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## Dissociative and Conversion Disorders

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Keep it well in mind, and this should not require great effort, that the word "hysteria" means nothing, and little by little you will acquire the habit of speaking of hysteria in man without thinking in any way of the uterus.

Charcot (1877, p. 37)

The word "hysteria" should be preserved, although its primitive meaning has much changed. It would be very difficult to modify it nowadays, and truly it has so great and beautiful a history that it would be painful to give it up.

Janet (1901, p. 527)

The dissociative and conversion disorders constitute a disorder that once was referred to as "hysteria:" symptoms and syndromes suggestive of neurological disease that occur in the absence of diagnosable insult,

injury, or disease in the brain.<sup>1</sup> Hysterical symptoms and syndromes were studied and catalogued by Janet and Freud, who both first encountered them in Charcot's clinic at the Salpêtrière (Chertok, 1970; Macmillan, 1986); later, their observations formed the bases for the first (rival) psychogenic theories of mental illness. These theories continue to fascinate us, even today.

In current usage, the dissociative disorders include amnesia, a loss of autobiographical memory (either general, covering an entire period in the person's life, or selective, covering only certain classes of events); fugue, a general amnesia coupled with loss of identity and, perhaps, relocation; multiple personality, in which a single individual seems to display two or more distinct personalities; depersonalization, in which the person perceives him- or herself as somehow changed or unreal; and derealization, in which the person perceives the surrounding world as changed or unreal instead. What unites these syndromes is a functional disorder of memory, broadly construed (Kihlstrom & Evans, 1979; Schacter & Kihlstrom, 1989; Kihlstrom, Tataryn, & Hoyt, 1990; Tasman, 1991); in some sense the patients forget what they did, who they are, or both.

The conversion disorders include psychogenic deafness, blindness, and other impairments of sensory-perceptual function, either general (i.e., affecting the entire modality) or selective (i.e., affecting the perception of only certain categories of objects and events), as well as paralysis, aphonia, and other impairments of voluntary motor function (these, too, may be general or specific). Again, these are functional disorders of perception and action (Kihlstrom, Barnhardt, & Tataryn, 1991), mimicking neurological disease but occurring in the absence of organic damage.

### **The Vicissitudes of Diagnosis**

The categories "dissociative disorder" and "conversion disorder" are unique in the psychiatric nosology, because they are the only syndromes

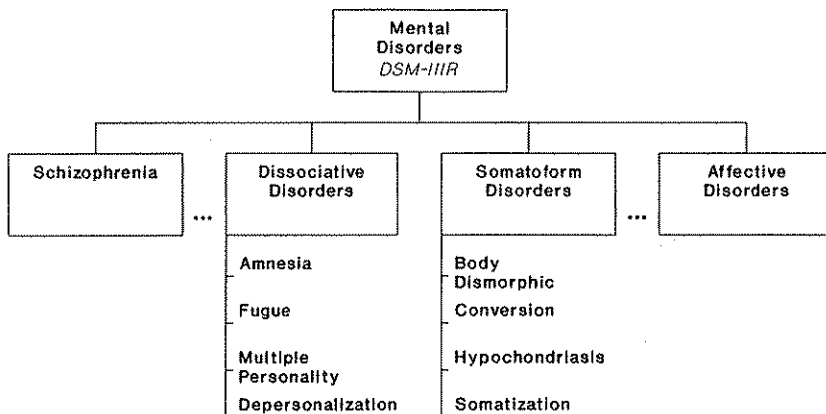
<sup>1</sup>This is not to deny that the symptoms of the dissociative and conversion disorders have a biological base. All mental states, including functional amnesia and similar disorders, are accompanied by correlated changes in brain state, but these brain states do not cause the disorders in the same way that damage to perihippocampal structures causes organic amnesia or lesions in the striate area cause cortical blindness. Moreover, it must be recognized that some dissociative and conversion disorders arise in association with physical injury, even if they cannot be attributed to lasting organic problems. Also, some apparently "functional" disorders may reflect the early stages of organic illness, the true nature of which becomes clear only after the disease has progressed. The fact that organic factors are implicated in some dissociative and conversion disorders should not be taken to imply that they are not analyzed most appropriately in psychological (or, according to some authors, sociocultural), rather than neurobiological, terms.

whose labels carry etiological significance. Schizophrenia may be caused by defective genes or double binds; depression may be caused by neurotransmitter abnormalities or a life history of helplessness and hopelessness; anxiety may reflect hormonal imbalances or an environment characterized by unpredictable aversive events. On the other hand, the dissociative disorders are caused by dissociation, ostensibly, and the conversion disorders by conversion. In this way, both sets of syndromes continue the line established by the ancient diagnosis of hysteria, the name of which derives from the attribution of symptoms to a wandering uterus.

In the earliest attempts to develop a standard nomenclature for psychopathology, introduced during and after World War I, the dissociative and conversion disorders were, in fact, linked under the general label of "conversion hysteria," a label that obviously reflects the heavy influence of psychoanalytic thought on psychiatry at the time. Even within that framework, however, the label was somewhat of a misnomer. Conversion might be invoked to explain disorders of the sensory and motor systems, when the anxiety associated with unacceptable impulses is converted into physical symptoms that symbolically represent the repressed content, but it cannot explain disorders of memory and personality.

After World War II, the conceptualization of dissociation and conversion changed as psychiatry and psychopathology attempted to find a firmer scientific footing for the diagnostic system. The first edition of the *Diagnostic and Statistical Manual* (DSM-I; American Psychiatric Association, 1952) abandoned explicit reference to hysteria, yet the classical psychoanalytic conception of these disorders continued to dominate psychopathological thought. Conversion and dissociation were categorized as psychoneurotic disorders in which anxiety was "unconsciously and automatically controlled by various defense mechanisms"—specifically, dissociation and conversion—rather than "directly felt and expressed" (p. 31). The dissociative syndromes included, among others, depersonalization, multiple personality, fugue, (psychogenic) amnesia, and somnambulism (a second listing of somnambulism was defined as sleepwalking, proper). The conversion syndromes included anesthesia (in various sensory modalities), paralysis, and dyskinesia.

The second edition of DSM (DSM-II; American Psychiatric Association, 1968) reverted to the pre-DSM practice of explicitly classifying dissociation and conversion disorders as subtypes of hysteria, again defined in classical psychoanalytic terms as involving the unconscious and automatic control of anxiety. Hysterical Neurosis, Dissociative Type, was conceptualized as involving alterations in consciousness and identity, whereas Hysterical Neurosis, Conversion Type, involved disruptions in the special senses or the voluntary motor system.



**FIGURE 1**

The classification of dissociative and conversion disorders by DSM-III(R), showing dissociative disorders and conversion disorders on separate branches.

The next editions, DSM-III and DSM-III(R) (American Psychiatric Association, 1980,1987), dispensed with both neurosis and hysteria as technical terms; for the first time, the dissociative and conversion disorders were defined descriptively in theory-neutral language (Kluft, Steinberg, & Spitzer, 1988). Moreover, for the dissociative disorders at least, a structured interview—the SCID-D—was developed that made diagnosis more reliable (Steinberg, Rounsaville, & Cicchetti, 1990; Steinberg, 1991; for an alternative instrument, see Ross, Heber, Norton, & Anderson, 1989). Finally, for the first time, dissociation and conversion were no longer linked in the hierarchical arrangement of the nosology (although, admittedly, they are described in adjacent chapters). As shown in Fig. 1, the dissociative disorders constitute their own category in DSM-III(R) on the same level as schizophrenia, mood disorders, anxiety disorders, and the like. In contrast, the conversion disorders are located under a different major branch, as a subtype of the somatoform disorders, along with body dysmorphic disorder, hypochondriasis, and somatization disorder. Moreover, conversion disorder continues to be characterized in psychoanalytic terms, including the notions of primary and secondary gain and the idea that the patient's symptoms are expressions of conflict.

In the forthcoming DSM-IV, the diagnosis of the dissociative disorders has been refined greatly (Spiegel & Cardena, 1991). For example, the criteria for psychogenic fugue include the loss of personal identity as well as the assumption of a new one. Most important, interpersonality amnesia is returned to a central place in criteria for multiple personality disorder. DSM-IV also adds a new subcategory of culture-specific disorders with dis-

sociative overtones, for example, amok, berserk, and koro. At the same time, DSM-IV persists in segregating the dissociative disorders from their conversion counterparts, which continue to be listed under the somatoform disorders. The diagnosis of the somatoform disorders, apparently, is largely unchanged.

A major thrust of this chapter is to argue that this classification separation between the dissociative and conversion disorders is, literally, a category mistake (Ryle, 1949), and that the conversion disorders are named misleadingly. Viewed from a cognitive perspective, the dissociative and conversion disorders have much in common, whereas the conversion disorders bear little or no resemblance to other somatoform illnesses.

### Conversion and Somatization

The classification of conversion disorders as somatoform in nature appears to have resulted from the fact that their presentation focuses on physical symptoms that have no demonstrable organic basis. Conversion patients complain of blindness, deafness, tactile anesthesia, and paralysis of the skeletal musculature. In body dysmorphic disorder (previously known as dysmorphophobia), patients with normal appearance complain of defects in their appearance, such as wrinkled or spotted skin, enlarged or shrinking hands or feet, excessive facial hair, or misshapen facial features. In hypochondriasis, the patient shows a preoccupation with a particular disease and misinterprets bodily signs or sensations accordingly, despite competent professional reassurance to the contrary. In somatization disorder, formerly called Briquet's syndrome (or, alternatively, hysteria), the patient presents with repeated, multiple somatic complaints, against a long and complicated medical history of unsuccessful hospitalizations, uninformative tests, and unnecessary treatments.

Linking all these syndromes under a heading of "baseless physical complaints" ignores important differences among them. For example, the symptoms of hypochondriasis are fear of and concern for disease, not actual complaints of illness or loss of function; in this way, it can be distinguished from both conversion disorder and somatization disorder. More relevant to the present argument, however, are the many differences between conversion disorder and somatization disorder (Maxmen, 1986; Goodwin & Guze, 1989). Conversion disorder generally involves neurological symptoms (although admittedly psychogenic vomiting and pseudocyesis also have been classified as instances of conversion), whereas somatization disorder typically involves symptoms of the gastrointestinal, genitourinary, and cardiopulmonary systems. Conversion disorders usually present in one system, whereas somatization disorders usually involve

multiple complaints. Patients with conversion disorder may be rather casual about their symptoms (*la belle indifférence*), whereas their counterparts with somatization disorders are more dramatic, bordering on histrionic. Conversion disorders erupt suddenly, whereas somatization disorders appear gradually. Conversion symptoms often respond, at least temporarily, to hypnotic suggestion or barbiturate infusion; somatization symptoms do not. Conversion disorders often remit spontaneously, whereas somatization disorders persist despite active and prolonged treatment. If they reappear, conversion symptoms usually involve the system originally involved; the complaints in recurrent somatization disorder more commonly affect a different system.

These differences have been recognized for a long time (Chodoff, 1954, 1974; Chodoff & Lyons, 1958), but apparently this knowledge has not affected diagnostic practice. Despite the views of Charcot (1877) and Janet (1901) quoted at the outset of the chapter, we can be glad to see the disappearance of the term "hysteria" with its ancient sexist connotations (Veith, 1965) and long service in modern health care as a vehicle for patient abuse. However, there is a sense in which the baby has been thrown out with the bathwater; the field has failed to recognize the features that originally led classifiers to link the dissociative and conversion disorders under a single rubric. To understand these common characteristics and their theoretical significance, we turn to the classic literature in descriptive psychopathology, as well as to a small body of experimental literature concerned with these syndromes. (For fuller descriptions, see Schacter & Kihlstrom, 1989; Kihlstrom et al., 1990, 1991).

### Contradictions in Conversion and Dissociation

The classic description of the conversion disorders is found in Janet's treatises, *The Mental State of Hystericals* (1901) and *The Major Symptoms of Hysteria* (1907). Here, Janet noted the apparent contradictions between patients' complaints of losses of sensory, perceptual, and motor functioning, and their behavior, which was often inconsistent with these claims. (For more detail, see Kihlstrom et al., 1991.) In hysterical anesthesia, for example, Janet observed that reflexes could be elicited by stimulation in the anesthetized area, and that the patients' limbs and digits did not show the scars and blisters characteristic of those whose insensitivities were caused by neurological damage. Janet contrived a clever test (for a review of research on a modern version, see McConkey, Bryant, Bibb, Kihlstrom, & Tataryn, 1990) in which one anesthetic patient was given the paradoxical instruction to say "yes" when she felt a touch and "no" when she did not; when stimulated randomly on sensitive and anesthetized portions of her body, she in-

variably said "yes" to the former and "no" to the latter, clearly making a discriminative response that belied her claims of insensitivity.

In other cases, Janet noted that the functionally deaf could still hear a ticking watch or vibrating tuning fork applied to their teeth or skull. In unilateral blindness, he showed that pressure to one eye produced a doubling of the image, and that patients could read both red and blue letters through eyeglasses, one of whose lenses passed only blue light, the other only red. In functional tunnel blindness, patients moved in response to events in the periphery; in functional hemianopsia, they responded to events in their scotoma. All such demonstrations indicate that vision in both eyes is intact.

Janet's patients said that they could not see, hear, or feel yet, at the same time, their behavior was obviously responsive to visual, auditory, or tactile events. Similar observations were made by others, including William James (1890; see Taylor, 1983), and passed quickly into established clinical lore: the way to distinguish a functional disorder from malingering is that the malingerer attempts to construct an internally consistent self-presentation; the genuine hysteric displays indisputable contradictions, and makes no attempt to hide or reconcile them. A similar notion underlies Orne's (1959) notion of trance logic in hypnosis. It should be noted that, although this kind of test may once have been valid, the diffusion of cultural knowledge about these contradictions may have rendered current reliance on it unsound (see McConkey et al., 1990).

Since the appearance of Janet's treatises, numerous formal experiments have confirmed his essential observations. (For a more complete review, see Kihlstrom et al., 1991.) For example, Hilgard and Marquis (1940) showed that a patient with functional anesthesia and paralysis was able to acquire a conditioned finger-withdrawal response; Malmö, Davis, and Barza (1952,1953) found that a functionally deaf patient showed electromyographic responses to an auditory conditioned stimulus for shock. Brady and Lind (1961) and others (Grosz & Zimmerman, 1965,1970; Theodor & Mandelcorn, 1973; Bryant & McConkey, 1989) found that patients who complained of total blindness were able to make visual discrimination. Barraclough (1966) made a similar observation in a case of functional deafness. Levy and his colleagues obtained event-related potentials (ERPs) in response to somatosensory stimulation in cases of functional hemianesthesia (Levy & Behrman, 1970) and anesthesia (Levy & Mushin, 1973), whereas Moldofsky and England (1975) showed enhanced ERPs in a group of patients with hemianesthesia and weakness. Knutsson and Martensson (1985) found a normal pattern of torque and electromyographic activity in the muscles of patients with functional paresis.

Interestingly, similar sorts of contradictions have been observed in patients with the dissociative disorders of psychogenic amnesia, fugue, and

multiple personality. (For reviews, see Schacter & Kihlstrom, 1989; Kihlstrom et al., 1990.) Thus, Janet's report on Madame D., a case of hysterical somnambulism and functional retrograde amnesia: the woman had been victimized by a cruel joke, and had no conscious recollection of the prank; nevertheless, her nocturnal dreams and somnambulist episodes recapitulated the episode, and she froze whenever she passed the location where the event occurred. Ansel Bourne, a case of fugue studied by William James (1890), had no memory for his life as a lay minister, yet during his fugue he attended church regularly and related episodes that ultimately were traced back to his premorbid life.

These observations have been repeated in the 20th century. An amnesic patient studied by Gudjonsson (1979; Gudjonsson & Haward, 1982), who had been suicidal before her illness began, showed a predominance of death themes on the Rorschach and electrodermal responses to items of personal relevance. Schacter, Wang, Tulving, and Freedman (1982) studied a patient who showed complete loss of autobiographical memory and personal identity, but was able to identify people and events from the time covered by his amnesia. Lyon (1985) asked a fugue patient to dial a telephone number at random; her mother answered. Kaszniak, Nussbaum, Berren, and Santiago (1988), treating a patient who was amnesic for a homosexual rape, observed that he became upset when presented with a TAT card showing one person possibly attacking another from behind. Christianson and Nilsson (1984) observed that an amnesic rape victim became upset when she returned to the scene of the crime. All these patients claimed amnesia for the events in question, yet in some sense memory for the events continued to influence them.

As in the case of the conversion disorders, these clinical observations are supported by formal experimental studies. (For reviews, see Schacter & Kihlstrom, 1989; Kihlstrom et al., 1990.) In the first of these studies to appear in the history of modern experimental psychopathology (for early examples, see Sidis, 1902; Sidis & Goodhart, 1904; Prince, 1939), Ludwig and his colleagues (Ludwig, Brandsma, Wilbur, Bendfeldt, & Jameson, 1972) administered a variety of tests of learning and memory to a patient who showed a complex pattern of amnesia among four alter egos. Although the primary personality could not recall paired associates learned by the others, it did show considerable time savings in relearning the list. Analogous findings were obtained on other tests involving fear conditioning and interpersonality transfer of knowledge.

Later experimental studies have produced the same kinds of results. For example, Silberman and his colleagues (Silberman, Putnam, Weingartner, Braun, & Post, 1985) conducted a study of verbal learning in nine multiple personality disorder (MPD) patients. Interestingly, proactive and retroactive interference were not reduced when lists were studied by



two different alter egos of the same subject. Nevertheless, each alter ego claimed an amnesia for events experienced by the other, and list discrimination between alter egos was very poor. Similarly, Dick-Barnes and her colleagues (Dick-Barnes, Nelson, & Aine, 1987) administered a test of paired-associate learning and pursuit-rotor learning to a single case of MPD. The paired-associate learning task showed an interpersonality amnesia, whereas the pursuit-rotor task showed interpersonality transfer.

In the most thorough study of memory in MPD performed to date, Nissen and her colleagues (Nissen, Ross, Willingham, Mackenzie, & Schacter, 1988) compared performance on a number of different memory tests in a single MPD patient with 22 alter egos, at least 8 of which were separated from the others by an amnesic barrier. On tests of cued recall and yes-no recognition, each ego state was unable to remember items presented to the others. However, on several other tasks, including four-alternative forced-choice recognition, repetition priming in perceptual identification and word-fragment completion, and sequence learning in serial reaction time, one personality appeared to capitalize on the experiences of the other.

### Implicit Memory and Implicit Perception

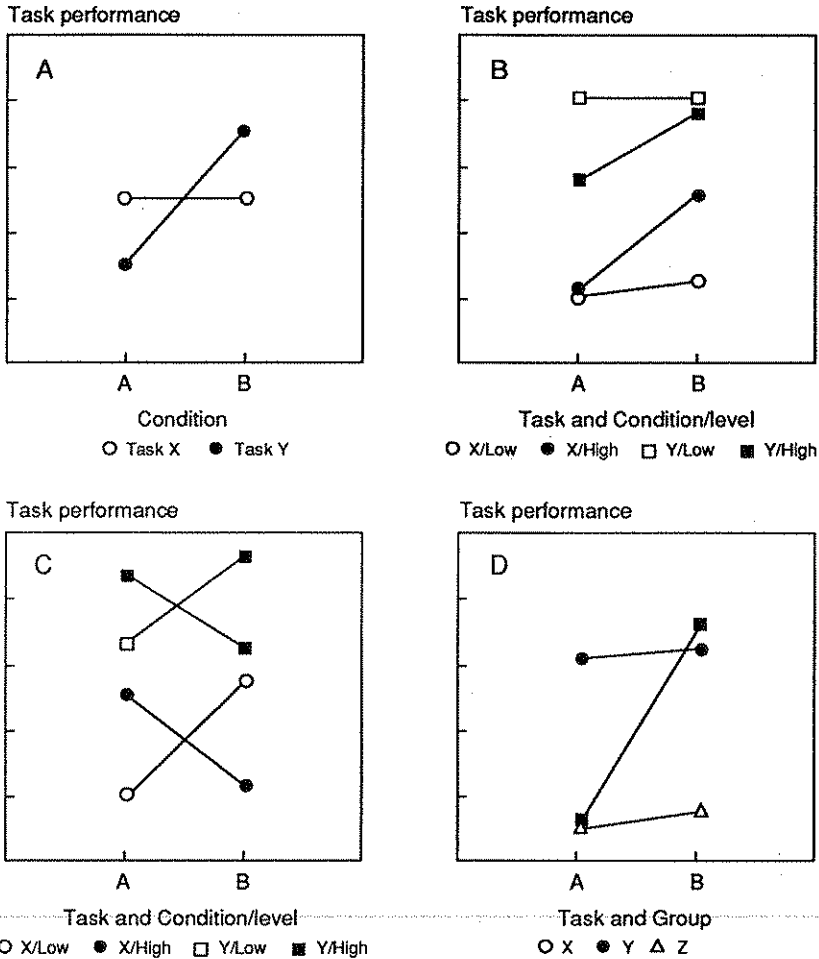
To summarize, despite the patients' claims that they cannot remember or cannot perceive, careful testing in both the conversion disorders and the dissociative disorders reveals that the unremembered or unperceived events continue to influence ongoing experience, thought, and action. One way to make sense of these contradictions is to dismiss the complaints of the patients and conclude that the hysterically blind and deaf actually see and hear perfectly well, but are enacting a socially prescribed "sick role" in compliance with situational demands and constraints, or to gain strategic advantage in interpersonal affairs. This idea is fundamental to certain social-psychological approaches to hysteria and, indeed, mental illness in general (Szasz, 1961,1970; Sarbin, 1964,1968; Braginsky, Bräginisky, & Ring, 1969; Sarbin & Coe, 1979; Sarbin & Mancuso, 1980).

However, Janet (1907) himself rejected the "crude explanation" (p. 171) of deception and fraud, and offered a different perspective. Hysterical patients are unaware of the events in question and, although the patients are affected by these events nonetheless, these effects occur outside of awareness. From a theoretical point of view that rejects the notion of unconscious mental processes, such an argument might appear to be *ad hoc*. More recently, however, the argument has gained force from similar observations that have been made in cases in which the facts rule out interpretations in terms of a sick role and strategic self-presentation.

Consider, for example, cases of the amnesic syndrome observed in patients suffering bilateral lesions in the hippocampus and related brain structures (Squire & Zola-Morgan, 1991). This memory disorder involves a gross anterograde amnesia, so patients cannot recall or recognize things that they have done or experienced since the time that the brain damage occurred. If tested in other ways, however, they clearly show the aftereffects of these events. For example, if they have forgotten a list of words, and subsequently are presented with a word stem or fragment and asked to complete it with the first word that comes to mind, they are more likely to produce items from the list than if they had never seen the list, a phenomenon known as a priming effect. Similarly, these patients show savings in relearning items from a forgotten word list. Finally, they are able to acquire and display new cognitive and motor skills, although they do not consciously remember how they acquired them and they do not realize that they possess them.

These contradictions resemble those that are observed in the functional amnesias of the dissociative disorders. Interestingly, they are known as dissociations, a technical term that has found considerable use in recent cognitive psychology and cognitive neuropsychology (Dunn & Kirsner, 1988). In cognitive psychology, the term *functional dissociation* refers generally to a situation in which some state, condition, or manipulation has an effect on one dependent variable but not on another. Several dissociations have been documented in the domain of memory. For example, the amnesic syndrome affects recall and recognition but not priming, savings in relearning, or performance of a cognitive skill. Similarly, elaborative activity at the time of encoding has an effect on recall but not on priming; on the other hand, a shift in the modality of presentation between study and test has an effect on priming but not on recall. However, dissociations are not limited to memory. In perception, damage to the striate cortex impairs object identification but not object location. In neuropsychological studies of language processing, it has been found that global dyslexics perform poorly when reading nonsense and irregular words, whereas normal individuals perform well on both tasks. Surface dyslexics can read nonsense words but not irregular words, whereas phonological dyslexics can read irregular but not nonsense words.

The general pattern of functional dissociations is illustrated in Fig. 2. In the case of single dissociation (Fig. 2A), some variable selectively affects performance on one task but not on another. In the case of double dissociation, there are two variables as well as two tasks: Variable A affects performance on Task X but not Task Y, whereas Variable B affects performance on Task Y but not on Task X. Double dissociations come in two forms: uncrossed, reflecting the co-occurrence of two single dissociations

**FIGURE 2**

Varieties of dissociations, after Dunn & Kirsner (1988). (A) Single dissociation. The difference between Condition A and Condition B has no effect on Task X (○) but a large effect on Task Y (●). (B) Double dissociation, uncrossed. High (●) and low (○) levels of Condition X have no effect on Task A, but a large effect on Task B; similarly, high (■) and low (□) levels of Condition Y have a large effect on Task A, but no effect on Task B. (C) Double dissociation, crossed. High (●) and low (○) levels of Condition X increase performance on Task A, but decrease performance on Task B; similarly, high (■) and low (□) levels of Condition Y decrease performance on Task A, but increase performance on Task B. (D) Reversed association. Group X (○) shows low levels of performance under both Condition A and Condition B, whereas Group Y (●) shows high levels of performance under both conditions, but Group Z (△) shows low levels of performance under Condition A, but high levels of performance under Condition B.

in opposite directions (Fig. 2B), and crossed, similar to the crossover interaction familiar in the analysis of variance (Fig. 2C). Single dissociations support the inference that two different processes underlie performance on the two tasks, an inference that is strengthened by the finding of double dissociations, especially crossed double dissociations. Even so, as Dunn and Kirsner (1988) have noted, the existence of two separate processes is by no means guaranteed. For that reason, they proposed a further criterion of reversed association (Fig. 2D), in which there is a positive correlation between two tasks under one pair of experimental conditions and a negative correlation in another pair of conditions.

In the domain of memory, these kinds of dissociations have been considered probative evidence for two different forms of memory, commonly known as explicit and implicit memory (Schacter, 1987), memory with and without awareness (Jacoby & Dallas, 1981; Eich, 1984), or direct and indirect memory (Johnson & Hasher, 1987; Richardson-Klavehn & Bjork, 1988).<sup>2</sup> Explicit memory refers to the person's conscious recollection of some previous event, the ability to say "This event happened to me" or "I did this thing at such-and-such a time and in such-and-such a place." Explicit memory is exemplified by tasks that ask subjects deliberately to remember a particular episode: free recall, cued recall, and recognition. Implicit memory, in contrast, is revealed by any change in experience, thought, or action that is attributable to some past episode. Priming, savings, and skilled activity are examples of such changes; note that they do not refer to specific prior episodes in the person's life, nor do they require that such episodes be remembered consciously. Explicit and implicit memory are dissociable in two broad senses. First, implicit memory can be spared when explicit memory is impaired and, second, variables can affect explicit memory but not implicit memory and vice-versa. Some theorists (e.g., Tulving & Schacter, 1990; Schacter, 1991) construe such dissociations as evidence that explicit and implicit memory correspond to different underlying memory systems; others disagree (e.g., Roediger, 1990). For our purposes it suffices to recognize them merely as different expressions of episodic memory.

Similar dissociations appear in neurological disorders of perception. The most dramatic of these is the report of "blindsight" in the patient D. B. (Weiskrantz, 1986) and others with damage in the primary visual projection area. This patient suffered a left hemianopia following surgical destruction of the right striate cortex. Although he has virtually no vision in his left visual field, he is able to judge accurately the presence or absence

<sup>2</sup>There are important differences between these sets of terms, but for our purposes they are treated as equivalent. The explicit-implicit distinction is preferred for reasons outlined elsewhere (Roediger, 1990; Schacter, 1990).

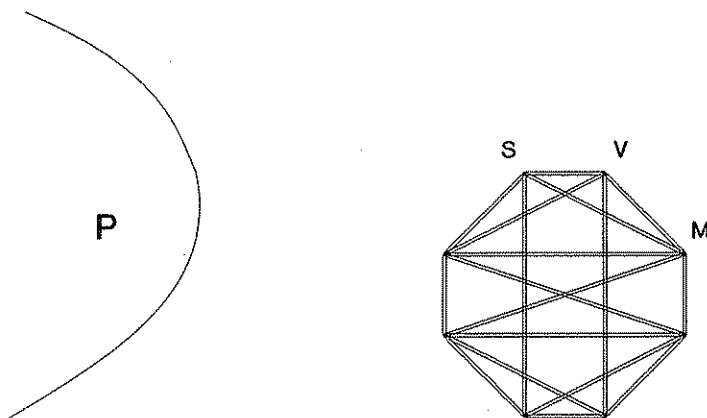
of visual stimuli, and reach accurately for objects presented in his scotoma; moreover, he is able to discriminate among horizontal, vertical, and diagonal lines and discriminate among such stimuli as Xs, Os, Ts, and 4s. He claims to be unable to see the objects to which he is responding. Although under some circumstances D. B. reports that he *knows* that something is in his field, he does not describe his experience as seeing; his test performance, although accurate, has the phenomenal quality of intuition.

Based on reports such as these, Kihlstrom et al. (1991) have proposed a distinction between explicit and implicit perception. Paralleling the case of memory, explicit perception may be defined as the person's conscious perception of some object or event in the current stimulus environment, manifested in tasks that require the subject to detect, describe, and identify the stimulus. By the same token, implicit perception is reflected in any change in experience, thought, and action that is attributable to some event in the current stimulus field. Explicit and implicit perception, so defined, apparently are dissociable; it is possible to respond discriminatively to a stimulus without having the experience of perceiving it.

It should be understood that the explicit-implicit distinction is not confined to the neurological syndromes. Dissociations of explicit and implicit memory are observed in posthypnotic amnesia, surgical anesthesia, young children, and aging memory; they also are observed in college students participating in conventional laboratory experiments, for example, elaborative activity at the time of encoding affects explicit but not implicit memory (Kihlstrom et al., 1990). Similarly, dissociations of explicit and implicit perception are observed in so-called "subliminal" perception, perceptual defense, hypnotic analgesia, and other negative hallucinations induced by hypnosis (Kihlstrom et al., 1991). Apparently, dissociations of explicit and implicit memory are observed in the dissociative disorders as well, just as dissociations of explicit and implicit perception are observed in the conversion disorders. These dissociations are what Janet had in mind when he argued that the syndromes of hysteria were united by an unconscious influence and behavior without awareness.

### **The Rise and Revival of Dissociation Theory**

As Ellenberger (1970) notes, the hysterics played a seminal role in the development of psychogenic theories of psychopathology. The first such theory was articulated around the turn of the century by Janet (1889, 1907; for fuller descriptions, see Ellenberger, 1970; Perry & Laurence, 1984; for an autobiographical account, see Janet, 1930). According to Janet, mental life can be analyzed into a large number of psychological automatisms or elementary structures (today we might think of them as schemata or



**FIGURE 3**

Janet's (1907) depiction of dissociation in the case of Irene. Ideas S, V, and M, all related to the death of her mother, are isolated from the ideas constituting the conscious personality, P (after Hilgard, 1977).

modules) that control experience, thought, and action in various domains. These automatisms, which combine both perception and action, are finely tuned to environmental circumstances. They are not restricted to whole faculties and modalities, such as cognition or emotion, perception or language, or vision or hearing. Rather, they involve content: memories of self, perception of a certain portion of space, or execution of certain actions.

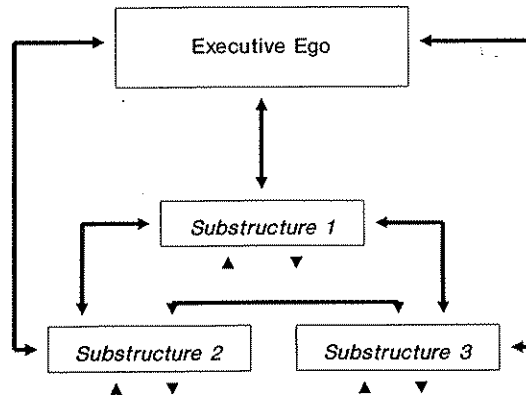
According to Janet, each person possesses a vast repertoire of such automatisms, bound together into a single unified stream of consciousness. As such, the inputs to these automatisms are accessible to phenomenal awareness and the outputs are amenable to voluntary control. However, under circumstances of stress or exhaustion, the unity of consciousness can be broken when one or more of these separates from the rest. These dissociated automatisms continue to operate, but they are detached from the executive functions of phenomenal awareness and voluntary control. In Janet's view, this occurs in hysteria; the unity of consciousness is broken, and some subset of automatisms becomes split off from the rest, resulting in a state of *désagrégation* (in French) or dissociation (in English). If the automatisms control vision, the result is hysterical blindness; if they control hearing, hysterical deafness; if voluntary motor function, paralysis; if autobiographical memory, amnesia. Moreover, the fact that automatisms are content-bound, rather than content-free, offers the possibility of selective dissociations: tunnel blindness, an ability to hear some voices but not others, the loss of memory for one time, place, or person but not another. Figure 3 presents a graphical representation of Janet's system.

In Janet's view, this state of disaggregation accounts for some of the peculiar features that distinguish the dissociative and conversion disorders from their organic analogs. For example, one of the hallmarks of the functional disorders is the remarkable set of paradoxes and contradictions apparent in the patients' behavior. These observations reflect the continued processing of information by the dissociated automatisms—the fact that they still receive inputs, and generate outputs, outside of executive awareness and control. These autonomous activities permit a high level of adaptive behavior on the part of the patient; Janet's case of the patient with functional tubular blindness who nevertheless was able to play ball games comes to mind. Because their symptom has a limited impact on adaptive behavior, it is not surprising that functional patients, but not organic patients, exhibit a rather blasé attitude about their symptoms and their consequences.

Janet was mistaken about one point. The occurrence of paradoxes and contradictions does not necessarily distinguish the functional disorders from their organic counterparts. Dissociations of explicit and implicit memory occur in the amnesic syndrome and dissociations of explicit and implicit perception occur in blindsight. In fact, dissociations are ubiquitous.<sup>3</sup> Fortunately, such rules are no longer needed; modern neurology offers a wide variety of brain-imaging techniques, including positron emission tomography and magnetic resonance imaging that can be used to determine the presence, location, and extent of brain damage. However, Janet was right to draw attention to the existence of dissociations, and to try to understand them in psychological terms.

Although dissociation was soon overshadowed by Freud's concept of repression and his psychosexual theory of neurosis, Janet's ideas eventually experienced a revival in the form of Hilgard's (1977) neodissociation theory of divided consciousness. (For an appreciation of Hilgard's theory, see Kihlstrom, 1991.) Like Janet, Hilgard (1977) characterizes the mind as a set of separate components, called cognitive control structures, that monitor and control mental functioning in different domains. These various components are organized in a tangled hierarchy so each is in communication with the others and all are in communication with an executive ego. This central control structure serves as the ultimate endpoint for all inputs and the ultimate starting point for all outputs, and provides the basis for the phenomenal experience of awareness and intention. When inputs received by a subordinate control structure are processed through to the

<sup>3</sup>Actually, Janet may have anticipated this situation. In his autobiographical essay, he writes, "From the medical viewpoint, I still believe that one will eventually be compelled to return to interpretations of neuropathic disorders similar to those which I have proposed in regard to hysteria" (1930, p. 127). In this light, we may conclude that Janet would have looked kindly on the appropriation of his concept by psychology, neuropsychology, and cognitive science.



**FIGURE 4**

Hilgard's system of multiple controls (after Hilgard, 1977). In this depiction of a unified cognitive system, each of the substructures is able to communicate with the others and with the executive ego.

executive ego, then the person is aware of them (or, more precisely, of their mental representation). When outputs are generated by a subordinate structure in response to commands initiated by the executive ego, then the person has the experience of intentional action. Finally, the interconnections among subordinate cognitive controls allow them to pass information to and otherwise influence each other. Hilgard's system of controls is portrayed in Fig. 4.

Hilgard makes clear that the situation just portrayed is an ideal, and that the unity of consciousness is actually illusory. Some subordinate cognitive structures may have no direct connection to the executive ego, meaning that they process inputs and generate outputs outside of awareness and independent of voluntary control. Similarly, the function of some substructures can become habitual, or routinized, by constant repetition or practice. This idea is closely related to the notion that some mental processes are innately automatic (Hasher & Zacks, 1979) or may become automatized through a process of routinization (Anderson, 1982; Shiffrin & Schneider, 1984).

Other circumstances also can disrupt the normal relationships among cognitive structures. Certain environmental conditions, such as those involved in "subliminal" stimulation, can make it difficult for information processed by a substructure to reach the executive ego. Alternatively, certain organic conditions, such as brain damage, physiological conditions induced by sleep, anesthetics, or other drugs, or mental states such as daydreaming, absorption, and hypnosis may temporarily or permanently alter the connections between individual structures. For example, if the



communication routes between a subordinate structure and the executive ego are cut, the subordinate structure may engage in certain forms of information processing outside of phenomenal awareness and without the subjective experience of intention. Such a state is defined by Hilgard as dissociation.

Hilgard's system was devised with the dissociations of hypnosis in mind, but also provides a way of conceptualizing the dissociations observed in the dissociative and conversion disorders. (For applications of Hilgard's scheme to other areas of cognitive psychology and cognitive neuropsychology, see Kihlstrom, 1991.)

1. Imagine a circumstance in which the subsystem responsible for visual perception is cut off from the executive ego, but remains able to communicate laterally with other subordinate systems. A person in this situation will be denied the experience of seeing yet, because the visual subsystem continues to process inputs, execute outputs, and pass information to (and receive information from) other subsystems, the person may still be able to respond adaptively to visual events, a common observation in cases of functional blindness.

2. In another case, the subsystems responsible for sensory and motor activity in the arm and hand are cut off from the executive ego. Under these circumstances, the person will be denied awareness of tactile and kinesthetic events, and deliberate attempts to move the limb will be without effect. However, at the same time, the subsystems in question may operate autonomously to develop conditioned escape and avoidance responses to mild shock applied to the affected limb, the sort of outcome obtained by Hilgard and Marquis (1940) in their pioneering exercise in behavior therapy.

3. Disruptions of links between the executive ego and substructures representing autobiographical memory will produce the symptoms of psychogenic amnesia and psychogenic fugue, respectively. However, this amnesic barrier will not prevent the person from gaining access to procedural and semantic memories that are not part of the episodic memory system. Multiple personality disorder represents a special case in which there appear to exist two or more executive ego structures; some substructures are shared between them, others are not. Activation of one executive ego gives it the ability to monitor and control the substructures to which it is connected; it is denied awareness of and control over the substructures that are unique to its counterparts. Under these circumstances, it would be possible to develop coexisting sets of identities, autobiographical memories, and mental functions, only one of which would be obvious at any one time. At the same time, each alter ego can influence the others implicitly, outside of awareness, by passing information between shared subsystems.

Hilgard's idea of dissociation reflecting a disruption in the normal relationships among mental subsystems is especially interesting at a time when cognitive science, especially cognitive neuropsychology, is attracted to the idea of modules, each geared to performing some information-processing task, with built-in constraints on cognitive penetrability and the possibilities of disconnections between them (e.g., Geschwind, 1965; Fodor, 1983). Contemporary neuropsychology provides evidence for brain structures mediating the encoding and decoding of speech, of language, of visual and auditory stimulation, of nouns and verbs, and even of vowels and consonants, each of which can be spared selectively (Shallice, 1988; McCarthy & Warrington, 1990). However, there are two important differences between Hilgard's notions and the dominant view of modules. First, Fodor's modules are tied at least implicitly to particular brain structures (Wernicke's and Broca's areas, for example, or the striate cortex), whereas Hilgard's subsystems are functional in nature, not isomorphic to any biological formations. Also, Fodor's modules are content-free mental faculties, such as language, speech, and vision; in contrast, Hilgard's subsystems can be associated with content as well as with function.

Whether in Janet's original form or Hilgard's updated form, dissociation theory provides a perspective of nonconscious mental functioning that is rather different from that proposed by classical psychoanalytic theory. Classical psychoanalysis restricts the unconscious to primitive sexual and aggressive ideas and impulses, and contends that unconscious mental processes are irrational and imagistic. In contrast, dissociation theory asserts that nonconscious mental structures and processes do not differ qualitatively from their conscious counterparts, except for the fact that they are not accessible to conscious awareness. Moreover, classical psychoanalysis argues that the restriction of awareness is motivated by purposes of defense. Thus, repression reflects an attempt to cope with anxiety aroused by conflicting ideas and impulses; rendering some mental content unconscious has the effect of reducing anxiety. In contrast, dissociation theory does not impart a defensive function to dissociation. Dissociations can occur as a by-product of stress and conflict without being regarded as coping mechanisms; dissociations also can occur under circumstances that are free from intrapsychic conflict, for example, hypnosis. When repressed contents intrude on consciousness and behavior, they do so in highly disguised symbolic form; dissociated contents express themselves more directly.

Dissociation and repression theory do agree, however, on one fundamental point: the percepts, memories, and thoughts denied to conscious awareness nevertheless may intrude on the person's ongoing experience, thought, and action. For Freud, the "return of the repressed" is reflected in neurotic symptoms, dreams, and slips of the tongue and other reflec-

tions of the psychopathology of everyday life. For Janet, the impact of dissociated "fixed ideas" is seen in the contradictions of hysteria, but also in the phenomena of hypnosis, for example, posthypnotic suggestion. From the perspective of present-day cognitive theory, both kinds of influences may be construed as instances of implicit perception and implicit memory, that is, as reflections of the processing of current or past events outside of phenomenal awareness.

### Consciousness, Dissociation, and the Self

An alternative information-processing account of dissociation (Kihlstrom, 1987,1990; Kihlstrom et al., 1990,1991) begins with James' (1890) proposal that the self is the key to conscious awareness.

The personal self rather than the thought might be treated as the immediate datum in psychology . . . It seems as if the elementary psychic fact were not *thought* or *this thought* but *my thought*, every thought being *owned* . . . The universal conscious fact is not "feelings and thoughts exist" but "*I think*" and "*I feel*." (p. 221; emphasis original)

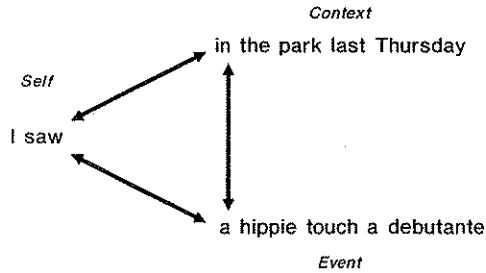
A similar idea was expressed by Janet.

The complete consciousness which is expressed by the words, "I see, I feel a movement," is not completely represented by this little elementary phenomenon [i.e., of a sensation of vision or of motion]. It contains a new term, the word "I," which designates something very complicated. The question here is of the idea of personality, of my whole person . . . There are then in the "I feel," two things in presence of each other: a small, new, psychological fact, a little flame lighting up—"feel"—and an enormous mass of thoughts already constituted into a system—"I." These two things mingle, combine; and to say "I feel" is to say that the already enormous personality has seized upon and absorbed that little, new sensation which has just been produced. (pp. 304–305)

On the other hand, Claparede (1911) remarked on the absence of self-reference in the mental activity of certain brain-damaged patients.

If one examines the behavior of such a patient, one finds that everything happens as though the various events of life, however well associated with each other in the mind, were incapable of integration with the *me* itself. (p. 71)

The problem is how to represent the self within the framework of contemporary cognitive theory. One option is provided by associative-network models of memory such as the ACT\* theory of Anderson (1976,1983). Anderson argues that memory stores two types of knowledge, declarative and procedural. Declarative memory consists of factual knowledge about objects and events; procedural memory includes the person's repertoire of cognitive and motor skills. In ACT\*, declarative knowledge is represented

**FIGURE 5**

Schematic memory network representation of an episode. The event node represents the episode itself; the context node the time and place that the event took place; and the self node represents the person as the agent or experiencer of the event (after Anderson, 1976).

by semantic (actually propositional) networks, in which nodes represent concepts and features and associative links represent the relationships between them. Procedural knowledge is represented by productions (or systems of productions), *IF-THEN* rules in which the nodes stand for processing goals, conditions, and actions. Whereas declarative knowledge is available to introspection, procedural knowledge is unconscious in principle. A special segment of declarative memory, know as working memory, contains representations of the organism, its environment, and its currently active processing goals, as well as nodes representing knowledge activated by perception, memory, and thought.

According to this view, the self is a declarative memory structure representing the person's knowledge of him or herself: the physical and psychosocial attributes that most characterize the person and serve to distinguish him or her from others (Kihlstrom & Cantor, 1984; Kihlstrom, Cantor, Albright, Chew, Klein, & Niedenthal, 1988; Kihlstrom, 1992). This knowledge structure resides in working memory, where it can make contact with other knowledge represented in the course of perception, memory, thought, and action. The proposal is that contact with the mental representation of self is a necessary condition for representation in phenomenal awareness.

Consider the following schematic representation of an event in which the person perceives (or remembers) an occasion on which a hippie touches a debutante (Fig. 5; for a full propositional representation, see Anderson, 1976).

I saw  
a hippie touch a debutante  
in the park last Thursday.

In such a representation, there are three central important links

1. between the event node (representing a hippie touching a debutante) and the context node (representing the fact that the touching took place in a particular park on a particular Thursday);
2. between the self node (representing the self as the observer of the event) and the event node; and
3. between the self node and the context node (representing the location of self at a particular time and place).

When the self node is connected to the event node, the person is aware of the event in question. In this way, just as James and Janet proposed, the personal self has become part of the mental representation of the event, as the agent or experiencer of whatever occurred. Of course, there are other ways in which the self could be represented in the event. The self could be the hippie who touched the debutante or the debutante who was touched by the hippie. In any case, the link to the self provides the mental basis for the phenomenal experience of consciousness, the moment when we inject ourselves into our thoughts, feelings, and desires; when we take possession of them; when we experience and acknowledge them as our own rather than someone else's.

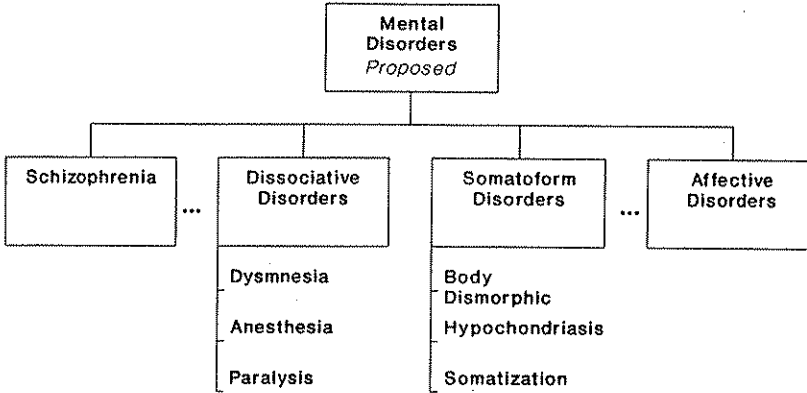
When the link between event and self is disrupted, the person is not aware of the event in question. Even so, however, there is nothing to prevent the activated mental representation of the event from influencing the person's ongoing experience, thought, and action, outside of awareness, and generating the classic phenomena associated with implicit memory. Thus, the event node can serve as a source of activation that can spread to other conceptually related nodes. Suppose the experience of viewing a hippie touch a debutante was so shocking that the person lapsed into an episode of psychogenic amnesia or fugue, reflecting the dissociation of the mental representation of self from the mental representation of the event. Such a person will not be able to remember the event in question. Nevertheless, activation of the mental representation of a hippie touching a debutante would facilitate the perceptual identification of hippies and debutantes in a scene, and the retrieval of factual information about these social types (i.e., that hippies have long hair and wear beads or that debutantes have long hair and wear white dresses); it might lead hippies and debutantes to appear in the person's thoughts and images, including dreams and daydreams. Moreover, if the event (or any of its constituents) appears as a condition in a production system, the person may engage in certain behaviors. Thus, if the person is offended by the mingling of different socioeconomic classes, he or she might experience feelings of anger or disgust. Note, however, that the individual will be unaware of why he has these thoughts, images, and feelings. The source of the spreading activation, in his own personal experience, will remain unknown to him.

A variant of the model can be used to represent the conversion disorders. Assume, for example, that our hypothetical patient has been struck blind (rather than rendered amnesic) by the sight of a hippie touching a debutante. This blindness represents the disconnection of the mental representation of the self from coexisting mental representations of visual input. Because these representations remain activated in working memory, however, they continue to play a role in the person's ongoing experience, thought, and action. For example, if the patient is unknowingly placed in the same room with a hippie, he or she might feel uneasy and ask to be relocated, might spend more (or less) time oriented in the direction of the hippie than would be expected by chance, or might attempt to catch a ball thrown by the hippie.

Obviously, the details of such a view must be worked out. In the present context, the primary value of the model is to show that it is possible, in principle, to represent dissociations of the sort that interested Janet and Hilgard within the confines of a widely accepted model of the human information-processing system. Moreover, it is of interest to note that variants of this model can account for other dissociations, occurring outside the domain of the dissociative and conversion disorders (Kihlstrom, 1991; Kihlstrom et al., 1991). Thus, for example, in hypnosis the links to the self that are so critical to consciousness might be set aside temporarily, resulting in such phenomena as posthypnotic amnesia and hypnotic blindness. It may turn out that the hippocampus, destruction of which results in the amnesic syndrome, plays a critical role in linking the mental representation of self to the mental representation of ongoing experience. In cases of so-called subliminal influence, it might be that degraded stimuli, either because they are too weak or presented too briefly, do not get processed into working memory and, thus, do not have the opportunity to make contact with the self node. Many possibilities along similar lines exist.

### **A Return to Diagnosis and a Call for Research**

It seems clear, at this point, that the dissociative and conversion disorders should be returned to their historical status as closely related diagnostic entities. Both types of syndrome share in addition to their pseudoneurological nature, the disruption of consciousness (Nemiah, 1990), of the normal integration of percepts, memories, and actions with the self. Percepts and memories that ordinarily would be linked with the self, and thus be consciously accessible, are not, yet they continue to influence experience, thought, and action outside of awareness in the form of implicit percepts and implicit memories. Goal-directed actions consciously willed by the self do not connect with their corresponding pro-

**FIGURE 6**

Proposed classification of dissociative disorders, with varieties of functional abnormalities of memory, perception, and action listed as subtypes.

duction systems, and thus remain unexecuted, yet these same systems can be activated, outside of awareness, by other appropriate conditions. The dissociative disorders are not simply disorders in which dissociations occur; rather, the term should be reserved for those cases in which the primary feature is a disruption of the monitoring and controlling functions of consciousness.

Looking forward to the future DSM-V, the foregoing considerations suggest a reclassification of the dissociative and conversion disorders as suggested in Fig. 6. First, the dissociative disorders should be retained as a broad category of psychopathology, listed in the same level of the nosology as schizophrenia, affective disorder, anxiety disorder, somatization disorder, psychophysiological disorder, and other major categories of mental illness. This label should be reserved for functional disorders of the monitoring and controlling functions of consciousness, that is, failures of conscious perception, memory, or motor control attributable to instigating events or processes that do not result in brain insult, injury, or disease, but produce more difficulties than normally would occur in the absence of those events and processes (Schacter & Kihlstrom, 1989). The pathognomic feature of the dissociative disorders is disruptions in phenomenal awareness and the voluntary control of action, coupled with evidence of information processing outside of awareness. Thus, the "dissociation" in the dissociative disorders refers to the links between the self on one hand, and perception, memory, and action on the other. Somatization disorders, which do not involve disruptions in the monitoring and controlling functions of consciousness, are classified separately.

The dissociative disorders are further divided into three subcategories, depending on the mental functions lost to consciousness. (1) Dissociative dysmnesia would include all the failures of identity and personal memory, presently classified as dissociative disorders: psychogenic amnesia, fugue, multiple personality disorder, and depersonalization and derealization; (2) dissociative anesthesia would include all the sensory-perceptual syndromes presently listed under the conversion disorders, including all the sensory modalities and pain: psychogenic blindness, deafness, tactile anesthesia, analgesia, and so forth; and (3) dissociative paralysis would include the losses of voluntary motor control listed under the conversion disorders, including paralysis of the extremities, aphonia, astasia-abasia, and weakness.

Issues of diagnosis aside, a cognitive approach to the dissociative and conversion disorders begins with an appreciation of their pseudoneurological nature. To a first approximation, the symptoms of dissociation and conversion are those of brain-damaged individuals. Concussed individuals show retrograde amnesias; certain brain tumors can induce massive personality changes; feelings of depersonalization and derealization often accompany epileptic seizures; anesthesia and paralysis are common consequences of strokes; striate damage can produce blindness. These disorders, however, are cognitive disorders, and can be studied with the experimental procedures developed by cognitive neuropsychologists (Kihlstrom & McGlynn, 1991). It is a pity that, for all the attention devoted to the dissociative disorders (and, for that matter, to the somatization disorders of which the conversion disorders are currently a part), there has been so little experimental work done on them.

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