

Dissociation and Dissociations: A Comment on Consciousness and Cognition

JOHN F. KIHLLSTROM

*Amnesia and Cognition Unit, Department of Psychology,
University of Arizona, Tucson, Arizona 85721*

Throughout a long and distinguished career,¹ Jack Hilgard has been a leader in the study of consciousness and cognition, and especially of the relations between conscious and unconscious mental processes. His earliest work, on the modification of conditioned responses, showed some of the possibilities for deliberate, conscious control of behaviors that had previously been considered unconscious and automatic (Hilgard, 1936a, 1936b, 1937). At the same time, he and his colleagues promoted the use of conditioning techniques for the study of both organic and functional sensory and motor disorders, anticipating later research on both "blindsight" and the cognitive unconscious (Cohen, Hilgard, & Wendt, 1933; Hilgard & Marquis, 1940, pp. 296-299; Marquis & Hilgard, 1936, 1937).

In the first edition (1948) of his synoptic *Theories of Learning*, Hilgard drew a clear distinction between a reaction psychology focusing on motor behavior and associations and a cognitive psychology emphasizing perceptions and thoughts. More important, Hilgard rejected the behaviorists' "abhorrence of the subjective" (p. 13): he expressed a clear preference for the cognitive point of view, in which the connection between stimulus and response is mediated by ideas, and a willingness to treat phenomenal introspection as a scientifically respectable source of data. For Hilgard, even in 1948, consciousness and cognition were of such overriding importance that he doubted whether the study of animal learning could tell us much about the human case: "Only if a process demonstrable in human learning can also be demonstrated in lower animals is the comparative method useful in studying it" (p. 329). So, even for nonhuman animals, the organism's response on the first learning trial is interpreted as a "provisional try," rather than the mere product of preexisting habits. By suggesting that both human and nonhuman learners are engaged in problem-solving and hypothesis-testing, Hilgard helped lay the foundation for the later study of animal cognition.

For Hilgard, the proper focus of psychology is always the human mind in order and in disorder. The second edition (1956) of *Theories of Learning* introduced Freudian psychoanalysis, viewed as a learning theory, to experimental psychologists. In this, and in other work in the 1950s (e.g., Hilgard, Kubie, & Pumpian-Mindlin, 1952), Hilgard helped foster an appreciation for psychopathology and

Commentary on E. R. Hilgard (1992). Divided consciousness and dissociation. *Consciousness and Cognition*, 1, 16-31.

¹ For a narrative account of Hilgard's many contributions to psychology, see Hilgard (1974).

what clinical material could contribute to psychological theory. This included a concern for emotion and motivation as well as cognition (e.g., Hilgard, 1962, p. 162; 1980), but especially an interest in the influence of unconscious mental contents and processes on experience, thought, and action. This interest led him into hypnosis, which in turn led him to the neodissociation theory of divided consciousness (Hilgard, 1973, 1986).

Neodissociation theory characterizes the mind as a set of separate components that monitor, organize, and control mental functioning in different domains. The idea is very old. Hilgard's cognitive structures bear a resemblance to Janet's (1889) psychological automatism: complex acts, tuned to environmental and intrapsychic circumstances, preceded by an idea and accompanied by an emotion (for a fuller description, see Ellenberger, 1970; Perry & Laurence, 1984). And they also resemble the mental schemata described by Bartlett (1932) and Piaget (1952): an abstract organization of past experiences and reactions that underlies adaptive action. But the idea is also very new. Hilgard's mental structures also function like the plans of Miller, Galanter, and Pribram (1960) and the mental modules of Fodor (1983). In each case, some stimulation is received and linked with preexisting knowledge stored in memory, and then a response is generated. But these structures are not merely reflex systems. Rather, they are able to selectively seek or avoid certain inputs, and facilitate or inhibit certain outputs, in accordance with some local or global intention. Thus, these structures contain the monitoring and controlling rudiments of consciousness.

Ideally, these various components are organized in such a manner that they are in communication both with each other and with an executive ego—a central cognitive structure which serves as the ultimate endpoint for all inputs and the ultimate starting point for all outputs, and which provides the basis for the phenomenal experience of awareness and intentionality. Thus, in Fig. 1 of Hilgard (1991), when inputs to cognitive control structure 1 reach the executive ego, the person is aware of them, and what structure 1 is doing to manipulate and transform them; and when commands from the executive ego are executed by structure 1, the person has the experience of intentionality.

Ideally, this is so, but not necessarily in fact. According to the theory, certain circumstances can alter the integration of the various cognitive structures, in terms of both the internal organization of the structures themselves and their relations to the executive ego. For example, the lines of communication between two subordinate structures might be cut, so that each performs its functions in the absence of any direct integration between them. Alternatively, if the lines of communication between a subordinate structure and the executive ego are cut, the person may engage in certain forms of information processing without the subjective experience of awareness and intentionality. In either case, information processing can continue in a particular subordinate structure without being processed by another substructure, or by the executive ego, at the same time. This, descriptively, is a state of dissociation.

Hilgard's system, devised with hypnosis in mind, provides a way of conceptualizing certain dissociations observed in hypnosis. Thus, one mechanism for hypnotic analgesia is to create a dissociation between the substructure that governs the

processing of painful stimulation and the executive ego. The pain system would still process the intensity and location of the pain stimulus and could even generate heart rate acceleration and other bodily responses to that stimulus; but because none of this reaches the executive ego, the person has no conscious awareness of pain. If, however, communication can be established with the pain substructure directly, as in the "hidden observer" technique, perceptual and memory representations of pain can be accessed. Similarly, in the dual-task experiments, we can imagine that the two tasks are performed by different cognitive substructures, and that only one of these is in communication with the executive ego. Thus, the person will not be consciously aware that he or she is performing one of the tasks; but because each task draws on the same limited-capacity attentional resource, the subconscious task will nevertheless interfere with the conscious one.

True to its origins in the work of Janet, and the historical link between hypnosis and hysteria, Hilgard's scheme can also handle the more dramatic clinical symptoms observed in conversion and dissociative disorder (for reviews, see Kihlstrom, 1991; Kihlstrom, Barnhardt, & Tataryn, 1991; Kihlstrom, Tataryn, & Hoyt, 1990). Thus, the functionally blind patient can claim to be unable to see, but nonetheless navigate around his or her environment, because the substructure responsible for vision, while out of touch with the executive ego, nonetheless processes visual information and passes it along to substructures controlling motor behavior. Multiple personality calls for something else: the establishment of two (or more) different executive ego structures, both in communication with subordinate cognitive structures. But because only one of these alter egos is active at any particular time, each will have limited awareness of the experiences, thoughts, and actions of the others.

The idea of systems of multiple cognitive controls, topped by an executive ego, and the possibility that amnesia-like barriers can be erected between them, has been rejected as post hoc, unparsimonious, and homuncular by theorists who prefer a social-psychological approach to hypnosis and hysteria. But it is important to note how attractive the idea can be in light of psychological and neuropsychological research that has emerged since 1973, when the idea was first publicly proposed. Contemporary cognitive science has no problem with the idea of modules, and even systems and hierarchies of modules, or with constraints on communication among them. It is not only the unity of consciousness that is illusory: it is the unity of mind itself.

Indeed, the existence of such modules, and disconnections between them, has long been assumed in accounts of the patterns of selective deficit seen in language disorders: alexia without agraphia, for example, or expressive aphasia without receptive aphasia. Studies of "blindsight" and the amnesic syndrome offer ample evidence of patients being affected by events that they cannot see or cannot remember. In such cases, the preferred explanation is that a system performing one function has been damaged, but the system performing another function has been spared. Hilgard's neodissociation theory of divided consciousness has many of these same qualities. The difference is that his substructures are functional in nature and not necessarily isomorphic with any biological formations.

Thus, one does not have to be brain-damaged to show dissociations. In fact, neodissociation theory can provide a general framework for understanding the complex relations between conscious and nonconscious mental processing (for further details, see Kihlstrom, 1984, 1987, 1990). There are at least four quite different possibilities, not all of which represent divisions in consciousness in Hilgard's terms.

A selective impairment in one cognitive subsystem, leaving another one intact. This is apparently a common occurrence in neuropsychological patients. For example, studies of blindsight suggest that there are two visual systems, one projecting to the occipital cortex and another projecting to the superior colliculus. Striate damage deprives the patient of awareness of visual stimulation, but the collicular system permits certain responses to visual stimulation (Weiskrantz, 1986). Similarly, recent research on the amnesic syndrome suggests that there are at least two memory systems, one that holds a representation of perceptual input and another that retains the product of episodic and semantic analyses on this input. Damage to the hippocampus and temporal lobe renders the patient unaware of past events, but the perceptual representation system nonetheless mediates certain memory-based priming effects (e.g., Tulving & Schacter, 1990).

A disruption of communication between two intact subsystems. Again, the example is from neuropsychology, which describes two forms of aphasia. One, expressive (or Broca's) aphasia, produces meaningful but dysfluent speech, but spares writing (sometimes) and the ability to understand spoken and written communication; the other, receptive aphasia, impairs both speaking (and writing) and understanding. While these disorders might reflect a selective impairment in one or the other cortical area (Wernicke's area, where the linguistic utterances are encoded and decoded; or Broca's area, where the speech act is organized), another view is that brain damage affects the nerve fibers that connect these two centers, producing a "disconnection syndrome" (Geschwind, 1965).

A disruption of communication between an intact subsystem and an executive ego. As discussed earlier, this is the situation in hypnosis, as well as in some of the dissociative and conversion disorders seen clinically. Processing of information by a cognitive subsystem, in the absence of representation of this information in the executive ego, gives rise to the phenomena of sensory anesthesia, negative hallucinations, and amnesia, along with the paradoxical effects of the critical percepts and memories on the individual's ongoing experience, thought, and action (e.g., Kihlstrom, 1985). Generation of mental images by such a subsystem, again without the involvement of the executive ego, gives rise to positive hallucinations, with their unbidden quality. In similar circumstances, execution of motor actions leads to the experience of involuntariness in ideomotor and challenge suggestions.

But the possibilities for this sort of division in consciousness go far beyond these two states. For example, certain substructures, by virtue of the innate organization of the brain, may be permanently disconnected from the executive ego. In this category might be found the modules that guide the acquisition of use of language, as well as the feature-detectors and some other components of the sensory-perceptual system. Other procedures, not innately automatic, become so following extensive experience and practice (e.g., Shiffrin & Schneider,

1984). Pattern-recognition processes are a good example. In either case, because they are isolated from direct connection with the executive ego, we have no introspective access to the operations of these systems and no voluntary control over them; they run off mechanically, and we know them only by inference.

Such a connection may exist in principle, but be realized only under certain conditions. In perception, for example, conditions of low energy, brief presentation, metacontrast, or masking may prevent a perceptual representation of a stimulus from being accessed by the executive ego; yet the percept may affect behavior that is organized at the level of a cognitive substructure. This produces the phenomena of subliminal (or, as I prefer, *implicit*; see Kihlstrom et al., 1991) perception. In memory, impoverished encoding may render a memory trace inaccessible to the executive ego; yet information accessible to a cognitive subsystem may be sufficient to produce the phenomena of implicit memory (Schacter, 1987). In problem-solving, the solution to a difficult problem may not be represented in the executive ego, but activity in a cognitive subsystem may produce the feeling of knowing that is an important component in the experience of intuition (Bowers, 1984; Dorfman, 1990).

A selective impairment in the functioning of the executive ego itself, leaving the subsystems intact. Although dissociation may be construed in terms of a failure of communication between an intact substructure and an intact executive ego, there are other dissociative phenomena that may reflect constraints on the executive ego itself. For example, in general anesthesia, the surgical patient apparently loses consciousness; yet there is now emerging fairly good evidence that some information-processing functions are spared, at least with some anesthetic agents, resulting in patients' display of implicit, if not explicit, memory for surgical events (e.g., Kihlstrom & Schacter, 1990; Kihlstrom, Schacter, Cork, Hurt, & Behr, 1990). Eich (1990) has raised the possibility that similar implicit memory effects might be found after sleep, although evidence from the laboratory is negative so far (Wood, Bootzin, Kihlstrom, & Schacter, 1991).

Multiple personality disorder seems to be a special case in which there are two or more different executive ego structures, each linked to the same subordinate cognitive control structures, and each taking turns in monitoring and controlling experience, thought, and action. From a social-psychological perspective, the appearance of alter egos is nothing more than a reflection of the various roles we play (Sarbin, 1954)—son, spouse, father, scientist, activist, patron of the arts—or the context-specific nature of personality (Cantor & Kihlstrom, 1987)—myself when I am alone, with close friends, with colleagues, with students. But in ordinary circumstances, these contextual selves are themselves in communication with each other; when I am in the presence of my mother, I am aware of how differently I behave with her compared to when I am with a group of colleagues. Pathological dissociation, in the form of psychogenic fugue or multiple personality, occurs when *these* lines of communication are disrupted. Just as a single executive ego may not know what the eye or hand is doing, so one ego structure may not know what has transpired with another.

These are probably not the only possibilities, and of course it remains for future theoretical and experimental studies to work out the details (for a review of some of the recent progress, see Greenwald (1991) and commentaries). It remains for

future research to map out the relations among the various systems responsible for mental life and to characterize more fully the executive ego which forms the basis for the experience of conscious awareness and intentionality. Nevertheless, by postulating an organized system of mental structures, each more or less specific with respect to function or structure, and by asserting that the lines of communication between them can be severed or blocked, Hilgard's neodissociation theory of divided consciousness provides a useful conceptual framework for the unified study of consciousness and cognition.

ACKNOWLEDGMENTS

The point of view represented here is based on research supported in part by Grant MH-35856 from the National Institute of Mental Health. I thank Terrence M. Barnhardt, Jill Booker, Jeffrey Bowers, Lawrence J. Couture, Suzanne Delaney, Jennifer Dorfman, Elizabeth L. Glisky, Martha L. Glisky, Lori Marchese, Susan McGovern, Sheila A. Mulvaney, Robin Pennington, Michael Polster, Victor Shames, and Michael Valdassari for their comments.

REFERENCES

- Bartlett, F. C. (1932). *Remembering: A study in experimental and social psychology*. Cambridge; Cambridge University Press.
- Bowers, K. S. (1984). On being unconsciously influenced and informed. In K. S. Bowers & D. Meichenbaum (Eds.), *The unconscious reconsidered* (pp. 227-272). New York: Wiley.
- Cantor, N., & Kihlstrom, J. F. (1987). *Personality and social intelligence*. Englewood Cliffs, NJ: Erlbaum.
- Cohen, L. H., Hilgard, E. R., & Wendt, G. R. (1933). Sensitivity to light in a case of hysterical blindness studies by reinforcement-inhibition and conditioning methods. *Yale Journal of Biology & Medicine*, *6*, 61-67.
- Dorfman, J. (1990). *Metacognitions in memory and problem solving*. Unpublished doctoral dissertation, University of California, San Diego.
- Eich, E. (1990). Learning during sleep. In R. R. Bootzin, J. F. Kihlstrom, & D. L. Schacter (Eds.), *Sleep and cognition* (pp. 88-108). Washington, DC: American Psychological Association.
- Ellenberger, H. (1970). *The discovery of the unconscious: The history and evolution of dynamic psychiatry*. New York: Basic Books.
- Fodor, J. (1983). *The modularity of mind: An essay on faculty psychology*. Cambridge, MA: MIT Press.
- Geschwind, N. (1965). Disconnexion syndromes in animals and men. *Brain*, *88*, 237-294.
- Greenwald, A. G. (1991). New look 3: Reclaiming the unconscious. *American Psychologist*, in press.
- Hilgard, E. R. (1936a). The nature of the conditioned response. I. The case for and against stimulus substitution. *Psychological Review*, *43*, 366-385.
- Hilgard, E. R. (1936b). The nature of the conditioned response. II. The case for and against stimulus substitution. *Psychological Review*, *43*, 547-564.
- Hilgard, E. R. (1937). The relationship between the conditioned response and conventional learning experiments. *Psychological Bulletin*, *34*, 61-102.
- Hilgard, E. R. (1948). *Theories of learning*. New York: Appleton-Century-Crofts.
- Hilgard, E. R. (1956). *Theories of learning* (2nd ed.). New York: Appleton-Century-Crofts.
- Hilgard, E. R. (1962). *Introduction to psychology* (3rd ed.). New York: Harcourt Brace Jovanovich.
- Hilgard, E. R. (1973). A neodissociation interpretation of pain reduction in hypnosis. *Psychological Review*, *80*, 396-411.
- Hilgard, E. R. (1974). Ernest Ropiequet Hilgard. In G. Lindzey (Ed.), *A history of psychology in autobiography* (Vol. 6, pp. 129-160). Englewood Cliffs, NJ: Prentice-Hall.

- Hilgard, E. R. (1980). The trilogy of mind: Cognition, affection, and conation. *Journal of the History of the Behavioral Sciences*, *16*, 107–117.
- Hilgard, E. R. (1986). *Divided consciousness: multiple controls in human thought and action* (rev. ed.). New York: Wiley-Interscience.
- Hilgard, E. R. (1991). Divided consciousness and dissociation. *Consciousness & Cognition*, *1*, in press.
- Hilgard, E. R., Kubie, L. S., & Pumpian-Mindlin, E. (Eds.). (1952). *Psychoanalysis as science*. Stanford: Stanford University Press.
- Hilgard, E. R., & Marquis, D. G. (1940). *Conditioning and learning*. New York: Appleton-Century.
- Janet, P. (1889). *L'Automatisme psychologique [Psychological automatisms]*. Paris: Alcan.
- Kihlstrom, J. F. (1984). Conscious, subconscious, unconscious: A cognitive perspective. In K. S. Bowers & D. Meichenbaum (Eds.), *The unconscious reconsidered* (pp. 149–211). New York: Wiley.
- Kihlstrom, J. F. (1985). Posthypnotic amnesia and the dissociation of memory. In G. Bower (Ed.), *The psychology of learning and motivation* (Vol. 19, pp. 131–178). San Diego: Academic Press.
- Kihlstrom, J. F. (1987). The cognitive unconscious. *Science*, *237*, 1445–1452.
- Kihlstrom, J. F. (1990). The psychological unconscious. In L. Pervin (Ed.), *Handbook of personality: Theory and research* (pp. 445–464). New York: Guilford.
- Kihlstrom, J. F. (1991). Dissociation and conversion: A unified view. In D. J. Stein & J. E. Young (Eds.), *Cognitive science and clinical disorders*. San Diego: Academic Press, in press.
- Kihlstrom, J. F., Barnhardt, T. M., & Tataryn, D. J. (1991). Implicit perception. In R. F. Bornstein & T. S. Pittman (Eds.), *Perception without awareness*. New York: Guilford, in press.
- Kihlstrom, J. F., Tataryn, D. J., & Hoyt, I. P. (1990). Dissociative disorders. In P. B. Sutker & H. E. Adams (Eds.), *Comprehensive handbook of psychopathology* (2nd ed.). New York: Plenum, in press.
- Kihlstrom, J. F., & Schacter, D. L. (1990). Anesthesia, amnesia, and the cognitive unconscious. In B. Bonke, W. Fitch, & K. Millar (Eds.), *Memory and awareness in anaesthesia* (pp. 22–44). Amsterdam: Swets & Zeitlinger.
- Kihlstrom, Schacter, D. L., Cork, R. C., Hurt, C. A., & Behr, S. E. (1990). Implicit and explicit memory following surgical anesthesia. *Psychological Science*, *1*, 303–306.
- Marquis, D. G., & Hilgard, E. R. (1936). Conditioned lid responses to light in dogs after removal of the visual cortex. *Journal of Comparative Psychology*, *22*, 157–178.
- Marquis, D. G., & Hilgard, E. R. (1937). Conditioned responses to light in monkeys after removal of the occipital lobes. *Brain*, *60*, 1–12.
- Miller, G. A., Galanter, E., & Pribram, K. H. (1960). *Plans and the structure of behavior*. New York: Holt, Rinehart, & Winston.
- Perry C., & Laurence, J.-R. (1984). Mental processing outside of awareness: The contributions of Freud and Janet. In K. S. Bowers & D. Meichenbaum (Eds.), *The unconscious reconsidered* (pp. 9–48). New York: Wiley.
- Piaget, J. (1952). *The origins of intelligence in children*. New York: International Universities Press.
- Sarbin, T. R. (1954). Role theory. In G. Lindzey (Ed.), *Handbook of social psychology* (Vol. 1, pp. 223–258). Cambridge, MA: Addison-Wesley.
- Schacter, D. L. (1987). Implicit memory: History and current status. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, *13*, 501–518.
- Shiffrin, R. W., & Schneider, W. (1984). Controlled and automatic processing revisited. *Psychological Review*, *91*, 269–276.
- Tulving, E., & Schacter, D. L. (1990). Priming and human memory systems. *Science*, *247*, 301–306.
- Weiskrantz, L. (1986). *Blindsight: A case study and implications*. Oxford: Oxford University Press.
- Wood, J. M., Bootzin, R. R., Kihlstrom, J. F., & Schacter, D. L. (1991). *Sleep impairs both explicit and implicit memory*. Unpublished manuscript, University of Arizona.