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Repression, Dissociation, and Hypnosis

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Since the time of Janet and Freud, hypnosis has been regarded as a valuable medium for the investigation of unconscious processes. However, these processes have been described in different terms by different authorities. Janet thought that the mechanism responsible for denying conscious access to certain mental contents was dissociation (his term was actually *desagregation*), while Freud postulated the concept of repression. Both processes were held to deny certain mental contents to phenomenal awareness and voluntary control. Both assume the existence of a psychological unconscious, by which percepts, memories, and thoughts denied to conscious awareness could nevertheless exert a palpable effect on ongoing experience and action. Yet it is also clear that the two concepts are different—at least, they were different in the minds of Janet and Freud. Janet seems to have believed that repression was a special form of dissociation, in which the denial to consciousness was motivated by considerations of defense. Freud, for his part, seemed to believe that dissociation was utterly trivial and that repression was a separate process with its own ontological status.

In fact, about all that Janet and Freud agreed on, or so it would seem, was that nonconscious mental processes were psychologically important and that the phenomena of hypnosis illustrated them. The purpose of this chapter is briefly to survey the application of repression and dissociation concepts to the phenomena of hypnosis, in the hopes of achieving some conceptual and empirical distinctions between them. Because dissociation has received a great deal of attention in recent years (e.g., Hilgard 1977; Kihlstrom 1984, 1985,

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1987a, 1987b), we begin with an examination of the literature, inspired by psychoanalytic theory, on repression and hypnosis.

Transference in Hypnosis

Freud's own earliest writings on hypnosis contain little reference to repression. From 1888 to 1892, Freud published a number of papers on hypnosis, reflecting the period (1885–86) he had spent with Charcot in Paris, supported by a traveling fellowship. The intellectual consequences of this visit were apparently profound for Freud (Ellenberger 1970; Macmillan 1986). In a real sense, Freud went to Paris a neurologist and returned a psychologist—albeit a biologically oriented psychologist (Sulloway 1979). Macmillan (1986) has shown just how much of Freud's early psychopathological theory (as reflected, e.g., in the *Studies on Hysteria* [Breuer and Freud (1893–95) 1955]) was derived from Charcot ([1887] 1889) and his pupil Janet (1889). This debt extends to Freud's conceptualization of hypnosis as well.

The classic psychoanalytic approach to hypnosis probably had its beginnings in the *Three Essays on the Theory of Infantile Sexuality* ([1905] 1953), in which Freud drew attention to the subject's stance of credulity and submissiveness with respect to the hypnotist (for a review, see Gill and Brenman 1959). Later, in *Group Psychology and the Analysis of the Ego* ([1921] 1955), Freud asserted that hypnosis was similar to love, with the single difference that hypnosis excluded sexual satisfaction. Further, he argued that "the hypnotist awakens in the subject a portion of his archaic heritage which had also made him compliant towards his parents and which had experienced an individual re-animation in his relation to his father; what is thus awakened is the idea of a paramount and dangerous personality, towards whom only a passive-masochistic attitude is possible, to whom one's will has to be surrendered—while to be alone with him, 'to look him in the face', appears a hazardous enterprise" (p. 127). Interestingly, no hint of this characterization appears in Freud's ([1891] 1966) essay on hypnosis for Bum's *Therapeutic Lexicon*, apparently written under the influence of Charcot, Janet, and Bernheim and republished without revision in the second and third editions of 1893 and 1900.

Schilder and Kauders (1927) went even further than Freud and denied the essential erotic difference between hypnosis and love. They write, "The hypnotist can often detect an expression of sexual excitement in the eyes of women before they fall asleep and after awakening. Trembling occurs similar to that accompanying erotic stimulation" (85). On the other hand, Kubie and Margolin (1944) argued that transference was incidental to hypnosis, an artifact of the hypnotist's technique. If a transference relationship was established before induction, it was carried over into hypnosis. If this could be prevented somehow, as by a purely mechanical means of induction, then no transference would occur.

In the absence of such a mechanical induction, hypnosis remains embedded in an interpersonal context in which one person, designated the subject, responds to suggestions offered by another person, designated the hypnotist. In self-hypnosis, the same individual may play both roles; but, since most self-hypnosis is structured by an experimenter or a therapist, the self-as-hypnotist is really a surrogate for another person. This interpersonal context may raise, as Shevrin (1979) has argued, an interesting tension between the subject's wish to cooperate with the hypnotic procedures and the unconscious temptation to submit to "an infantile longing to be loved and cared for and to have one's troubles washed away" (644).

Psychoanalysts have not been the only ones to remark on the peculiar relationship that may obtain between the subject and the hypnotist. Shor (1962, 1979) argued that hypnosis, whether it transpires in the clinic or in the laboratory, involves some degree of archaic involvement on the part of the subject. That is, the hypnotic subject displaces certain attitudes, formed in very early childhood, onto the hypnotist. In the process, the subject comes to relate to the hypnotist as an object of love and admiration and to desire earnestly to please the hypnotist and incorporate the hypnotist's wishes as his or her own. Hypnosis, then, becomes "a labor of love" (Shor 1979, 126). As did Kubie and Margolin (1944), Shor conceded that the occurrence of archaic involvement could be minimized (but not obviated entirely), provided that the hypnotist did not encourage the formation of such feelings. Nevertheless, because he felt that some degree of transference occurred regardless of what the hypnotist did, Shor argued that archaic involvement was essential to the experience of hypnosis.

The idea that regressive transference is central even in the laboratory setting will strike most experimenters as quite foreign to their experience. Perhaps some denial is involved here, but probably not much. In our laboratory, for example, we go to great lengths to defuse the hypnotist-subject relationship. We describe hypnosis as reflecting a cognitive skill (or, in Mischel's [1973] terms, a "construction competency") that is possessed by the subject and in which all the action resides. Further, we characterize the hypnotist as a coach or a tutor, whose function is to help subjects to have experiences that they are fully capable of having on their own, if only they knew how. We also characterize all hypnosis as essentially self-hypnosis and inform our subjects, correctly, that they cannot be hypnotized against their will—or, once hypnotized, led to do anything that they would not be willing to do in the normal waking state. Some subjects are rather disappointed with this demystification of hypnosis, which may account for some of the negative responses Shevrin (1979) obtained to the "hypnotist" card (12M) of the Thematic Apperception Test. But the fact that our virtuoso hypnotic subjects are devoid of these sorts of feelings for us must be some kind of evidence.

The transference view of hypnosis has been effectively contradicted by Hil-

gard (1971, 1979) on the basis of extensive clinical interviews with college students who have volunteered for hypnosis research. Interviewing a fair sample of highly hypnotizable college students, she found they generally perceived the hypnotist in impersonal terms and their various experimental hypnotists as interchangeable. The hypnotist is generally viewed as a guide or facilitator, and, when he or she takes on the appearance of an authority figure or manipulator, subjects become uncomfortable, and hypnosis is likely to grind to a halt. This was as true of experienced hypnotic subjects as it was of novices, and interviews in a therapeutic setting indicated that it was as true of clinical patients as it was of experimental subjects.

This is not to say that the relationship between hypnotist and subject is uninteresting. It has long been noted that hypnotized individuals are highly motivated to accept and act on the suggestions offered by the hypnotist. White (1941) made this point long before the current run of social-psychological theorizing (e.g., Sarbin and Coe 1972; Spanos 1986) began, when he pointed out that "hypnotic behavior is meaningful, goal-directed striving, its most general goal being to behave like a hypnotized person as this is continuously defined by the operator [i.e., the hypnotist] and understood by the subject. . . . [T]he operator's words, far from being lifeless syllables, are loaded with his hopes and wishes; they act on the subject with the force of another's hopes and wishes which through him may be either gratified or frustrated. We cannot understand hypnosis without bearing in mind the motivational field in which it takes place" (483, 501). Somewhat later, Orne—a student of White's—conceptualized the apparent increase in suggestibility that occurs in hypnosis as reflecting the increase in the subject's motivation to conform to the wishes of the hypnotist and stated that increased motivation is "a constant accompaniment of the hypnotic state" (1959, 290).

A series of experiments by Sheehan and his associates (Dolby and Sheehan 1977; Sheehan 1971a, 1980; Sheehan and Dolby 1975, 1979; see also McConkey and Sheehan 1976; McDermott and Sheehan 1976; Sheehan, in press; Sheehan and McConkey 1982) illustrate one way in which the relationship between hypnotist and subject may be studied. In the first study, Sheehan (1971a) arranged for subjects to experience hypnosis after witnessing a lecture-demonstration concerned with the phenomenon. During the demonstration, the lecturer asserted, falsely but plausibly, that two phenomena—compulsion and catalepsy—were defining characteristics of hypnosis. During the subsequent experiment, however, the hypnotist gave the impression that compulsive responding was no longer desired, although the lecture point about catalepsy was not contradicted. The subjects generally conformed to the intentions and wishes of the hypnotist, displaying catalepsy but not compulsion; insusceptible subjects appropriately instructed to simulate hypnosis, however, conformed to the preexperimental information. The tendency of subjects to counter preconceptions about hypnosis in order to conform to the

intentions of the hypnotist is taken by Sheehan as an objective index of the subject's personal involvement with the hypnotist. Interestingly, it is not highly correlated with hypnotizability. More important in the present context, however, the archaic flavor of the psychoanalytic concept of transference is missing in these studies, just as it is from Hilgard's (1971, 1979) interview data. While it is clear that hypnotic subjects have a special relationship with their hypnotist, that relationship is more appropriately characterized by rapport than by transference.

Repression in Posthypnotic Amnesia

Although the psychoanalytic theory of hypnosis has received little support, the dominant position of psychoanalysis within personality and clinical psychology has often led to interpretation of certain hypnotic phenomena in terms of repression. At a descriptive level, for example, the concept is well applied to hypnotic analgesia, in which the subject appears unaware of painful stimulation impinging on his or her sensory surfaces. In psychoanalytic terms, such a phenomenon might seem to be analogous to primal repression, in which certain percepts, thoughts, memories, and impulses are denied entry into consciousness. Similarly, posthypnotic amnesia might be considered analogous to repression proper, or after expulsion, in which percepts once accessible to awareness are subsequently denied to consciousness. But, while a painful stimulus is by definition noxious, the events of hypnosis are typically benign, if not downright pleasant. What, then, is the motivation for repression?

From a psychoanalytic point of view, posthypnotic amnesia may be seen as resulting from the repression by the subject of memories associated with the hypnotic experience. This hypothesis was alluded to by Freud himself, formally proposed by Schilder and Kauders (1927), and cited favorably by Rappaport (1942) and Stengel (1966). According to Schilder and Kauders, the motive for the amnesia lies in the subject's transference relationship with the hypnotist: "Obviously, the hypnotized is ashamed of his infantile-masochistic adjustment and denies the hypnosis in order to conceal the adjustment. Very frequently, therefore, we find hypnotized subjects indignantly denying that they have been hypnotized" (1927, 60). According to Rappaport (1942, 176), recovery of these memories occurs when the subject accepts his or her masochistic relationship, an affective change that is instigated by the hypnotist's further suggestions.

Thus, hypnotic events are repressed not because they are intrinsically threatening but because the transference relationship in which they occur makes them so. The repression theory of amnesia is troubled, of course, by the general lack of evidence for these sorts of transference processes in hypnosis. We still seem to be missing the motive for repression. Nevertheless, a

number of investigators have assumed that posthypnotic amnesia is somehow analogous to repression, and it is this assumption that we must confront.

Posthypnotic Amnesia as a Repression-like Process

In fact, there are three different empirical approaches to the study of repression in posthypnotic amnesia. In one, which involves the hypnotic induction of laboratory analogues of the clinical psychopathology (a form of artificial neurosis), the assumption that posthypnotic amnesia involves a repression-like process is central to the experimental paradigm. In the others, which involve "complex indicators" and selective recall, repression is less an assumption and more a hypothesis to be tested.

Amnesia in the Induction of Artificial Conflict

Nowhere is that assumption more visible than in the large body of research employing hypnotic suggestion to induce in nonpatient subjects the kinds of intrapsychic conflicts assumed by psychoanalytic theory to be at the heart of neurosis. The technique was introduced by Luria (1932), coming from outside psychoanalysis, in his *Nature of Human Conflict*. Luria's method was to suggest to a normal subject, during hypnosis, that he or she had committed a crime too terrible to contemplate. This suggested paramnesia was covered by amnesia along with the other events and experiences of hypnosis. Thus, according to Luria's reasoning, the subjects' posthypnotic behaviors should be influenced by these conflictual, threatening (but not consciously accessible) memories. Later, when the subjects were asked to perform a simple psychomotor task, the effects of the paramnesia were clearly visible in their behavior. For example, the subjects rested their hands on separate tambours and were instructed to press with their preferred hand whenever they gave a free association to the items in a word list. Critical words extracted from the paramnesia were then presented along with neutral, unrelated words. Luria reported that subjects responded to the critical words with irrelevant movements, as recorded by the tambour under their nonpreferred hand. Luria's findings were essentially replicated by Huston, Shakow, and Erickson (1934), again using hypnosis as the vehicle for inducing both paramnesia and amnesia. The apparent success of these efforts directly stimulated at least three different lines of research.

In one, Levitt and his colleagues (e.g., Levitt 1967; for an overview, see Levitt and Chapman 1979) directly administer suggestions for anxiety to hypnotized subjects. These are then followed by suggestions for amnesia covering the induction of anxiety. In a series of studies, Levitt and his colleagues observed a number of effects of the anxiety suggestion on subsequent test behav-

ior, even though the subjects were unaware of the source of their emotional state—or, for that matter, even of being anxious. Thus, hypnotic amnesia seemed to function in a manner analogous to repression, by denying the subjects' awareness of unpleasant material that nonetheless influenced their behavior.

A variant on this technique has been adopted by Bower (1981) and his colleagues to permit controlled studies of mood effects on memory. Some mood, positive or negative, is suggested to subjects, who are then asked to study or remember some material. It is common in these experiments to cover the mood induction with amnesia, but the intent here is not to create an experimental analogue of repression. Rather, it is to prevent the subject from consciously recognizing the experimental source of his or her mood so that he or she experiences it in a more lifelike manner. Because these studies do not bear directly on the status of posthypnotic amnesia as a repression-like process (if for no other reason than that half the subjects are experiencing positive moods), they are not further considered here.

A second line of research, devised by Blum (1979), suggests that hypnotized subjects will relieve some experience from early childhood that is of a conflictual, ego-threatening nature. The content of the experience is then covered by an amnesia suggestion, leaving the subject in a free-floating emotional state. Again, Blum has observed a variety of effects of these emotions on psychological functioning, and, again, amnesia appears to serve as an analogue of repression—in this case, by isolating the content of the memory from its associated affect.

Yet a third approach has followed Luria more closely in using suggested paramnesias rather than direct suggestion of memory revivification. That is, a memory is fabricated that would have certain emotional consequences, and the fabrication procedure is covered by amnesia. Finally, the subject is given a posthypnotic suggestion to feel certain sexual or aggressive emotions whenever certain cues are presented. Reyher (1967) and his colleagues have reported that these procedures produce a variety of somatic and emotional symptoms, including feelings of nausea, guilt, and shame, headaches, and perspiration. Here again, the suggestion for amnesia seems to be operating in a manner analogous to repression.

Unfortunately, the results of other investigations shed doubt on the repressive effects of the suggestion for amnesia. Sheehan (1969) performed a study based on Reyher's paradigm, but including a comparison group of unsusceptible subjects instructed to simulate hypnosis. The real-simulator design was invented by Orne (1959) in order to determine which effects, commonly attributed to hypnosis, might rather be attributable to the presence of subtle cues in the experimental procedure indicating the hypothesis of the experiment and the manner in which it is to be tested. If an experimental situation contains

such cues, then subjects who are highly motivated to comply with the experimenter's wishes might simply act on them rather than behave in accordance with hypnotic suggestions.

In Sheehan's experiment, reals and simulators behaved in substantially the same manner. Now, the logic of the real-simulator paradigm is as follows: if reals and simulators behave differently, then the behavior of the reals cannot be attributed merely to the demand characteristics of the experiment. However, if they behave similarly, no conclusions can be drawn. Perhaps the reals picked up on, and behaved in accordance with, the same demand characteristics noticed by the simulators; on the other hand, it may be that the behavior of the reals is genuine and that the simulators' performances are fortuitously correct. Sheehan's results do not allow us to choose between these two possibilities. Until an experiment can be designed in which reals and simulators behave differently in Reyher's paramnesia paradigm, it is impossible to determine whether posthypnotic amnesia has effects analogous to repression (see also Reyher 1969; Sheehan 1971b).

Amnesia for Complex Indicators

A second approach to the study of repressive processes in amnesia is based on Jung's work with word associations (e.g., Jung and Ricklin [1906] 1973). As is well known, Jung presented patients and subjects with a series of stimulus words and asked them to report the first word that came to mind in response to each. Jung considered certain response characteristics, such as abnormally long reaction times or electrodermal responses, repetition of the stimulus, and perseveration of the response to be "complex indicators"—that is, related to some kind of conflict or threat, conscious or unconscious. When the series was later repeated, with the subject instructed to give the identical response as he or she had on the first occasion, Jung noticed that the complex indicators tended to produce errors.

Clemes (1964) adapted Jung's technique, administering a word-association test to a number of subjects. On the basis of the individual subjects' response latencies, word lists were idiographically constructed that consisted of half complex indicators and half neutral words. The subjects then memorized their lists while hypnotized. After a suggestion of partial amnesia, to the effect that they would remember only half the words, hypnosis was terminated. Clemes found that recall favored the neutral items over the complex indicators, indicating that a repression-like process had been invoked by the suggestion for posthypnotic amnesia. There was no differential recall shown by a control group who studied the list in the normal waking state. However, a recent attempt at replication failed to produce similar results (Stam, Radtke-Bodorik, and Spanos 1980). Thus, Clemes's evidence for a repression-like process in posthypnotic amnesia must be considered equivocal.

Selective Recall for Success and Failure

The most productive line of research was begun by Hilgard and Hommel (1961), who drew their inspiration from Zeigarnik's (1927) work on memory for interrupted tasks (the paper, originally published in German, is reprinted in Rapaport 1960). Zeigarnik engaged normal (nonpatient) subjects in a series of fairly simple tasks. For each subject, half the tasks were interrupted before they could be completed; the remainder were allowed to be finished. On a later test of incidental memory, she found that recall favored interrupted over completed tasks, a result that has since been christened the Zeigarnik effect. Zeigarnik, a student of Kurt Lewin, argued that brain systems involved in task performance remained activated until the tasks were completed, thus rendering memory traces of task performance more accessible to retrieval—a process we would now call a kind of priming effect.

However, Zeigarnik also noted that under certain conditions her effects were reversed. When the subjects construed task interruption as a sign of failure or lack of ability, memory favored completed tasks as opposed to interrupted ones. Zeigarnik interpreted this as a kind of repression of ego-threatening material. Her study, which has been called “a methodological milestone in the study of experimental psychodynamics” (MacKinnon and Dukes 1964, 676), set in motion a line of inquiry that has lasted more than fifty years (e.g., Blaney 1986; Butterfield 1964; Holmes 1974; Weiner 1966). For example, Rosenzweig and his colleagues experimentally controlled task perception and again reversed Zeigarnik's effect under conditions of ego threat (e.g., Rosenzweig 1938, 1952). Rosenzweig also produced the first link to hypnosis, demonstrating that the selective forgetting of uncompleted tasks under conditions of ego threat—repression—was significantly correlated with hypnotic susceptibility (Rosenzweig and Sarason 1942; Sarason and Rosenzweig 1942; see also Brenman 1947; Petrie 1948). This formed the basis for Rosenzweig's “triadic hypothesis” that hypnotizable individuals prefer repressive defenses and tend to gloss over or rationalize frustration (Rosenzweig and Sarason 1942; Sarason and Rosenzweig 1942).

In many ways, the standardized procedures used to assess individual differences in hypnotizability constitute an ideal medium for the study of Zeigarnik's effects (for reviews, see Hilgard 1965; Kihlstrom 1985). Here, a group of unselected volunteer subjects is administered a hypnotic induction accompanied by suggestions for a representative set of hypnotic phenomena. For example, it might be suggested that there is a fly buzzing annoyingly around the subject's head. The subjects, presumably all positively motivated for hypnosis (by virtue of their volunteer status), are asked to try to experience each suggested effect. In the conventional forms of these scales, response to each suggestion is indexed by an objective, behavioral criterion. To continue the example, the subject would be scored as “passing” the fly hallucination if he

or she made any observable acknowledgment of the presence of the fly—perhaps by brushing the face or shaking the head. However, only a very few subjects, about 10 percent are “hypnotic virtuosos” who will experience all (or virtually all) the suggestions. Most subjects will experience a mix of successes and failures (only very rarely are subjects so unsusceptible to hypnosis that they will have none of the experiences at all). So, following the logic of Zeigarnik and Rosenzweig, it should be possible to examine the subject’s recall for these test items after hypnosis has been terminated and determine whether recall favors passed or failed items.

At the very least, this would tell us whether Zeigarnik’s Gestalt effect, or its repressive reverse, can be obtained in the hypnotic domain as well as in the sorts of tasks typically used in the Zeigarnik-Rosenzweig tradition. But there is more because the standardized scales usually end with a suggestion of amnesia. As with any other hypnotic suggestion, response to amnesia varies widely and is highly correlated with hypnotizability. Therefore, if posthypnotic amnesia involves a repression-like process, the reverse Zeigarnik effect should be especially prominent in those highly hypnotizable subjects who are most responsive to amnesia suggestions—and in those hypnotizable subjects who actually show amnesia.

The initial experiment along these lines was performed by Hilgard and Hommel (1961), employing data gathered in the standardization of the Stanford Hypnotic Susceptibility Scale. Those few unsusceptible subjects who failed all the items, as well as those hypnotizable subjects who passed all the items, were excluded from analysis. The remaining subjects, 97.6 percent of the entire group, showed a general tendency to favor passed over failed items. On the average, these subjects recalled 60.2 percent of the items they had passed but only 49.0 percent of those they had failed. The difference was highly significant and represents a reverse Zeigarnik effect indicative of repression. It seems plausible to conclude that failure to respond positively to hypnotic suggestions is generally disappointing, at least for subjects who are positively motivated for hypnosis, and that those items that are failed are also repressed.

When the sample was stratified into three levels of hypnotizability (high, medium, and low), however, somewhat different results were obtained (see table 1). The differential recall of passed over failed items was not significant for the hypnotizable subjects. Hilgard and Hommel (1961) suggested that this might be a statistical artifact of the very low levels of recall displayed by these subjects during posthypnotic amnesia. They also examined selective recall after the amnesia suggestion was canceled by the prearranged reversibility cue. Under these circumstances, the hypnotizable subjects recalled considerably more material than they had previously, but there remained a residual pool of items that remained unrecalled despite the reversal of the amnesia. This pool contained a disproportionate share of failed items. Thus, Hilgard

Table 1. Extent of Selective Recall during Posthypnotic Amnesia

Study	N	Hypnotizability		
		High	Medium	Low
Hilgard and Hommel (1961)	124	.06	.19	.15
O'Connell (1966):				
Sample A	100	.07	.12	.43
Sample B	152	.11	.15	.33
Sample C	54	.18	.27	.40
Sample D	86	-.02	.27	.44
Sample E	94	.10	.20	.05
Coe et al. (1976)	29			
Objective		-.22	-.03	.08
Subjective		-.08	-.10	.17
Pettinati and Evans (1978)	88	.10	.20	.20
Pettinati et al. (1981)	278	.14	.16	.23
Chorny et al. (1988):	501			
Objective		.08	.13	.26
Subjective		.09	.12	.23

Note: Positive values indicate that recall favors passed items over failed ones; negative values indicate that recall favors failed items.

and Hommel (1961) concluded that the repressive process represented by the reverse Zeigarnik effect, if indeed that is what it is, is largely independent of hypnosis and amnesia.

Hilgard and Hommel (1961) also considered an alternative to the repression hypothesis, one based on salience effects. As is well known, salient events are more accessible in memory (Von Restorff 1933; Tversky and Kahneman 1973). The argument is that suggestions that are successful are highly salient for hypnotic subjects—the more so for insusceptible subjects, who after all have relatively few of them. However, it would seem that the salience hypothesis would predict a Von Restorff-type contrast effect—that recall would favor passed items among insusceptible subjects, which it does, and failed items among hypnotizables, which it does not. On these grounds, repression is probably to be preferred over salience.

On further examination, however, the finding of the reverse Zeigarnik effect in and of itself does not permit us to distinguish between a selective repression of failed items and a selective enhancement of passed items. The two processes are not the same. The difference between them may be seen by considering what is missing in the Hilgard and Hommel (1961) study (and in all subsequent studies employing their paradigm): an untreated control group. Suppose that we recruited a representative sample of subjects and simply read them the hypnotizability scale items, without asking them to experience the

suggested effects or to have amnesia, and that, later on, we asked them simply to recall the items. In this case, memory cannot be selectively affected by repression or enhancement, for the simple reason that the subjects have had no experiences of success and failure.

Suppose, then, that we determined that under these circumstances the average subject recalls 60 percent of the items. This figure would then establish a baseline representing the proportion of passed and failed items a subject would be expected to remember. With an expected value of 60 percent, then, the Hilgard and Hommel (1961) data would provide evidence of repression, not enhancement, because the proportion of failed items recalled is lower than expected. On the other hand, if the baseline were 50 percent, the same data would provide evidence for enhancement, not repression, because the proportion of passed items recalled is greater than expected. Just such data has been collected by Cooper (1979) from a fairly large sample of college student subjects. He estimated that the average subject recalls about 64 percent of critical items. Assuming that his baseline is generalizable across samples, then, the results of Hilgard and Hommel (1961) may be taken as evidence of repression—the selective and disproportionate forgetting of failure.

O'Connell (1966) replicated the Hilgard and Hommel (1961) procedure on five new samples of subjects who had received various standardized hypnotizability scales, with similar results (see table 1). Again omitting subjects who either passed or failed all the items and thus could not show selective recall, there was a significant overall tendency for recall to favor passed over failed items. Again, this reverse Zeigarnik effect in recall was most pronounced among those who were relatively unsusceptible to hypnosis. On the assumption that most hypnotic subjects are positively motivated to experience the suggestions, O'Connell (1966) interpreted these results as providing evidence of a repression-like process operating independently of hypnosis and amnesia. In addition, he argued that unsusceptible subjects also experienced an enhancement of memory for those few items that they successfully experienced, leading to the observed difference in selective recall among hypnotizability groups.

The next foray into this area was by Coe and his colleagues (Coe et al. 1976). They argued, correctly, that repression could not be studied adequately without considering the subject's subjective emotional responses to the suggestions. Investigators can *assume* that subjects are disappointed when they fail items and pleased when they pass them, but this is not necessarily so. (In fact, unpublished research in our laboratory provides considerable evidence that, for individual suggestions, the subjective feeling of success is not highly correlated with behavioral response.) Accordingly, Coe et al. asked subjects to rate their emotional responses to each item on a five-point scale, with the poles marked "pleasant" and "unpleasant." In fact, objective pass-fail status was not correlated with emotional valence. Coe's differential recall results,

summarized in table 1, reversed those of Hilgard and Hommel and of O'Connell. Overall, recall favored failed over passed items (using objective indices of item response) and unpleasant over pleasant ones (using subjective ratings). This effect was strongest for hypnotizable subjects; insusceptible subjects showed a somewhat weaker preference for failed items. This study provides no evidence for repression, though the trends have the flavor of Von Restorff-type contrast effects. However, owing to the small number of subjects involved, none of the differences were statistically significant.

Most recently, Pettinati and Evans (1978; Pettinati et al. 1981) analyzed two new samples of subjects, using only behavioral pass-fail ratings, and replicated the findings of Hilgard and Hommel (1961) and O'Connell (1966). In general, recall favored passed items. Although the difference was not statistically significant, the reverse Zeigarnik effect was greatest in subjects of low and moderate hypnotizability (see table 1). Pettinati and Evans (1978) also analyzed the data with an alternative index of selective recall designed to remove the artifactual influence of the total number of times remembered. The old and new indices were in fact highly correlated, suggesting that the artifact was not a serious one. The difference in selective recall between hypnotizable and insusceptible subjects remained constant. A second study, reanalyzing data originally collected by Kihlstrom et al. (1980), yielded similar results (Pettinati et al. 1981). Overall, recall favored passed over failed items. Further, there was a nonsignificant trend for this difference to be reduced among the highly hypnotizable subjects, and, for those highs who met a criterion for posthypnotic amnesia, it was reduced virtually to zero.

In our laboratory, Chorney followed the lead of Coe et al. (1976) in examining the effects of both objective and subjective success on memory for scale items (Chorney et al. 1988). A total of 501 subjects completed HGSHS:A, evaluating their responses to the various suggestions in terms of both the standard behavioral criteria and their subjective impressions of success. Preliminary analysis indicates that selective recall tended to favor passed over failed times, regardless of whether item status was determined in objective or subjective terms, and the degree of selectivity was highest among insusceptible, nonamnesic subjects. Thus, Chorney's results generally confirmed the findings of Hilgard and Hommel (1961), O'Connell (1966), and Pettinati (Pettinati and Evans 1978; Pettinati et al. 1981) and contradicted those of Coe et al. (1976): selective recall generally favors passed or successful items.

In an attempt to distinguish between repression and enhancement effects, Chorney et al. (1988) administered the HGSHS:A to a control sample of 103 subjects under conditions that precluded the experience of success or failure. The average control subject recalled 5.83 items (64.8 percent) during a test of initial recall, compared to an average of 3.37 items (37.4 percent) for the experimental subjects on the comparable test of posthypnotic amnesia. Thus, the recall bias exhibited by hypnotic subjects seems more closely akin to

repression than enhancement. Nevertheless, because the degree of selectivity was negatively correlated with hypnotizability, this repression-like tendency is unrelated to either hypnosis or posthypnotic amnesia. Rather, the mechanism of posthypnotic amnesia appears to be superimposed on ordinary selective recall effects.

With the exception of the small sample collected by Coe et al. (1976), then, all the studies reviewed here agree that hypnotic subjects show a general tendency to recall passed over failed items during posthypnotic amnesia. Assuming that the reverse Zeigarnik effects reflects repression, it appears that there is a general tendency for hypnotic subjects to repress their failures. This tendency is not magnified in those who are most highly hypnotizable and thus most responsive to amnesia suggestions. In fact, if anything, it is reduced, so it cannot be said to constitute part of the mechanism by which posthypnotic amnesia takes place—or, indeed, to have anything to do with hypnosis *per se*. In summary, then, it is difficult to see in posthypnotic amnesia either the motive to avoid unpleasant, threatening, and conflict-laden memories or the selective impairment in retrieval of these memories that are part and parcel of the classic concept of repression.

Dissociation in Posthypnotic Amnesia

Although Hilgard initiated the formal study of repression-like processes in posthypnotic amnesia (in addition to his collaboration with Hommel, the Clemes study was also done under his supervision), he himself has always favored an interpretation in terms of dissociation (Hilgard 1966, 1977, 1979). The *prima facie* evidence suggesting a dissociative mechanism for posthypnotic amnesia is the same as that indicating a repressive one. The phenomenon presents us with a set of memories, denied to conscious awareness (as reflected in the subject's inability to recall them) but remaining stored in memory (as reflected by the recovery of memory that occurs when the reversibility cue is given to cancel the amnesia suggestion). Both dissociation and repression require this continued availability of inaccessible memories.

Both concepts also require that the memories remain dynamically active—that is, although they are outside the scope of phenomenal awareness, they exert a demonstrable influence on ongoing experience, thought, and action. This is what dissociation means in the descriptive (as opposed to the explanatory) sense: posthypnotic amnesia affects some aspects of memory function but not others. As defined by Tulving (1983), the dissociation paradigm in psychological research involves the differential effects of an experimental manipulation on two dependent variables. Dissociation occurs when the manipulation affects one variable but not the other or effects the two variables in different ways (i.e., positive and negative). An extremely powerful example

of this paradigm is found in cases of "double dissociation," where there are two manipulations that are found to affect two variables differently. Tulving (1983) has also proposed two other variants on the dissociation paradigm: pathological dissociation, in which the experimental manipulation is replaced by two or more patient groups, and developmental dissociation, in which it is replaced by two or more age levels.

In this descriptive sense, at least, posthypnotic amnesia certainly can be described in terms of dissociation (see the comprehensive reviews in Kihlstrom 1977, 1984, 1985, 1987a, 1987b; Kihlstrom and Evans 1979). For example, posthypnotic amnesia exerts a profound effect on free recall, but it exerts considerably less effect on recognition (e.g., Kihlstrom and Shor 1978) and relearning (Hull 1933) measures of memory. It does not appear to affect either proactive or retroactive inhibition (e.g., Dillon and Spanos 1983; Graham and Patton 1968). Nor does it appear to affect the subject's use of factual knowledge acquired during the hypnotic session (e.g., Evans 1979) or the priming effects that occur when subjects are asked to perform some processing task on material covered by the amnesia suggestion (e.g., Kihlstrom 1980; Spanos, Radtke, and Dubreuil 1982). All these dependent variables are measures of memory: the fact that posthypnotic amnesia affects some but not others is indicative of dissociation in its limited, descriptive sense. But what is dissociated?

Steps toward a Description of Dissociation

Gregg (1979, 1980) has suggested that the dissociation is between optional and obligatory memory processes. Obligatory processes are those that occur automatically, without any conscious intention or control on the part of the subject; optional processes, by contrast, are those whose deployment and operation can be deliberately controlled by the individual. There is some evidence favoring Gregg's hypothesis: obligatory processes are perhaps best represented by the sorts of interference, savings, and transfer effects familiar from the literature on paired associated learning (Crowder 1976) and by the priming effects that lie at the core of spreading activation models of memory retrieval (Anderson 1983). The persistence of these effects in the face of a failure of free recall would, indeed, seem to indicate that amnesia affects the optional, but not the obligatory, aspects of memory processing. At the same time, however, there are some troubling anomalies in the application of the optional-obligatory distinction to research on posthypnotic amnesia. Chief among these is the finding that recognition is relatively unaffected in amnesic subjects. There is nothing obligatory about performance on recognition tests: subjects can choose to withhold a positive recognition response just as easily as they can choose to withhold a free-recall report (for a detailed critique, see Kihlstrom 1985).

Another potential dissociation is between declarative and procedural memory. Declarative memories represent factual knowledge about the nature of the physical and social world; by contrast, procedural memory represents the cognitive processes—the rules, skills, and strategies—by which declarative knowledge may be manipulated and transformed. The limited evidence available suggests that posthypnotic amnesia has no effect on the acquisition or retention of either cognitive or motor skills (for a detailed review, see Kihlstrom 1985, 1987a, 1987b), suggesting that the dissociation is between declarative memory (which is impaired) and procedural memory (which is spared). But there are certain aspects of declarative memory that are relatively unimpaired in posthypnotic amnesia. For example, in the phenomenon of posthypnotic source amnesia, subjects may remember factual information acquired while they were hypnotized but forget the circumstances under which they learned it (Evans 1979). Alternatively, amnesic subjects may forget the contents of a word list memorized during hypnosis but retain the words in their vocabulary. In these experiments, both variables involve declarative memory, yet amnesia affects one but not the other.

Kihlstrom (1980, 1985, 1987a, 1987b; see also Kihlstrom and Evans 1979) and Tulving (1983) have suggested that these findings illustrate a dissociation between the episodic and the semantic forms of declarative memory. Episodic memory is autobiographical memory, concerning one's own past experiences and referring to the spatiotemporal and organismic context in which those experiences occurred; semantic memory may be thought of as the mental lexicon of categorical world knowledge stored without reference to the episodic context in which it has been acquired and used. In fact, the episodic-semantic distinction organizes a large portion of the empirical literature on posthypnotic amnesia (for a review, see Kihlstrom 1985). Posthypnotic amnesia impairs performance on episodic memory tasks such as free recall but spares performance on semantic memory tasks such as word association (e.g., Kihlstrom 1980; Williamsen, Johnson, and Eriksen 1965). This dissociation between episodic and semantic memory is a feature that this experimentally induced temporary amnesia shares with certain permanent pathologies of memory observed in the neuropsychological clinic, such as the amnesic (Korsakoff's) syndrome (Schacter and Tulving 1982).

But even here there are some anomalous findings, due in large part to the fact that some memory tasks are not easily classified as either declarative or procedural, episodic or semantic, in nature. For example, McKoon and her colleagues (McKoon, Ratcliff, and Dell 1986) have pointed out that retroactive inhibition—in which memory for one word list impairs retrieval of another list learned previously—is an effect of episodic memory but is not impaired by posthypnotic amnesia (for a reply, see Tulving 1986). Similarly, relearning and priming may be classified as episodic memory effects because they reflect the residual activity of memory traces encoded during some pre-

vious event. While this is true, there appear to be qualitative differences between, say, recall and relearning or priming. The difference is that recall, almost by definition, requires conscious awareness of a previous experience, whereas relearning and priming do not. For example, Nelson (1978) has shown that savings in relearning can occur even for items that are neither recalled nor recognized. Also, patients displaying anterograde amnesia due to lesions in the medial temporal lobe and associated areas show unimpaired repetition priming effects of words that they cannot recall or recognize (e.g., Schacter 1985).

Explicit and Implicit Memory

Thus, comparison of various forms of episodic memory effects reveals a further distinction between memory with and without awareness (Eich 1984; Jacoby 1986; Jacoby and Witherspoon 1982) or between implicit and explicit memory (Graf and Schacter 1985; Schacter 1987). As defined by Schacter (1987), explicit memory requires the conscious recollection of a previous episode, whereas implicit memory is revealed by a change in task performance (facilitation or interference) that is attributable to information acquired during that episode. An increasingly large body of literature from both normal and patient populations indicates that these two forms of memory are dissociable and that people can display implicit memory (e.g., savings or priming effects) without having any conscious recollection of the episode on which these effects are based). In many ways, the implicit-explicit distinction subsumes the distinctions drawn earlier between optional and obligatory, procedural and declarative, and episodic and semantic memory. Certainly explicit memory, which involves the conscious recollection of the details of a prior experience, comes very close to what Tulving originally meant by episodic memory (Tulving 1985).

Just as the explicit-implicit memory distinction more accurately characterizes the dissociations observed in normal remembering and the amnesic syndrome, so it appears to capture the dissociations observed in posthypnotic amnesia (Kihlstrom 1987a). Consider, for example, two experiments by Kihlstrom (1980), originally presented as bearing on the episodic-semantic distinction. In the first experiment, subjects classified as low, medium, high, and very high in hypnotizability memorized a list of fifteen unrelated words to a criterion of two correct recitations. After reaching criterion, they received a suggestion of posthypnotic amnesia—that they would not be able to remember the words they learned, or that they learned any words at all, until administration of the reversibility cue. Note that the suggestion is directed toward episodic memory—the amnesia covers a particular episode in the subject's experience. On an initial test of recall, the subjects of very high hypnotizability (who, following Hilgard, might be called hypnotic virtuosos; Register and

Table 2. Dissociation between Explicit and Implicit Memory in Posthypnotic Amnesia (after Kihlstrom 1980)

Experiment	Index of Memory Performance	Hypnotizability	
		Insusceptible	Virtuoso
1	Free recall	13.90	.20
	Word association:		
	Critical	10.80	12.20
	Neutral	8.40	10.40
2	Free recall	15.83	1.25
	Category instances:		
	Critical	10.83	9.42
	Neutral	7.83	7.08

Note: Priming effects are reflected by the difference between response to critical and neutral probes in the word association and category instances tasks.

Kihlstrom 1986) remembered virtually none of the words they had previously memorized, showing a very dense posthypnotic amnesia—a deficit in episodic memory. The insusceptible subjects, by contrast, showed virtually perfect memory for the word list.

At this point, the subjects were asked to give word association to various probes; half of these, called critical stimuli, were selected because they had a high a priori probability of eliciting the items from the previously memorized word list; the remainder, called neutral stimuli, targeted items that the subjects had not learned. The critical and neutral lists were carefully matched in terms of stimulus-response probabilities, and learning of the two lists was counter-balanced across subjects. Three results were of special interest (see table 2). First, posthypnotic amnesia did not disrupt the word-association performance of the hypnotic virtuosos: the items from the memorized word list remained available for use in their vocabulary. More important, there was a semantic priming effect observed in the word-association performance, such that the subjects were more likely to give the targeted response to critical as opposed to neutral stimuli. Most important, there was no difference in priming between virtuoso and insusceptible subjects, despite the fact that the virtuosos displayed a dense posthypnotic amnesia on the initial recall test. These findings were confirmed in a conceptual replication in which subjects memorized a categorized word list and were asked during amnesia to provide instances of critical and neutral taxonomic categories.

The dissociation between free recall and word-association performance is, as Kihlstrom (1980) and Tulving (1983) noted, a dissociation between episodic and semantic memory. But the dissociation between free recall and semantic priming is somewhat more difficult to interpret in those terms. Clearly, priming is an effect of episodic memory on a semantic memory task, but, just

as clearly, priming does not require awareness of the learning experience that is the source of the facilitation in word-association or category-instantiation performance. In Schacter's terms, then, these experiments show a dissociation between explicit and implicit forms of episodic memory—the former impaired, the latter spared—in the effects of posthypnotic amnesia. The results of experiments on relearning and retroactive and proactive inhibition would also appear to illustrate this dissociation, although it may be necessary to repeat the experiments now that the explicit-implicit distinction has been formally articulated.

But even here there is an anomaly: under some circumstances at least, recall is impaired by posthypnotic amnesia, but recognition is not—at least not to the same degree. The problem is that recall and recognition are both measures of explicit memory, so we should not observe any dissociation between them. One possible resolution of this anomaly is to argue that recognition is generally easier than recall and thus less likely to show amnesic effects. However, there are reasons to think that recognition can be mediated by implicit as well as explicit memory. A number of investigators (e.g., Jacoby and Dallas 1981; Mandler 1980) have suggested that recognition of an item can be mediated by two qualitatively different processes: (a) respecification of the context in which an event occurred or (b) the feeling that an item is familiar. The former process is closer to the ordinary meaning of the word “remembering” because it involves conscious recollection of the spatiotemporal context in which the event took place as well as the role of the self as agent or experiencer of the event. The second process is more like an inference or a judgment of prior occurrence and resembles the experience in which a face or name “rings a bell.”

In some cases, the “bell ringing” or feeling of familiarity may reflect the residual activation of the trace encoded by the prior experience—the same residual activation that underlies repetition and semantic priming effects. Thus, recognition by respecification might be construed as explicit memory, while recognition by familiarity might be construed as implicit memory. Unfortunately, most comparisons of recall and recognition do not permit a distinction between the respecification and familiarity components of recognition. However, ongoing research in our laboratory appears to reveal a dissociation, predicted by the explicit-implicit memory distinction, between them during posthypnotic amnesia. That is, amnesic and nonamnesic subjects may not differ in recognition by familiarity, but they may well differ in recognition by respecification (Kihlstrom 1985).

Repression and Dissociation in Cognitive Theory

Freud and Janet were continually at odds over the question of repression versus dissociation as the mechanism underlying unconscious mental processes

of the kind observed in clinical psychopathology. They and their seconds also disagreed about the conceptual relation between the two processes. The First and Second Dynamic Psychiatries divided over the relation between the two concepts (Ellenberger 1970). At the same time, other theorists, contemporary with Freud and Janet, refused to choose between the two approaches, seeing value and utility (as well as unfortunate vagueness) in both concepts. For example, Sears (1936) suggested that both concepts were necessary to account for the functional disorders of memory observed in the clinic. More recently, Hilgard (1977), in reviving the theory of dissociation, saw no need to revive as well the ancient battle between Janet and Freud. Instead, he attempted to show how repression and dissociation might be related to each other. Adopting the topographic language of depth psychology, he described the repressive barrier as horizontal, with the function of preventing direct access to the contents of the unconscious system. In terms of contemporary memory theory (Kihlstrom 1984), the contents of the system covered by the horizontal, repressive barrier would be described as unavailable to introspective access or voluntary control under any circumstances. The contents of this system can be known only indirectly, through their effects on publicly observable behavior, and they are not amenable to conscious, voluntary control.

On the other hand, following Prince's use of the term "co-conscious," the dissociative barrier is depicted as vertical, segregating some contents of the conscious and preconscious systems from others. This barrier prevents conscious access to percepts, memories, and thoughts that nonetheless remain available, in principle, to introspective awareness (Kihlstrom 1984, 1987a, 1987b). A physical model (if perhaps an overly literal one) for this vertical division is cerebral commissurotomy, which effectively prevents the two hemispheres of the brain from communicating with each other, even though their individual operations remain unimpaired. Although the contents of dissociated memory systems are in principle available to direct introspection and voluntary control, they are temporarily denied access to these executive functions.

Because repression and dissociation are both postulated mechanisms for denying introspective access to certain mental contents, it would seem useful to conclude with some comments about how these processes could be conceptualized in terms of contemporary information-processing approaches to memory (see also Erdelyi 1985; Erdelyi and Goldberg 1979; Hilgard 1977; Hoyt 1987; Kihlstrom 1984, 1985, 1987a). For this purpose, let us assume that repression and dissociation are not mutually exclusive and that it would be possible to construct a cognitive system in which both were possible. Let us further assume, for purposes of exposition, that repression, like dissociation, operates on declarative knowledge, factual knowledge about the self or the outside world. The postoeidial child who is unaware that he loves his mother desperately and the rape victim who blocks out all memory for her

assault have both lost access to some piece of declarative knowledge—some empirical or believed-in fact about the world. Both concepts—repression and dissociation—would permit unconscious procedural knowledge, differing qualitatively (i.e., in terms of its representational format) from declarative knowledge and inaccessible in principle, under any circumstances, to direct introspective access. Within the domain of declarative knowledge, then, it remains to make further distinctions between conscious, preconscious, dissociated, and repressed mental contents (Kihlstrom 1987a, 1987b).

Let us now identify the conscious system with working memory, that portion of declarative memory that contains activated representations of the organism in its immediate environment as well as of the organism's current processing goals and goal-relevant memory structures activated by perceptual processing or memory retrieval (Anderson 1983). In these terms, as I have argued elsewhere (Kihlstrom 1984, 1985, 1987a, 1987b), the essential distinction between what is conscious and what is not is that conscious mental contents are both activated (by perception or thought) and linked with activated representations of the self, its goals, and its local environment. Preconscious mental contents are latent: not activated (or, more properly, not activated above some threshold) and perforce not linked to the activated mental representation of the self. Dissociated, subconscious mental contents, while fully activated, are not linked with either an active mental representation of the self or the active mental representation of the context, or both (Kihlstrom 1984, 1985, 1987a, 1987b).

One approach to repression may begin with the reminder that Freud used the terms "repression" and "suppression" interchangeably throughout his writings on the subject (Erdelyi and Goldberg 1979). Perhaps, then, repression is a close kin of conscious, deliberate denial. Recently, Wegner and his colleagues have developed an interesting paradigm for the study of conscious, deliberate thought suppression that may be of use in understanding repression (Wegner et al. 1987). In their experiments, subjects are asked not to think about a white bear but to indicate if they should happen to do so. Three findings are of interest: (a) subjects were generally unable to suppress the target thought completely—even though, under ordinary conditions, they would have been extremely unlikely to have entertained it in the first place; (b) when they were subsequently asked to think about the bear deliberately, they produced more target thoughts than a control group that had not been asked to suppress them at the outset; and (c) this rebound effect was reduced when subjects are given something else to think about, as a distraction from white bears.

The thought suppression paradigm of Wegner et al. (1987) deserves further exploration as a vehicle for the experimental study of repression. However, as they themselves note, conscious suppression is not the same as repression—precisely because repression, in order effectively to defend the individual

against threatening ideas and impulses, must be unconscious. Hoyt (1987) has suggested that one mechanism for transforming conscious thought suppression into unconscious repression is afforded by recent information-processing analyses of attention (Egeth 1977; Kahneman 1973; Kahneman and Triesman 1984) and the acquisition of cognitive skills (e.g., Anderson 1982; Schneider and Shiffrin 1977; Shiffrin and Schneider 1977). Attention is construed as the allocation of processing resources to some object or activity; these resources are limited, placing constraints on the number of objects or activities that can be attended simultaneously. At the same time, paying attention is also construed as a cognitive skill. The ability to divide attention among two or more simultaneous tasks, as required by dissociative processes, may be one such skill (Spelke, Hirst, and Neisser 1976). Deploying attention away from unpleasant cognitive contents that would otherwise attract it, as required by repression, may be another (Wegner et al., 1987).

While attentional capacity may wax and wane with maturational changes over the life cycle (producing, e.g., at least some of the memory deficits associated with childhood and old age), attentional skills—like other cognitive and motoric abilities—develop over time, with practice. At the initial stages of their acquisition, such skills demand the allocation of considerable attention, but, with practice, they become automatized (Anderson 1982; Hasher and Zacks 1979; LaBerge and Samuels 1975; Logan 1980; Posner and Snyder 1975; Schneider and Shiffrin 1977; Shiffrin and Schneider 1977, 1984). Some theorists hold that automatization of a cognitive process appears to change its representational format, from declarative to procedural in form (Anderson 1982). Automatic procedures are so named because they are inevitably engaged by the presentation of specific stimulus inputs, regardless of any intention on the part of the subject; in addition, they consume little or no cognitive resources. Thus, automatized processes are unconscious in that the person has no introspective access to their operation (Kihlstrom 1987a, 1987b, *in press*).

In most cases, of course, the person has direct introspective access to the final products of cognitive processing—the particular percept, memory, image, thought, or goal that appears in consciousness. But the goal of dissociative and repressive procedures, if indeed they exist, is quite different: their purpose is to allow the person to remain unaware of what is being processed. Thus, both the operation of dissociative and repressive skills and the products of their operation may be inaccessible to consciousness. It is an open question whether dissociation and repression ever become fully automatized in this sense; in fact, there seem to be cognitive costs associated with both processes (for further discussion of these issues, see Hoyt 1987; Kihlstrom 1987a, 1987b). Nevertheless, the information-processing approach to attention and cognitive skills suggests a mechanism by which the act of repression itself could be rendered unconscious—as Freud required it to be and, indeed, as it must be to serve as an effective defense.

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