden observer instructions (Hilgard et al 1978a). Perhaps most telling in this respect is the comparison of hypnotized and simulating subjects. Under the usual instructional conditions, which contain strong demands for the hidden observer, Hilgard et al (1978a) obtained such reports in 50% of reals and 75% of simulators; however, a later study employing a weaker form of the suggestion obtained an incidence of 42% in reals and 0% in simulators (Nogrody et al 1983). In other words, the hidden observer reports of simulators, but not of reals, are affected by the demand characteristics of the testing situation.

Some added indications that the hidden observer phenomenon is lawful have been provided by recent successes in predicting which of a selected group of highly hypnotizable subjects will show the effect. The two studies yielding the highest incidence of hidden observers (both 87.5%) employed selection criteria of amnesia and/or automatic writing or talking in addition to high hypnotizability (Knox et al 1974, Spanos & Hewitt 1980; see also Spanos 1983); the remaining published studies employed hypnotizability as the sole selection criterion, yielding an average incidence of 45%. In less stringently selected samples, however, the occurrence of the hidden observer can be predicted almost perfectly by the occurrence of duality response to age regression, in which subjects experience themselves simultaneously as child participants and adult observers (Laurence & Perry 1981, Nogrody et al 1983). Apparently, subjects capable of manifesting the hidden observer have a general capacity for simultaneously representing two contradictory states of affairs in conscious awareness.

CLINICAL APPLICATIONS

The earliest therapeutic use of hypnosis involved direct suggestions for symptom relief or attitude change, and this technique continues to find favor among

some therapists of a cognitive-behavioral persuasion. Despite Freud's early rejection of hypnosis on the ground that not all patients were hypnotizable, hypnosis continues to hold a place as an adjunct to psychoanalysis and other forms of psychodynamic psychotherapy. In the period under review, a number of texts appeared that deal with various uses of hypnosis in medical, dental, and psychotherapeutic applications (Crasilneck & Hall 1975, Frankel 1976, Spiegel & Spiegel 1978).

The Relevance of Hypnotizability

The apparent stability of hypnotic susceptibility in the face of efforts to modify it has at least two implications for the clinical use of hypnosis: (a) Hypnotizability should be assessed in patients who are candidates for hypnotherapy; and (b) Claims that hypnosis is an active ingredient in therapy should be supported by a significant correlation between hypnotizability and outcome. If a person proves to be insusceptible, it would seem better for the clinician to try a nonhypnotic approach to the problem. Clinicians may try to capitalize on what might be called the placebo component of hypnosis, but this practice should be conceptually distinguished from the claim that something occurs beyond the social influence attendant on the hypnotic ritual.

To date there have been very few studies of the hypnotizability of patients in various diagnostic categories, and these yielded conflicting results. Chronic schizophrenics appear to be relatively insusceptible to hypnosis (Lavoie & Sabourin 1980). Acute schizophrenics, depressives, alcoholics, and anorectics seem to show the normal distribution of hypnotizability scores (Pettinati 1982). Phobic patients appear to be relatively highly hypnotizable (Frankel & Orne 1976, John et al 1983), although a study employing the HIP, as opposed to scales of the Stanford type, failed to confirm this finding (Frischholz et al 1982).

The relationship between hypnotizability and treatment outcome is equally confusing at present, not least because of the reluctance of most clinicians to measure hypnotizability in their patients using standard procedures. Fears that poor performance on the scales will reduce the motivation of patients for therapeutic regimes involving hypnosis appear to be unfounded, however (Frankel 1978–1979, 1982, Frankel et al 1979). A relationship with hypnotizability has been definitively established in studies of clinical pain employing both standardized measurements and clinical assessment procedures that possess at least face validity (for a review, see Hilgard & Hilgard 1983). For other symptoms and syndromes, the relationships are complex and poorly understood. Positive correlations are reported between hypnotizability and outcome of hypnotherapy for asthma, migraine headache, headache and vertigo secondary to skull injury, a variety of psychosomatic conditions, and myopia (for reviews, see Bowers & Kelly 1979, Perry et al 1979). However, no correlation

is obtained between hypnotizability and outcome for smoking (Perry & Mullen 1975, Perry et al 1979, Holroyd 1980). In those syndromes yielding positive correlations, the hypnotic treatment typically makes use of characteristically hypnotic suggestions for dissociative alterations in experience, thought, and action. By contrast, those treatments yielding null correlations seem to capitalize on the placebo effects of the hypnotic ritual.

Perhaps most intriguing are reports of correlations between hypnotizability and response to nonhypnotic treatment modalities (Benson et al 1975, Nace et al 1982). Such a relationship would suggest that either the syndrome, or the treatment, or both have hypnotic components.

The Utilization of Hypnotic Phenomena

Frankel (1976) noted two principal ways in which hypnosis has traditionally been used in clinical practice: (a) symptom relief by means of direct suggestion; and (b) adjunctive use to aid the exploration and uncovering of clinically relevant material. The paradigm example of the former strategy is hypnotic analgesia, and its success should strongly urge practitioners to adopt analogous techniques in other domains. For example, negative hallucinations for craving and other interoceptive events might be an effective hypnotic treatment for smoking and other addictions. The paradigm example of the latter strategy is hypnotic hypermnesia, and its ambiguous status should encourage caution in assuming the truth value of hypnotic productions. Still, the relationships among hypnosis, hypnotizability, holistic thinking, and creative problem-solving, etc., as described in the work of P. Bowers (Bowers & Bowers 1979), J. R. Hilgard (1979), and Crawford (1982b), suggest that hypnosis may be of service where fantasy and role-taking play an important part in the therapeutic process.

There is some tendency among practitioners to view hypnosis as a kind of placebo therapy, yielding no specific therapeutic effect aside from the "magic" associated with it in popular culture, and the shared belief of clinician and patient that hypnosis will work. Accordingly, there have been relatively few attempts to employ the potential of hypnosis for controlling experience, thought, and action—including cognition and emotion—in the service of treatment (Kihlstrom 1979). The success of hypnotherapy and the correlation between treatment outcome and hypnotizability may both improve where the hypnotic treatment capitalizes on the absorptive and dissociative processes that are central to hypnosis.

Along these lines, Frankel (1976) suggested that, for patients who happen to be hypnotizable, the difficulties that bring them to the clinic may have their origins in naturally occurring states similar to hypnosis. Thus, when the spontaneous, perhaps stress-induced, state terminates, a pathological syndrome—irrational fear, obsessive thought, compulsive behavior, automatism, amnesia—may persist much in the manner of a posthypnotic suggestion.

Frankel found that in such cases the patient's propensity for entering hypnotic-like states may be parlayed from a liability into an asset through a kind of attribution therapy. By producing and cancelling artificial "symptoms" at will through hypnosis, the patients may come to understand that their pathological symptoms are controllable, and that they can cope with future occasions when similar symptoms arise or threaten to do so. Although offered from an eclectic psychodynamic viewpoint, Frankel's ideas mesh quite well with current concepts in cognitive-behavioral therapy such as self-efficacy, and they open up the possibility for a third, radically different approach to hypnotherapy.

THEORETICAL DEVELOPMENTS

Throughout its history, research on hypnosis has been characterized by general consensus on the basic observations, but considerable controversy over their interpretation. Edmonston (1981) revived Braid's argument that hypnosis is fundamentally similar to relaxation, but this seems to apply only to "neutral" hypnosis, in the absence of suggestions for alterations in experience, thought, and action. Banyai & Hilgard (1976) found equivalent responsiveness to test suggestions in subjects who received an induction procedure in which relaxation instructions were omitted and those who pedalled on a bicycle ergometer throughout the testing procedure. Response to suggestions is central to hypnosis, and most theoretical controversy revolves around them. Sheehan & Perry (1977) provided a critical summary of the theoretical paradigms that have dominated hypnosis research in the period since its revival: those of Barber, Hilgard, London & Fuhrer, Orne, Sarbin, and Sutcliffe.

Shor (1979a) placed current theoretical conflicts in historical perspective, identifying the fundamental problem in hypnosis research as the conflict between insufficient skepticism on the one hand, and a failure on the other hand to recognize that hypnotic phenomena offer something new to be learned about the mind. Indeed, in hypnosis it has often been popular to classify individual theories into the "credulous" and the "skeptical." As described by Sutcliffe, the credulous point of view asserts that the psychological processes invoked by hypnotic suggestion are identical with those that would be invoked by actual stimulus conditions; the skeptical account, by contrast, holds that the subject acts in accordance with the suggestions while maintaining conscious awareness of the actual state of affairs. While some approaches clearly fall into each category, many others—including Sutcliffe's own (Sheehan & Perry 1977)—do not. Moreover, some investigators commonly identified by skeptics as credulous have themselves been the most skeptical of certain claims made for hypnosis, as in the case of hypermnesia.

The Controversy over State

Much theoretical heat has been generated over the question of whether hypnosis is a “special” or “altered” state of consciousness. Hilgard (1969, 1978b) identified two versions of the state concept. The strong view asserts that certain phenomena are unique to hypnosis. From this point of view, all hypnotic phenomena, or all hypnotized individuals, share some set of psychological attributes in common. The consistent failure to find any phenomenon of hypnosis (amnesia, trance logic, the hidden observer, etc) that occurs consistently in all subjects who have been hypnotized, and which cannot be observed in any state other than hypnosis, is often interpreted as casting doubt on the status of hypnosis as a special state of consciousness (Sarbin & Coe 1972, Barber et al 1974). This is a problem, of course, only if hypnosis is considered to be a proper set defined by singly necessary and jointly sufficient attributes. However, recent work in philosophy and psychology suggests that natural categories are best regarded as fuzzy sets whose instances are related by family resemblance, and that they are represented by a prototype whose features are only probabilistically associated with category membership. From this point of view, trance logic or any other phenomenon may be considered to be more or less characteristic of hypnosis, with some phenomena possessing more cue validity than others but all contributing in some degree to the diagnosis of the state (Orne 1977, Sheehan 1977, Kihlstrom 1984).

Hilgard also identified a weak version of the state view, in which hypnosis serves only as a label representing some domain of characteristic phenomena, including suggested behaviors and self-reports of experience. But, as he notes, this version has difficulty dealing with the fact that all the characteristic phenomena of hypnosis can also be observed posthypnotically, when hypnosis has been formally terminated and subjects no longer indicate that they “feel” hypnotized. If the term “state” is construed only as a kind of shorthand, with no causal properties or defining features associated with it, the question of whether hypnosis is a special state of consciousness disappears as a substantive issue, and investigators can proceed to analyze hypnotic phenomena, and individual differences in hypnotic susceptibility, in terms of their underlying mechanisms.

The Neodissociation Theory of Divided Consciousness

E. R. Hilgard (1973a, 1977a, 1979) offered a dissociative interpretation of hypnosis as an alternative to “state” conceptualizations. Dissociation involves, first, a division of consciousness into multiple, simultaneous streams of mental activity; dissociation proper occurs when one or more of these streams influences experience, thought, and action outside phenomenal awareness and voluntary control. Many of the classic hypnotic phenomena, including motor automatisms, analgesia, blindness, deafness, and amnesia, seem to invite a concept of dissociation. Loss of awareness is exemplified by analgesia and

amnesia; that the critical percepts and memories have been registered is indicated by the hidden observer technique in the former case, and reversibility in the latter. Loss of voluntary control is exemplified by motor automatisms such as automatic writing or posthypnotic suggestion (these are often associated with a lack of awareness of the dissociated activity). The concept of dissociation dates back at least to the work of James, Janet, and Prince (E. R. Hilgard 1977a); the new theory is called "neodissociation" to set it apart from the excesses of the older versions. Dissociation, with its emphasis on divided consciousness and amnesic barriers between streams of perceptual-cognitive activity, provides a basis for linking hypnosis to existing theories of attention and memory (Hilgard 1977a, Kihlstrom 1984).

The concept of dissociation has often been criticized on the grounds that ostensibly dissociated percepts, memories, and actions continue to interact with other ongoing cognitive and behavioral events, which results in the anomalies of hypnotic behavior described earlier. In fact, the available evidence suggests that *more* interference occurs when one of the tasks is subconscious. Stevenson (1976) compared conscious color naming with two conscious or subconscious written arithmetic tasks differing in difficulty (counting and serial addition). Simultaneous task performance created mutual interference, the more so when one task was subconscious. Similar results were obtained by Knox et al (1975) comparing color naming with rhythmic key pressing. In the one apparent exception, Bowers & Breneman (1981) found less interference between shadowing and subconscious nose-touching in response to a signal presented over an unattended channel, although some degree of interference still occurred.

Hilgard (1973a, 1977a,b) argued that the criterion of noninterference is a later importation into the concept of dissociation, and that the only essential properties of the phenomenon are lack of awareness and the experience of involuntariness. The results of the interference experiments, in fact, may be ordered along a continuum representing the attentional demands of the simultaneous tasks, with serial addition arguably the hardest and nose-touching clearly the easiest. Given the assumption that attention is a resource that can be divided according to prevailing task demands (which is what the concept of divided consciousness is all about), the results are approximately as they should be (Kihlstrom 1984). The increase in interference that occurs when one task is performed subconsciously may reflect the need to maintain two streams of thought pertaining to the subconscious task, increasing the draw on the common attentional resource.

Hypnosis as Strategic Social Behavior

While neodissociation theory focuses on the cognitive changes that occur following hypnotic suggestion, another group of theories focuses on the social

context in which hypnosis takes place. One approach was developed within sociological role theory by Sarbin & Coe (1972, 1979, Coe & Sarbin 1977, Coe 1978). The theory begins with the proposition that hypnotized individuals do not behave as they do because they have undergone a change in internal state, but because they are striving to enact the role of hypnotized subject as it is defined by the hypnotist and wider sociocultural institutions. In an earlier analysis, they described a number of variables that are important to the success of this role enactment, including the location of individual participants in their proper roles, perceived congruence between self and role, accuracy of role expectations and sensitivity to role demands, possession of role-relevant skills, and the influence of the audience. To the extent that these factors are favorable, the subject can give a performance convincing to both others and oneself. Later analyses made use of concepts of secret-keeping and deception to account for such phenomena as analgesia, amnesia, and the hidden observer.

Another approach within social-psychological theory has been offered as an extension of Barber's task-motivation account of hypnosis (Barber et al 1974, Barber 1979, Spanos 1982a,b). Continuing a line of debunking initiated by Barber, some of the research associated with this position demonstrates that certain claims sometimes made for hypnosis, such as the assertion that suggested deafness or amnesia are identical to corresponding symptoms of organic illness, are incorrect. Another line of research shows that the behavioral effects of hypnosis can often be duplicated by nonhypnotic interventions, which leads to the conclusion, described above, that the concept of hypnotic state is superfluous and unnecessary. While Barber's earlier theory was presented as a behaviorist input-output analysis that eschewed reference to internal states, the more recent version emphasizes the cognitive strategies deployed by subjects in response to explicit and implicit situational demands, in order to produce analgesia, amnesia, and other suggested effects.

The social-psychological approach to hypnosis derives its intuitive plausibility from the fact that the major phenomena occur as a result of suggestion, thus inviting analysis in terms of social influence. Evidence in support of the approach comes from demonstrations that response to hypnotic suggestions is affected by the context in which they are given, which indicates that the underlying processes are not wholly autonomous and involuntary (as might be the case with organically based dysfunctions), and by self-reports of strategies designed to facilitate response to hypnotic suggestions. Just as the cognitive theories of hypnosis must take into account these facts, so must the interpersonal theories take into account the fact that some aspects of hypnosis are not implied by the demand characteristics contained in the hypnotic situation, and that some subjects do not respond to contextual changes. In the social-influence theories, such instances are attributed to degrees of role-involvement in which self and role are merged, or contextual factors that encourage subjects to

deceive themselves about the origins and nature of their behaviors. A major disadvantage of allowing these considerations to enter the theory, however, is that they can account for any evidence that would contradict straightforward versions of the theory; this renders them unidentifiable with respect to cognitive theories and thus untestable.

Cognition, Social Influence, and a Possible Rapprochement

Of course, it is not necessary to choose between cognitive and interpersonal theories of hypnosis in an either-or fashion. Many earlier theorists identified with the "state" position, especially Hilgard, Orne, and Shor, explicitly acknowledged the role of interpersonal and sociocultural factors in shaping hypnotic behavior and experience. And among the newer generation of theorists, Sheehan has discussed the role of imagery on the cognitive side of hypnosis and at the same time has underscored the importance of the transference-like interpersonal relationship between the subject and the hypnotist (Sheehan 1979, 1980, 1982, Sheehan & Dolby 1979). More recently, Sheehan & McConkey (1982) emphasized both cognitive and social factors that shape the subjective experiences central to the domain of hypnosis.

Hypnotic phenomena such as paralyses, anesthetics, and amnesias can be genuine even though they do not parallel the symptoms of insult, injury, or disease to the nervous system, and disciplined inquiry can attempt to determine the psychological processes involved in them. From this perspective, a comprehensive analysis of hypnotic phenomena must take into account both the mechanisms underlying cognitive changes and the sociocultural context in which these cognitive changes take place. What might be required is a kind of psychological titration, determining what proportion of variance in response to some suggestion is accounted for by involuntary cognitive changes, and what proportion is due to implicit and explicit social demands.

A somewhat different approach appears implicit in recent trends in role theory, as represented by Coe (1978, Howard & Coe 1980, Schuyler & Coe 1981). Coe distinguishes between two types of responses to hypnotic suggestions: "doings" and "happenings." In the former, the person is an active participant *who makes things happen*; in the latter, the person is a passive participant *to whom things happen*. Roughly half of posthypnotically amnesic subjects modify their memory reports in response to changing contextual demands, which suggests that their amnesia is a "doing"; the remainder do not, which suggests that their amnesia is a "happening." While Coe, like Spanos, prefers to account for the experience of involuntariness in terms of self-deception and attributional processes, he also offers the hypothesis that the cognitive and interpersonal approaches may be equally valid but applicable to

different subgroups of hypnotized subjects. For example, the behavior of hypnotic “virtuosos,” who make extreme scores on the scales of hypnotic susceptibility, may best be analyzed in terms of underlying dissociative changes in the cognitive system. For the remainder (arguably the greater portion of the population at large), it may be more profitable to focus on the cognitive strategies that they deploy to construct responses to hypnotic suggestions, and the situational factors that lead them to do so.

At the beginning of the period under review, it was suggested that a rapprochement between the cognitive and interpersonal views of hypnosis already existed (Spanos & Barber 1974). However, Hilgard (1973b) had already cautioned that the promised convergence of views was premature, and obscured problems as well as solved them. A decade later, rapprochement appears as distant as ever. Some debunking serves a useful purpose, as in the case of hypermnnesia and forensic hypnosis, but scientific progress depends on positive as well as negative findings. It is clear that boundaries must be placed around both the cognitive and interpersonal views of hypnosis, and that the proper investigative stance is not one of “fact or fiction” or “either-or,” but rather one of open inquiry or “both-and” in which the laws of hypnotic behavior and experience may be discovered rather than enforced.

NOTES AND ACKNOWLEDGMENTS

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During the period under review, a number of anthologies have appeared collecting original papers dealing with various aspects of experimental and clinical hypnosis (Edmonston 1977, Frankel & Zamansky 1978, Fromm & Shor 1979, Burrows & Dennerstein 1980), as well as special issues of the *Journal of Abnormal Psychology* (1979, Vol. 88, No. 5) and *Research Communications in Psychology, Psychiatry, and Behavior* (1982, Vol. 7, No. 2). In addition, Bowers (1976) has provided a summary of hypnosis research suitable for use with undergraduates.

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