

Hypnosis III: Hypnotic Age Regression and Hypermnesia

Hypnotic age regression is the most dramatic subjective hypnotic experience, according to many subjects. This chapter begins with a discussion of research on age regression and asks what, if anything, is regressed following age regression suggestions. Some regressed subjects report a duality or divided consciousness experience, where they report that one part is a child and another part is an adult. This is one of several types of incongruent responses in hypnosis, which Orne (1959) interpreted as *trance logic*—the acceptance of contradictory beliefs. This chapter asks whether *trance logic* is a common characteristic of hypnotized subjects.

Next I will discuss *hypnotic hypermnesia*, the enhanced recall of personal experiences during hypnosis. Hypermnesia seems to occur during age regression, where subjects report unusually vivid memories of childhood experiences. It may also occur when hypnosis is used to interrogate victims or witnesses to crimes. Because of the practical as well as theoretical implications of hypermnesia, it is important to ask whether it is valid. I will discuss research on hypnotic hypermnesia and a related issue with forensic implications—whether hypnosis increases susceptibility to false leading questions during interrogation, and whether it enhances the creation of pseudo-memories that persist after hypnosis. Finally, I will make some concluding comments about hypnosis theories and about the implications of hypnosis for understanding consciousness.

AGE REGRESSION

In the age regression item of SHSS:C (Weitzenhoffer & Hilgard 1962), the hypnotist suggests that the subject is gradually becoming younger and smaller, going back in time, until finally he or she is back in the second grade, sitting in the classroom on a nice day, writing or drawing. The usual criterion for "passing" age regression is that, when asked to write his or her name, the subject prints the name in a childlike manner (whereas the signature before regression is cursive). About 40 percent of college student subjects pass by this criterion. However, handwriting change is too lax a criterion for age regression. The most important aspect of age regression is changes in subjective experience, in which subjects feel as if they are younger and reliving a childhood event. By this criterion the proportion of subjects experiencing age regression is probably much smaller than the 40 percent figure (Perry et al. 1988).

While answering questions during regression ("Where are you?" "What are you doing?") some subjects speak in a childlike voice. They may describe the classroom scene in vivid detail and tell where various students sat in the room. If it is suggested that they go outside for recess, they describe a typical school recess scene, and they describe what they are doing—joining in the play (tag, hopscotch, jump rope) or in some cases just standing and watching. The most convincing subjects describe the scene in the present tense, saying, for example, "I *am* playing hopscotch with Ruth and Susie" rather than "I *was* playing hopscotch. . . ." Many subjects list age regression as their most vivid and interesting hypnotic experience. Infrequently, subjects spontaneously recall sad or traumatic events from childhood and show emotional reactions that may include crying, accelerated breathing, and so on. In one case, a subject age-regressed to infancy wet his pants when he was frightened unexpectedly (Laurence et al. 1985; Perry et al. 1988).

What is going on during age regression? The credulous view is that regressed subjects are genuinely like children mentally and emotionally and, furthermore, that the scenes they describe are accurate memories of actual childhood experiences. When recall of childhood experiences appears to be more accurate during hypnosis than in the normal waking state, hypnotic hypermnesia (memory enhancement) is said to occur. Credulous psychotherapists have sometimes used hypnotic age regression to induce clients to recall repressed childhood events, with the assumption that their recollections are accurate. We will see, however, that the credulous view is not valid.

Research on Age Regression

Michael Nash (1987) reviewed some eighty studies of age regression conducted over a period of sixty years. The specific question he asked was, "Does hypnotic age regression enable subjects to exhibit developmentally previous modes of mental functioning?" The studies were directed at four different regression topics: (1) reinstatement of childlike physiological responses (EEG and reflexes); (2) cognitive regression, including (a) reinstatement of childlike cognitive processes (childlike performance on IQ tests and Piagetian cognitive tasks, such as conservation of volume), and (b) recall of

childhood events; (3) reinstatement of childlike perceptual processes (illusions and eidetic [photographic] memory); and (4) reinstatement of childlike personality processes, including emotional attachments and projective test performance.

In order to demonstrate genuine hypnotic age regression, two criteria must be met, according to Nash: (1) the responses of adults regressed to a particular age must be similar to those of typical children of that age, and (2) the childlike responses must not be successfully duplicated by adults following waking suggestions or instructions to simulate hypnosis. The latter criterion is necessary to ensure that apparent age regression in hypnosis is not mere acting or role playing based on the subjects' knowledge of children's behavior.

In all four of the regression categories Nash found the same pattern of experimental results: Where studies were properly controlled (by the criteria described above) and had more than one subject, the results were predominantly (84 percent) *against* genuine age regression. For example, O'Connell, Shor, and Orne (1970) found that following hypnotic age regression suggestions, highly hypnotizable subjects did not behave in an age-appropriate manner on Piagetian cognitive tasks, nor was their behavior any more age-appropriate than that of simulator controls. Nash found the evidence supporting genuine age regression to be weak; it comes mostly from older studies (pre-1954) that had only one subject and no controls. In controlled studies the hypnotically "regressed" subjects either failed to respond like children, or if they did, waking or simulator controls also did so, suggesting that the hypnotic subjects could have been using their accurate knowledge of child behavior to act like children without experiencing regressive changes in their own mental states.

Nash (1987) found *no* well-controlled studies showing evidence of reinstatement of childlike physiological or cognitive states or convincing hypermnestic retrieval of childhood memories. Only for the topics of perceptual changes and personality or affective changes were there a few studies that suggested that something like age regression might have occurred. Nash's own study of affective (emotional) regression is especially interesting; I will describe it next.

Age Regression and Reinstatement of a Childhood Affective State

Some of the most compelling evidence for a regression-like process in response to hypnotic age-regression suggestions comes from the work of Nash and colleagues (Nash, Johnson, & Tipton 1979). Nash et al. noted that, in spite of the failures of laboratory studies to find convincing evidence of age regression, a number of clinical cases have shown dramatic revivifications (reliving) of childhood affective experiences, almost always frightening and unpleasant, and with significant therapeutic implications (O'Connell et al. 1970).

Nash et al. devised an experimental procedure to test the possibility that a childlike affective state might be induced by suitable suggestions. They noted that most children pass through a stage, between ages one to six years,

when they are strongly attached to some inanimate object (a doll, stuffed animal, or blanket) that they want to hold in times of stress or insecurity, such as when their mother is absent. Such objects are termed *transitional objects*, and—according to psychodynamic theory—they symbolically represent the love and security of the mother while children are making the transition from more imaginary to more reality-oriented modes of thought and learning to adapt to frustration. Research shows that about 60 percent of children have transitional objects, and that those who have them adopt them by the end of the second year in about 89 percent of the cases, and that the attachment typically lasts for about three years (Rudhe & Ekecrantz 1974).

Nash et al.'s plan was to first give age regression suggestions, then give additional suggestions to try to induce an affective state of stress or insecurity and see whether the subjects then desired a transitional object. They compared real hypnotic subjects with control subjects who were instructed to simulate hypnosis. Presumably, if subjects experience a childlike stressful state, they should desire the transitional object. And if age regression is more than mere role playing, then desire for transitional objects should be greater in hypnotized subjects than in simulators.

Nash et al. gave subjects suggestions to regress to the age of three years. Then they suggested that subjects were experiencing a series of stressful situations: being alone in a dark bedroom, waking up alone in a living room, or seeing mother arrange some toys and then leave. These suggestions were accompanied by suggestions for feelings of isolation, loneliness, fear, and a desire to "touch something." In each of the stressful situations the experimenters asked a series of questions intended to discover whether the subjects were thinking about transitional objects: "What's happening?"; "What are you touching?"; "Do you want something else?"

Nash et al. used three dimensions—derived from earlier research with children—to score subjects' transitional object relating: (1) *spontaneity*, a spontaneous desire for the object in stressful situations, scored positive if the subject mentioned the same object in two of the three stress test situations; (2) *specificity*, where only one specific object is desired, scored positive if the subject said "no" when asked whether he or she wanted anything else; and (3) *affective intensity*, where the object is affectionately cuddled and excitedly loved and mutilated; the hypnotist-experimenter judged the intensity of the subject's responses and assigned a numerical rating from zero to twenty.

Table 16.1 shows the results for Nash et al.'s real hypnotized and simulator control adult subjects, as well as data for actual children one to six years of age (based on interviews with the children's mothers; Rudhe & Ekecrantz 1974). Two aspects of the results are noteworthy: (1) on all three behavioral measures of transitional object relating the real hypnotic subjects scored significantly higher than the simulators, and (2) nearly identical percentages of hypnotic reals and children showed the spontaneity and specificity responses to transitional objects, whereas on both measures both of those groups responded significantly more often than simulator subjects. These results were replicated in a follow-up study, which also showed that, among hypnotically age regressed subjects, spontaneous desire for transitional objects was significantly greater with the mother absent (69 percent) than with the (imagined) mother present (38 percent) (Nash et al. 1985).

TABLE 16.1 Responses to Transitional Objects in Hypnotic Real and Simulating Adults and Actual Children Ages 1 to 6 Years

Subject group	n	BEHAVIORAL MEASURE		
		SPONTANEITY*	SPECIFICITY*	INTENSITY**
Reals	16	69%	75%	13.5
Simulators	15	27%	40%	7.5
Children	77	60%	78%	—

n = Number of subjects in group.

* Percent of subjects showing positive response.

** Numerical rating on 0 to 20 scale.

From Nash, M. R., Johnson, L. S., & Tipton, R. (1979). Hypnotic age regression and the occurrence of transitional object relationships. *Journal of Abnormal Psychology*, 88, 547-55. Copyright 1979 by the American Psychological Association. Reprinted by permission.

Nash et al. (1979, 1985) concluded that through age regression suggestions a childlike affective state relating to stress and insecurity was produced, which was similar to that experienced by actual children, as evidenced by the desire for transitional objects. Furthermore, the hypnotic responses were not mere faking in response to the demands of the experimental situation, as is shown by the markedly lesser responding by the simulator subjects. However, further research showed that regressed highs were not very accurate at recalling the transitional objects that they had actually had as children (about 21 percent accuracy, according to interviews with their mothers), nor were they any more accurate than low-hypnotizable simulator subjects (Nash et al. 1986). Thus, there was no evidence for hypermnesic recall of transitional objects in regressed highs.¹

Explanations of Apparent Age Regression

If hypnotized subjects do not really age regress in the sense of either reinstatement of childhood cognitive stages or hypernesia of childhood events, then what is going on? Why is "age regression" such a dramatic and convincing experience for hypnotized subjects?

According to skeptics, motivated hypnotic subjects use their knowledge of children and their imaginations to behave *as if* age regressed; age regression is more of an act than a true feeling of being younger (Barber 1969). Though such shamming may be possible, the skeptical view is implausible as an explanation of the dramatic age regressions that sometimes occur during hypnotherapy, where clients have strong emotional reactions with anxiety and crying and report afterward that they actually felt younger and smaller, and as if they were reliving childhood experiences. It seems that regression is more than just acting; it is a dramatic subjective experience that needs to be explained.

Orne (1951) argued that, for deeply hypnotized subjects, age regression is a compelling hallucination of being a child again. Orne suggested that apparent age regression is "role taking on a primarily emotional basis," which

is not the same thing as shamming or simulating. In response to regression suggestions, subjects try to imagine being younger, and they reconstruct childhood scenes using a combination of recalled personal experiences, knowledge of children and typical childhood experiences, and imagination. When this reconstruction process occurs in hypnosis, where imagination is particularly vivid and reality testing is reduced, the result is *believed-in imagination*—in other words, a hallucination of being a child again. Hallucinations of age regression can be so vivid that they can produce authentic emotional reactions, even though the hallucinated scenes may be more products of imagination than of memory.

Spanos's social-cognitive view of regression (1989, personal communication) is similar to Orne's in some respects. Spanos sees regression as a case of strategic role enactment to meet the demands of the situation, where subjects vividly imagine childhood scenes. Some subjects may become so absorbed in the role of being a child that they may temporarily feel as if they are children. However, in Spanos's view the regression experience does not require or involve a special hypnotic state.

Hilgard (1977) acknowledged that the evidence is largely against cognitive regression and hypermnnesia in age regression and that the behavior of regressed highs usually does not differ from that of simulators. However, Hilgard suggested that regression may have a dissociation component, indicated by the fact that some subjects describe a double consciousness experience, where one part feels regressed while an "observer" part maintains a realistic view of the situation. I will discuss research on this "duality experience" in the section on trance logic, after a brief comment on hypnotic reincarnation.

Age regression and hypnotic reincarnation. A number of years ago public interest was stirred by a report that a Colorado housewife had regressed in hypnosis back to a prior life as a woman named Bridey Murphy in nineteenth-century Ireland (Bernstein 1956). Several similar reports have appeared since then (Venn 1986). To those who want to believe it, such reports appear to provide evidence for reincarnation of souls. However, reincarnation reports can be explained in scientific terms. In most cases of "hypnotic reincarnation," there is no evidence that the prior-life person ever existed. In the few cases that have been thoroughly investigated, where a plausible prior-life identity was reported along with a suitable historical context, it was found that the hypnotic subject had previously learned about that time and place through normal sources, such as reading, conversations, and movies. Some cases apparently involved *source amnesia*, where subjects recalled the historical information but did not recall where they had learned it (Perry et al. 1988; Venn 1986). Thus *pseudomemories* were created, where hypnotized subjects reported as their own memories experiences that were, in fact, constructed from secondary sources. With suggestions that suitably stimulate the imagination and the will to comply, it is not hard to get reports of prior lives from hypnotized subjects (Baker 1982; Spanos 1987-88). The basis of the prior-lives reports is essentially the same as that for ordinary age regression: a mixture of knowledge and imagination and hypnotic role-taking. The same principles have been applied to produce hypnotic age

"progressions," reports of experiences that have not yet occurred (Hilgard 1977).

RESPONSE INCONGRUITIES AND TRANCE LOGIC

In his search for studies showing authentic cognitive age regression, Nash (1987) rejected studies where regressed adults failed to behave like real children. Yet some of the incongruous (out of place) and inconsistent responses of hypnotized subjects are interesting in their own right.

Orne (1951) observed several logical incongruities of responses in age-regressed subjects. In one case, a twenty-six-year-old man regressed to age six was asked questions about his birthday. He understood the questions asked in English and replied in English. Yet, when he was six years old he was living in a German-speaking household and had not yet learned English. When he was reminded that his mother had spoken to him in German, he shifted to speaking German. Thereafter, during regression, he replied to English questions in German, and when asked if he understood English he repeatedly replied "nein!" When he was asked the time, he looked at his wristwatch—which he surely did not wear at age six.

Another adult regressed to age six was asked to write the sentence "I am conducting an experiment which will assess my psychological capacities." He spelled all of the words correctly, though a normal six-year-old would not be able to do so. He also understood and defined the word "hypochondriac." (Orne 1951, p. 219).

These response incongruities have two implications (Orne, 1951): (1) they argue against the old *ablation* hypothesis, which claimed that age-regressed subjects cannot retrieve knowledge acquired since the age to which they are regressed; and (2) they represent a form of hypnotic behavior that is counterintuitive and hence unlikely to be faked to please the hypnotist. Such incongruent behaviors are instances of *trance logic*, in which hypnotized subjects readily accept logical incongruities in their responses, more so than one would expect of a nonhypnotized subject.

Orne (1959) argued that trance logic is characteristic of deeply hypnotized subjects. Response incongruities, or trance logic, also occurs in other hypnotic situations besides age regression. Other examples include: *transparent hallucinations*, where hypnotized subjects say that they can really see a hallucinated person, yet they also acknowledge that they can see through the person; and *double hallucinations*, where subjects say that they can see a hallucinated individual (who is not in the room), and when that individual walks into the room the subjects say they see two of that individual. More recent research has asked whether trance logic is an authentic hypnotic response, or merely a matter of responding to experimental demands and trying to please the hypnotist.

Duality in age regression and the hidden observer. In a postexperimental inquiry following hypnosis, about half of Perry and Walsh's (1978) highly hypnotizable subjects reported that during age regression their conscious experience had alternated between being a five-year-old child and

being an adult. This shifting of awareness in age regression is called the *duality experience*. Here is an example of a duality report:

I became small again; small, small. Physically . . . I saw myself again with my curls at school. . . . I felt 5, and I felt 23 also. . . . I knew I was 5 years old at school, but I knew I was 23 years old, also, that I was an adult. . . . I really felt 5 years old. I would not be able to say that I was solely 23 years old (Laurence & Perry 1981, p. 338).

The duality experience during age regression seems similar to the hidden observer effect during hypnotic analgesia. Laurence and Perry (1981) examined the relationship between the two experiences in some twenty-three highly hypnotizable subjects. About half of the subjects reported hidden observer experiences during hypnotic analgesia, and these same subjects were highly likely to also report duality experiences in age regression. In contrast, the other subjects did not report hidden observer experiences during hypnotic analgesia or duality experiences during age regression. Also, the hidden-observer subjects were more likely than the others to spell big words correctly when asked to write complex sentences during age regression.

All of the responses measured by Laurence and Perry (1980) can be conceptualized as cases of incongruous responding or trance logic, and all were highly correlated with each other. In a subsequent study, Nogrady et al. (1983) replicated the earlier results, and also showed that simulator subjects behaved like no-observer hypnotic reals: they did not report either hidden observer or duality experiences.² Nogrady et al. interpreted their results as a convincing demonstration that neither duality nor hidden observer reports are merely the result of experimental demands. The results are consistent with a dissociation theory interpretation of the hidden observer and duality experiences. However, it remains a mystery why only about half of the highly hypnotizable subjects reported hidden observer and duality experiences in experiments by Hilgard et al. (1975, 1978a), Laurence and Perry (1981), and Nogrady et al. (1983).

Trance logic and the hidden observer as incomplete responding. Spanos (1986a) proposed two principles to account for the results of trance logic experiments. First, incongruous responses—supposedly indicators of trance logic—really represent *incomplete responding* to hypnotic suggestions. Hypnotized subjects, under constraints to report their experiences honestly, admit failing to fully experience the suggestions. Hence, they admit to “transparent” positive hallucinations, they admit to alternating old/young awareness (duality experience) during age regression, and they spell big words correctly during age regression. Hidden observer reports are also cases of incongruous, incomplete responses during hypnosis, in Spanos’s view.

Second, the fact that simulators make fewer incongruous responses than hypnotic reals is due to *differential demands* on real and simulator subjects. Real hypnotic subjects are motivated to try to experience the suggestions and be *good* hypnotic subjects. Simulators, on the other hand, are in-

structed to behave like *excellent* hypnotic subjects. The demands for compliance are stronger for simulators than for reals. Thus, simulators behave consistently in ways that make them appear to be excellent hypnotic subjects: they report solid rather than transparent hallucinations, they report unified age-regression experiences, and they report no hidden observer or hidden pain greater than overt pain.³

Spanos's argument was supported in a study by Spanos, de Groot, and Gwynn (1987b). They found more incongruous responses in hypnotic reals than in simulators. In their interpretation, simulators overfaked by behaving consistently. For example, simulators denied transparent hallucinations and duality experiences, and reported more details in their hallucinations, compared to hypnotized subjects. Within the hypnosis group, incongruous responses were *negatively* correlated with ratings of strength of subjective experience of the suggestions; for example, subjects reporting stronger subjective age-regression experiences were *less* likely to report duality experiences. This negative correlation is clearly contrary to Orne's (1959) characterization of strong subjective experiences and trance logic both being characteristics of hypnosis. Also, studies have found that various trance logic items (double hallucination and so on) are not reliably correlated among hypnotizable subjects (Obstoj & Sheehan 1977; Spanos et al. 1987b).

In conclusion, research by Spanos and others has cast serious doubt on the notion that trance logic is a general and common characteristic of hypnotized subjects. Others have argued, however, that individual instances of trance logic may be spontaneous and authentic hypnotic responses (McConkey & Sheehan 1980).

HYPNOTIC HYPERMNESIA

Hypnotic hypermnnesia refers to enhanced retrieval of memories during hypnosis, compared to non-hypnotic retrieval. Here I will discuss the question of whether hypnotic hypermnnesia is real.

One source of belief in hypnotic hypermnnesia comes from hypnotic age regression. Regressed subjects may seem to be reliving actual experiences from childhood, complete with emotional reactions and recall of details that had presumably been forgotten. In psychotherapy, age regression may produce reports of memories, such as traumatic childhood experiences, that have important therapeutic implications (Frankel 1988).

Another source of belief in hypnotic hypermnnesia comes from its use by police for the investigation of crimes (Block 1976). It often happens that crime victims or eyewitnesses cannot recall details that the police need to identify and track down the criminal and make an arrest. This is a problem particularly in violent or frightening crimes, such as physical assault, rape, or armed robbery. Memory difficulties are compounded by fear at the time of the crime, lack of attention to important details, and the passage of time between the crime and the interrogation. In numerous cases, when victims or eyewitnesses were regressed through suggestions back to the time and place

of the crime they have reported additional information relevant to the case. In some, but not all, cases this information has helped lead to the arrest of the alleged criminal. In view of the apparent potential of hypnotic hypermnnesia for practical use and abuse, it is important to ask whether memory recall under hypnosis is, in fact, better than recall without hypnosis.

How hypnosis might aid memory recall. Belief in the marvelous possibilities of hypnotic recollection is often predicated on a belief in the "videotape" theory of memory. According to the videotape theory, everything that you experience is stored permanently in memory in vivid detail, and any event of your life can be "played back" in consciousness in vivid detail if you are sufficiently motivated and you have the right retrieval cues. In fact, the videotape theory of memory has been thoroughly discredited by modern research. Episodic long-term memories are certainly not stored in vivid detail, nor is there convincing evidence that all memories are stored permanently (Loftus & Loftus 1980). Nonetheless, the possibility remains that hypnosis might be helpful in retrieving whatever pertinent information happens to be stored in memory.

There are several mechanisms through which hypnosis might conceivably aid memory recall (Orne et al. 1988). (1) Imagery-mediated recall might be enhanced, if hypnosis increases the vividness of mental images. (2) Reinstatement of the original scene through suggested images might serve as a retrieval cue to help witnesses recall additional details. (3) Reinstatement of the original mood through suggested images might serve as a retrieval cue. (4) Relaxation during hypnosis might reduce anxiety produced by recall of the critical memories, thus helping overcome repression of traumatic memories. (5) Repeated recall attempts can lead to retrieval of additional items—an effect not limited to hypnosis (Erdelyi 1988). In order to show that hypnosis *per se* produces hypermnnesia, it is necessary to show that improved recall is not due merely to repeated recall attempts.

Research on Hypnotic Hypermnnesia

It is difficult to evaluate claims of hypermnnesia in hypnotic age regression because it is usually impossible to check on the accuracy of subjects' reports. Age-regressed hypnotherapy clients and research subjects often report vivid childhood memories that they accept as accurate, often with strong conviction. But subjects' beliefs in the accuracy of their recollections is not proof that they are accurate. If we disregard clinical case studies that made no attempt to verify the accuracy of patient's recollections, there is really very little evidence for hypnotic hypermnnesia in age regression. The few studies that have attempted to verify such reports (for example, by checking school records or talking with parents) have found that the reports contained many errors (Nash et al. 1986; O'Connell et al. 1970). The situation is somewhat better for verifying claims of hypnotic hypermnnesia in eye-witnesses, since police can sometimes verify their reports, although in most cases eyewitness reports cannot be verified.

We are interested in knowing the accuracy of memory reports collected through hypnotic methods, but more important, we need to ask whether

such reports are any more accurate than reports obtained without hypnosis—other things being equal. In other words, is hypnotic hypermnnesia real?

Experimental studies with verifiable facts. The best way to test hypnotic hypermnnesia is through controlled experiments where the experimenter knows the facts, so the accuracy of subjects' recollections can be verified. The usual procedure involves three stages: (1) exposing subjects to material to be learned (such as a film or series of pictures); (2) giving the first recall test, without hypnosis; and (3) before the second recall test, hypnotizing half of the subjects and suggesting that they will be able to recall the learned material; a control group is not hypnotized, but simply asked to try again (and try harder). If the amount of improvement in recall (additional correct items) is greater for the hypnosis group than for the control group, the difference might be interpreted as evidence for hypnotic hypermnnesia, though, as we will see, other interpretations are possible.

Orne et al. (1988) reviewed a large number of experimental studies on hypnotic hypermnnesia and summarized several conclusions based on the evidence available so far. Most experimental tests have failed to find evidence for hypnotic hypermnnesia. Where apparent successes have occurred, they have involved meaningful materials (such as pictures, stories, films, and live dramatic enactments) rather than meaningless materials (such as lists of unrelated words). Enhanced recall is more likely for visual than for verbal material, and for material that has been deeply processed, rather than superficially processed (Shields and Knox 1986). Apparent hypermnnesia occurs only with recall tests of memory, and not with recognition tests. For example, hypnosis failed to improve recognition of faces in a lineup of suspects (Wagstaff 1982). Unfortunately, there is no convincing evidence that hypnosis can aid recall of the impersonal, semantic types of information that college students usually encounter on exams.

Memory enhancement versus response criterion shift in hypnotic recall.

According to the *generate-and-recognize model* of recall, recall of target items (names, events, etc.) involves three stages: (1) using whatever retrieval cues are available, people retrieve from memory a list of candidate items (the list might include both correct and incorrect items); (2) they subjectively rate each candidate item according to how confident they are that it is correct; and (3) they report only the items for which subjective confidence is greater than a criterion level (the *response criterion*).

The generate-and-recognize model, in conjunction with signal detection theory, says that increases in the number of correct reported items might occur for either of two reasons: increased *memory sensitivity*, where new correct candidate items are retrieved; or *response criterion shift*, where the response criterion is lowered, such that people now report previously retrieved items for which their subjective confidence is low. If the response criterion is lowered, subjects will also report *incorrect* low-confidence items, along with correct ones.⁴

For older studies where only correct responses were recorded, it is impossible to tell whether an increase in correct reports was due to increased

memory sensitivity or to a lowered response criterion. Jane Dywan and Kenneth Bowers (1983) initiated a new generation of hypnotic hypermnnesia studies by using an improved procedure in which subjects reported all candidate items, then indicated which ones they thought were correct memory recollections.

Dywan and Bowers' procedure involved four stages: (1) Preselected high- and low-hypnotizable subjects viewed a series of sixty slides of drawings of common objects. (2) Then they did a *forced recall* memory test in which they were required to make sixty different responses, each response being the name of an object that might have been among the target pictures. For each response, subjects indicated whether it was a memory or just a guess. Presumably they only labeled responses as memories if they were fairly confident; and presumably, only these items would have been reported on an ordinary free-recall test in which subjects were not forced to report guesses. (The purpose of the forced recall procedure was to provide data to test the criterion shift hypothesis, as I will explain momentarily.) (3) Then, in order to be sure that subjects recalled everything they could before the hypnosis test, they were required to do another forced recall test (without hypnosis) every day for a week. As expected, there was some improvement during the week simply as a result of repeated recall efforts: the mean number of correct responses increased from 30 in the first test to 38 in the last test before hypnosis. (4) Finally, the subjects were randomly assigned to two treatments: half of the highs and lows were given a hypnotic induction and suggestions for enhanced recall, while the others (control condition) were given task-motivational instructions ("you can do better if you try harder") without hypnosis; then all subjects did their final recall test.

Figure 16.1 shows the number of *new items reported as memories* on the final recall test, for each group. (New memory items include both items previously reported as guesses but now reported as memories, and completely new items reported as memories.) Three aspects of the results are important: (1) For all four groups, a large majority of the new items reported as memories were, in fact, incorrect. (2) The total number of new memory items was much greater for hypnotized subjects (highs in the hypnosis condition) than for any of the other groups. Hypnotized highs reported both more correct new items, and more incorrect new items, than other groups. (3) The percent of new memory items that were correct (about 20 percent) was not significantly greater for hypnotized subjects than for other groups.

Dywan and Bowers' study provides no convincing evidence for hypermnnesia. Though the number of new correct items increased during hypnosis, the increased number of incorrect items was much greater. This result can be explained in terms of the criterion shift hypothesis: hypnotized subjects lowered their response criterion and reported as memories items for which their confidence was low. In the final test, many of the newly reported "memories" were items that had previously been reported as guesses, and most of these items were incorrect. Some completely new memory items were reported during hypnosis, and most of them were incorrect, too. A practical implication of Dywan and Bowers' results is that in criminal investigations any new information reported during hypnosis would be likely to include many errors along with, perhaps, a few correct reports.

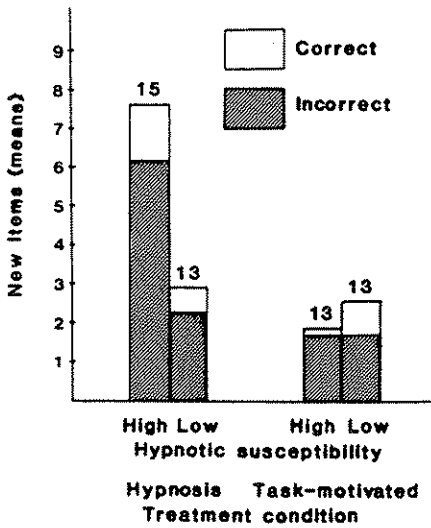


FIGURE 16.1. New items reported as memories after hypnotic or task-motivating (control) suggestions to enhance recall (includes both items previously reported as guesses and completely new items). Under all conditions, most new items reported as memories were, in fact, incorrect. [From Dywan, J., & Bowers, K. (1983). The use of hypnosis to enhance recall. *Science*, 222, 184-85. Copyright © 1983 by the AAAS.]

Dywan and Bowers' (1983) conclusions have been confirmed in other studies (Sheehan 1988). Whitehouse et al. (1988) used forced-recall tests for the contents of a film, and found that subjects' confidence in the accuracy of responses that were, in fact, incorrect was increased by hypnosis. The implication is clear: increased confidence in recall during hypnosis cannot be taken as an indicator that the reported "memories" are necessarily correct.

Implanting Pseudomemories During Hypnosis

We can distinguish between lying and confabulation in memory reporting. *Lying* involves telling a falsehood that you know is false. *Confabulation* involves confusing fantasies with memories and unknowingly reporting as true memory events that are really fantasies (Bowers & Hilgard 1988). Confabulation seems to be a common occurrence during hypnotic age regression, and perhaps also during hypnotic eyewitness interrogation (Perry et al. 1988).

Besides confabulation, another source of error in hypnotic recall is *pseudomemories*: memories that the individual believes to be based on per-

sonal experience of an event, but which are in fact based on information learned after the event. Pseudomemories can be created when witnesses to crimes are asked leading questions during interrogation (Loftus 1979). For example, after a bank robbery, a witness might be asked by police "Did you see a blue Volkswagen bus parked outside the bank?" Later, the witness might report in court that he remembered seeing a blue Volkswagen bus outside of the bank (though in fact he never saw it). Pseudomemories can be created by leading questions in interrogations without hypnosis. But there is a particular concern that hypnosis might increase the risk of creating pseudomemories and further, that such pseudomemories would subsequently be believed by the witness with great confidence and be resistant to disconfirmation through cross-examination (Orne 1979). Creation of pseudomemories might be increased during hypnosis because hypnotized subjects tend to be particularly attentive and responsive to hypnotists' communications. Also, hypnotized subjects might vividly imagine events suggested in leading questions and subsequently fail to distinguish between imagined and remembered experiences.

Some studies have found that hypnotized subjects are more likely than waking controls to reply affirmatively to false leading questions about filmed incidents. For example, hypnotized subjects were more likely to reply "yes" to the question, "Did you see the stop sign at the intersection?" when in fact there was no stop sign (Putnam 1979; Zelig & Beidleman 1981). Also, some studies have found that hypnosis increases the likelihood of pseudomemories being implanted through leading questions containing misleading information (Laurence & Perry 1983; Sheehan, Grigg, & McCann 1984). However, some evidence is inconsistent with these conclusions.

In an elaborate experiment by Spanos et al. (1989a), high- and low-hypnotizable subjects watched videotape of a (simulated) bank robbery and shooting, and later they were exposed to misleading information about the robber in a videotaped newscast. Subsequently, different groups were interrogated with misleading questions about the robber ("Visualize the man's upper left arm. Do you see a tattoo?") either with or without hypnosis; a control group was asked nonleading questions ("Describe the man."). Subsequently, subjects tried to identify the robber in a set of mug shots (photographs). Finally, they were cross-examined by a different experimenter, who tried to break down (get them to deny) their earlier incorrect responses to interrogation questions and choices of mug shots.

Two aspects of the results were especially important: (1) Most subjects exposed to misleading questions during interrogation agreed to some of them (for example, seeing a tattoo when in fact the robber had no tattoo), but hypnotized subjects (highs in the hypnosis condition) were no more likely to do so than other subjects. (2) During cross-examination, most subjects broke down on some of their earlier answers, but previously hypnotized highs were no more, or less, likely to do so than subjects not previously hypnotized. Thus, hypnotically implanted pseudomemories are no more resistant to cross-examination than those implanted without hypnosis.

Spanos et al. (1989a) concluded that during interrogation subjects responded to social pressures to answer affirmatively to leading questions. But under cross-examination a new set of social pressures was introduced, with

demands for accuracy, and subjects complied by reversing some of their earlier responses. Assuming that subjects want to be both accurate and consistent, during cross-examination they may feel conflict over reversing their prior responses, so they don't reverse all of them. In other words, subjects might fail to reverse some of their responses in order to save face—they don't want to appear inconsistent by admitting that all of their prior responses were wrong. Social-contextual influences on memory reports can occur either with or without hypnosis (see also Spanos & McLean 1986).

Implications of Hypermnnesia Research for Forensics and Psychotherapy

Research on hypnotic hypermnnesia has some clear implications for the forensic use of hypnosis: (1) Witnesses' reports during hypnotic interrogation should not be taken at face value. They will likely contain many errors or confabulations. For example, in one case a hypnotized witness claimed to describe a face seen at the time of a crime, though in fact the distance and lighting conditions at the time of the crime would have made it impossible for him to see the face in question (Orne 1979).

(2) Reports during hypnosis may include some accurate information. Thus, hypnotic reports may sometimes be useful as a source of *leads* for the police to independently verify. However, both laboratory experiments and a study of witnesses to actual crimes (Sloane 1981) indicate that hypnosis is no better than the waking state in producing useful leads. Recall tends to improve with repeated attempts, to some degree, even without hypnosis.

(3) The fact that hypnotized subjects often have a high degree of confidence in their recollections cannot be taken as proof of the accuracy of their reports. Independent verification of reports is needed.

(4) Both hypnotized and unhypnotized subjects often reply affirmatively to false leading questions during interrogation. Research evidence is not entirely clear on whether hypnotized subjects are more susceptible to leading questions than unhypnotized subjects. In any case, it is clear that there is no hypermnnesia effect in hypnosis to counteract the tendency to comply with leading questions.

(5) Leading questions—either with or without hypnosis—can create pseudomemories that persist after hypnosis. Pseudomemories created during hypnosis are not necessarily more resistant to cross examination than those created without hypnosis. In any case, interrogation sessions should be videotaped so it can be determined whether leading questions were asked.

There is a special risk in allowing the use of "hypnotically refreshed" testimony in court. Because of popular myths about hypnosis, jurors may give hypnotic testimony more credibility than it deserves, particularly when hypnotized witnesses show strong confidence in their reports. Thus, claims based on hypnotic interrogations alone should not be allowed.

In concluding that research evidence is largely against the validity of hypnotic hypermnnesia, certain limitations of the laboratory experiments must be acknowledged. Some laboratory studies have used memory testing materials, such as word lists and photographs, that are far different from the type of information that is important in forensic or psychotherapy situa-

tions. Other studies have achieved a degree of ecological validity by using dramatic films or live simulated crimes (Wagstaff, Traverse, & Milner 1982). But for obvious ethical reasons, laboratory studies cannot duplicate the emotional upheaval that often accompanies violent crimes and other traumatic personal events. Conceivably, hypnosis might be particularly helpful for enhancing retrieval of memories in such cases, though there is no proof that this is the case. Even if hypnosis was helpful in such cases, the reports would likely include many errors and confabulations. (See Laurence and Perry [1988] for more information on forensic applications of hypnosis, including discussion of case studies.)

The reservations that apply to hypnotic recall in criminal investigations do not necessarily apply to psychotherapy. In psychotherapy the actual facts of earlier experiences may be less important than patients' *beliefs* about what happened. In some cases therapists have deliberately implanted benign pseudomemories to counteract the effects of anxiety-evoking memories or beliefs (Frankel 1988; Orne et al. 1988; Perry et al. 1988).

CONCLUDING COMMENTS ON HYPNOSIS

Hypnosis is interesting because it can produce unusual, sometimes dramatic subjective experiences, and it has important clinical applications. However, the theoretical conflict between the special-process and social-psychological approaches is sometimes confusing to students. These different approaches represent radically different *paradigms*, that is, different views of the basic nature of hypnosis that affect the questions that are asked, the way research is designed, and how the results are interpreted (Sheehan & Perry 1976).

The traditional view, dating back over 200 years to Mesmer, is that hypnosis involves some sort of special process, though ideas about the nature of the special process have changed over the years. Nowadays the special processes are framed in terms such as altered subjective states (Orne 1977), altered cognitive processes (Kihlstrom 1984, 1985b), or dissociations of cognitive subsystems (Hilgard 1977). A major criticism of special process theories is that they have never been developed in much detail, so it is hard to derive unique predictions that can be tested by research. The main research emphasis has been on demonstrating special effects of hypnosis, that is, showing that hypnotized subjects (hypnotized highs) respond differently than nonhypnotized subjects (lows, simulators, waking controls), and trying to discover the nature of the special underlying processes that are assumed to be responsible for the responses of hypnotized subjects.

The social-psychological approach argues that hypnosis does not involve any special processes, but rather involves ordinary processes of thinking, motivation, and behavior control operating in a special social situation identified as hypnosis (Barber 1969; Sarbin & Coe 1972; Spanos 1982, 1986a; Wagstaff 1981, 1986). The main research emphasis for social-psychological theorists has been to show that the behaviors of hypnotized subjects can be duplicated by nonhypnotized subjects that are given appropriate instructions for motivation, attitudes, beliefs, and effective cognitive strategies. Spa-

nos has been concerned to show that social and cognitive variables affect subjective experiences and subjective reports, as well as overt responses to suggestions.

Spanos and others in the social-psychological camp have produced an impressive body of research in support of their view. However, criticisms of social-psychological interpretations of this research have been made. For example, Barber (1969) and Spanos (1986a) argued that, since the behavior (including subjective reports) of hypnotized subjects can often be duplicated by nonhypnotized subjects with appropriate motivation, cognitive strategies, and so forth, the underlying processes are identical. But this logic of equivalence is not necessarily valid (Sheehan & Perry 1976): while identical response is consistent with identical process, it does not prove identical process. Spanos, in attempting to explain everything in terms of his theory (strategic social enactment using voluntary strategies) is unprepared to allow for alternative explanations. Another criticism of Spanos is that he is not consistent in his treatment of subjects' introspective reports. Sometimes they are treated as behaviors influenced by the social context, whereby subjects try to present themselves as good hypnotic subjects; at other times they are deemed to be authentic reports of subjective experience (such as in Spanos's interpretation of trance logic as incomplete responses to suggestions)—whichever interpretation seems to best suit Spanos's theoretical viewpoint.

When researchers in different laboratories obtain different results in similar experiments (such as tests of the hidden observer effect), one possible explanation is that there are different demand characteristics in different laboratories. Experimenter beliefs, perhaps subtly and unintentionally communicated to subjects, can affect the way subjects respond, including their subjective reports (Perry et al. 1988).

Kihlstrom (1985a, 1985b) suggested that the special-process and social-psychological approaches have some important points of agreement, and that a rapprochement between them is possible, in principle. Special-process theorists do not deny that hypnotic responsiveness is influenced by social-behavioral processes such as motivation, attitudes, expectancies, and the desire to be a good hypnotic subject. "True, many of us do not typically manipulate social-psychological variables in our experiments. But this is not because we deny the importance of such variables. It is because we take their effects for granted and wish to determine what other processes may also be involved" (Kihlstrom 1986, p. 475). These special processes are assumed to be different from common everyday occurrences, though not necessarily unique to hypnosis. Yet hypnosis is a particularly good situation for engaging and studying these special processes.

Special-process theorists have sometimes suggested that the social-psychological approach can explain hypnotic responsiveness in low and moderately hypnotizable subjects and in those who fake their responses, but that some sort of special process is involved for hypnotic virtuosos—very highly hypnotizable subjects who respond strongly to the full range of hypnotic suggestions and experience their responses as nonvoluntary. But insofar as the social-psychological approach does not claim that hypnosis involves any special processes, it is the more conservative viewpoint. The

burden of proof is on special-process theorists to demonstrate convincingly that hypnosis involves some sort of special processes of cognition, dissociation, or whatever.

An alternative approach to theoretical reconciliation is to analyze the different cognitive styles of different highly responsive subjects. For example, some subjects seem to react in a relatively passive way and experience their responses as nonvoluntary, whereas others use more active strategies to experience the suggestions. Future progress in understanding hypnosis is likely to depend on a more intensive examination of individual subjects, in order to understand how individuals with particular traits and skills respond to particular types of suggestions in particular social contexts (Sheehan & McConkey 1982).

Implications of hypnosis for consciousness. The implications for understanding consciousness that one might draw from hypnosis research depends largely on one's theoretical interpretation of hypnosis. Hilgard's (1977) neodissociation theory and the hidden-observer effect are loosely consistent with modern cognitive psychological and neuropsychological theories that see the mind/brain system as made up of a number of specialized cognitive subsystems that are coordinated by an executive control system. In Hilgard's view, consciousness includes both control and monitoring processes. Hypnosis involves dissociations between specialized subsystems (perception, memory) and the executive control system, or between the control system and the monitoring system. Thus, hypnotic subjects can sometimes respond to stimuli without awareness, or with a feeling of nonvolition, as sometimes occurs in neuropsychological conditions with brain-damaged patients. Just as we have learned much about the normal mind/brain by studying its abnormal operations in psychopathology and brain-damaged patients, we can learn more about the mind/brain system by studying temporary alterations in hypnotized subjects in dissociative states. It should be pointed out, however, that while hidden-observer effects can be interpreted in terms of dissociations in a mind/brain system, the hidden-observer effect is not predicted by other systems theories, and alternative interpretations of the hidden observer effect would not discredit mind/brain system theories based on neuropsychological or other data.

From the social-cognitive viewpoint, hypnosis is a special case of the general rule that behavior and subjective experience are strongly affected by social contexts. Hypnotic inductions and suggestions are relatively benign manipulations: they do not change subjects' physical or cognitive abilities. Rather, they encourage and guide subjects to use the natural abilities of their own minds. Hypnotic inductions and suggestions can alter subjective experience (such as pain) by encouraging the use of cognitive strategies, such as imagination, redirection of attention, and reinterpretation of experiences. With appropriate procedures, these same abilities can be engaged to produce the same effects in nonhypnotic contexts, within the limits of individuals' capacities for imagination and attentional absorption.

In the hypnosis social context, suggestions can create response expectancies that in turn affect subjective experiences, such as the feeling of nonvolition of responses (Kirsch 1985). Feelings of nonvolition are encouraged

by the passive wording of suggestions and the use of imagery strategies to bring about the suggested effects (Spanos, Rivers, & Ross 1977; Spanos & Katsanis 1989). What is changed in hypnosis is not so much the functioning of cognitive and behavioral control processes as subjective interpretations of control processes. In hypnosis, as in ordinary waking consciousness and dreaming, consciousness is—or results from—an interpretive process that attempts to bring coherence and consistency to our subjective experiences, including our behavior and social contexts as they relate to each other.

SUMMARY

Controlled research on age regression indicates that cognitive regression does not occur, though emotional regression may occur. Age regression seems to involve either a hallucination of being younger or a strategic social enactment. Incongruous behaviors during hypnosis were interpreted by Orne as evidence for trance logic—the acceptance of contradictory beliefs—which he believed to be characteristic of hypnotized subjects. Incongruous responses in age regression include incongruous writing (spelling big words correctly) and the duality experience (feeling that one is simultaneously a child and an adult), both responses being correlated with the hidden observer effect. Spanos argued that trance logic—including the duality and hidden observer effects—involves incomplete responses to suggestions. Simulator subjects are less likely than hypnotized subjects to show trance logic because simulators often overfake, since they are under strong pressure to appear to be excellent hypnotic subjects.

Claims of hypnotic hypermnnesia (enhanced memory) have practical implications where hypnosis is used for eyewitness interrogation and psychotherapy. Experiments on hypermnnesia have usually involved slide sequences or films of crimes, where subjects first recalled the events without hypnosis, then were tested again either with or without hypnosis. Controlled research indicates that hypnotic hypermnnesia is not authentic, in the sense of enhanced accuracy of memory retrieval in hypnotized subjects compared to controls. Rather, hypnosis can increase the frequency of memory reports, but the reports will include many incorrect responses as well as, perhaps, a few correct ones. These findings can be explained in terms of signal detection theory: hypnosis lowers the response criterion, such that subjects are willing to report items that were previously withheld because of low confidence in their accuracy (or alternatively, hypnosis may increase subjects' confidence in the accuracy of their memories, without increasing actual accuracy).

Hypnosis may increase subjects' tendencies to agree to false leading questions during interrogation. Either with or without hypnosis, leading questions may create pseudomemories that persist afterward, where subjects cannot reliably distinguish between their memories of the original event and information suggested later during interrogation. Hypnotic testimony should not be taken at face value, because it is full of errors. However, some hypnotic recollections may be accurate, so hypnotic testimony may be a useful source of leads that police can check for verification.

ENDNOTES

¹One question that was not addressed in Nash's research is whether high hypnotizables might be better than lows at play-acting childlike behavior, even without hypnosis or age regression suggestions. There is independent evidence that this might be the case (Troffer 1965, cited in Hilgard 1977, p. 57), though it has not been tested with Nash's procedure.

²In Nogrady et al.'s (1983) study, the absence of hidden-observer reports among the simulators is noteworthy, considering that Hilgard et al. (1978a) earlier had reported successful faking of the hidden observer effect by simulators. The different results of the two experiments is probably due to Nogrady et al. using a nonleading hidden observer suggestion that did not imply that the hidden part would feel more pain than the hypnotized part of consciousness.

³Note that Spanos (1986a) is making an important reinterpretation of the simulator control condition. The traditional interpretation has been that simulators and hypnotic reals have equivalent experimental demands, so any differences between reals' and simulators' responses cannot be explained in terms of compliance with experimental demands; differences might be due to altered cognitive processes in the reals (Orne 1959; Sheehan & Perry 1976). But in Spanos's view, simulators and hypnotic reals have *different* experimental demands, so differences in the responses of simulators and reals might, in fact, be due to differences in the experimental demands for the two groups. Another problem with the standard simulator control procedure is that the reals are high hypnotizables whereas the simulators are low hypnotizables. Thus, in some test situations (such as where vivid imagination is important) response differences between the two groups might be due to preexisting subject differences.

⁴Alternatively, rather than lowering the response criterion hypnosis might raise subjective confidence for all candidate items. The practical result would be the same: subjects would now report items (both correct and incorrect) previously unreported because of low confidence.