

THE SCIENTIFIC STATUS OF UNCONSCIOUS PROCESSES: IS FREUD REALLY DEAD?

At regular intervals for over half a century, critiques of Freud and psychoanalysis have emerged in the popular media and in intellectual circles, usually declaring that Freud has died some new and agonizing death, and that the enterprise he created should be buried along with him like the artifacts in the tomb of an Egyptian king. Although the critiques take many forms, a central claim has long been that unconscious processes, like other psychoanalytic constructs, lack any basis in scientific research. In recent years, however, a large body of experimental research has emerged in a number of independent literatures. This work documents the most fundamental tenet of psychoanalysis—that much of mental life is unconscious, including cognitive, affective, and motivational processes. This body of research suggests some important revisions in the psychoanalytic understanding of unconscious processes, but it also points to the conclusion that, based on controlled scientific investigations alone (that is, without even considering clinical data), the repeated broadside attacks on psychoanalysis are no longer tenable.

Probably no one's death has been heralded as many times, over as many years, as Sigmund Freud's. In one "obituary" published in the *New York Review of Books* (1993), Frederick Crews, a professor of English, penned a scathing critique of Freud and psychoanalysis, contending that psychoanalysis has "proved to be an indifferently successful and vastly inefficient method of removing neurotic symptoms," and that psychodynamic treatments produce "more converts than cures." He added that "Freud's doctrine has been faring no better, in

Associate Professor, Department of Psychiatry, Harvard Medical School; Chief Psychologist, The Cambridge Hospital.

The author thanks Glen Gabbard and three anonymous reviewers for their useful comments on drafts of this manuscript.

Submitted for publication November 27, 1996.

scientifically serious quarters, as a cluster of propositions about the mind," and that psychoanalytic theory is "without significant experimental or epidemiological support."¹ Crews concluded that any body of knowledge built on Freud's dubious insights is likely to sink into quicksand, and that "despite some well-intentioned efforts at reform, a pseudoscience is what psychoanalysis has remained" (p. 55).

Certainly, too many in the history of the psychoanalytic "movement" have treated psychoanalysis as a dogma to be protected, rather than as a complex set of hypotheses to be tested. However, the recent declarations of Freud's demise share two central problems. First, they report the death of the wrong psychoanalysis. Critics have typically focused on a version of psychoanalytic theory—circa 1920 at best—that few contemporary analysts find compelling.²

1062

Second, these critiques reflect a lack of knowledge of current psychological research, which is striking given their frequent claim that psychoanalysis is without evidentiary basis. A substantial body of evidence now suggests that Freud was right in a series of propositions that are central to *contemporary* psychoanalytic theory: (1) that enduring aspects of personality begin to coalesce in childhood, and that childhood experiences play an important role in personality development, shaping in particular the ways people form later social relationships; (2) that mental representations of self, others, and relationships guide people's interactions with others and play a substantial part in many forms of psychopathology; (3) that mental processes, including affective and motivational processes, operate simultaneously and in parallel, so that individuals can have conflicting feelings toward the same person or situation and can craft compromises outside of awareness; (4) that personality development involves not only learning to regulate sexual and aggressive feelings and wishes, but also moving from an immature

¹Crews makes these assertions about the scientific status of psychoanalytic theory and therapy without apparent knowledge either of the basic science literature that I will review here, or of psychotherapy outcome research. The latter documents that even brief psychodynamically informed treatments are as effective as cognitive therapy and antidepressant medication in treating depression (Elkin, Shea, Watkins, and Imber 1989). He seems to be equally unaware of other studies demonstrating the efficacy of psychoanalytic forms of treatment (e.g., Ablon and Jones 1998; Fonagy and Moran 1990; Jones and Pulos 1993; Snyder, Wills, and Grady-Fletcher 1991).

²In so doing, however, they have set the terms of the public debate and have led some analysts, I believe mistakenly, down the indefensible path of trying to defend a 75- to 100-year-old version of a theory and therapy that has changed substantially since Freud laid its foundations at the turn of the century.

dependent state to a mature interdependent one; and (5) that much of mental life is unconscious (Westen 1998a; Westen 1999; Westen and Gabbard 1999).

This article centers on the last and most central of these suppositions: the existence of unconscious thoughts, feelings, and motives.³ Ironically, at a time when the prestige of psychoanalysis is at a low ebb in both psychiatry and academic psychology, an explosion of experimental research on several psychological fronts (much of it conducted by researchers with little interest in, or knowledge about, psychoanalysis) has now documented conclusively that Freud was right in this central tenet.

I will proceed as follows. In the first section I will review the data on unconscious thought and memory, focusing on the psychological and neuroanatomical distinction between implicit and explicit thought and memory—that is, between ideas and memories that can be consciously retrieved and manipulated, and those that are expressed in behavior without conscious awareness. In the second section I will examine the evidence on unconscious affect, which ranges from studies showing that amnesic patients can retain feelings toward objects they cannot remember having seen, to studies showing the discrepancy between people's conscious racial attitudes and the unconscious associations that guide their behavior when their conscious values are not activated. Research in this area suggests not only that affect can be triggered outside of awareness, but also that people can regulate it—that is, defend against it—without conscious awareness of any feelings. In the third section I will consider and review the data on unconscious motivation. This impressive body of literature documents how motives activated outside of awareness not only influence behavior, but also have different developmental antecedents than the motives people can consciously report.⁴

As will become clear, two general conclusions emerge from this review. The first is that the most fundamental assumption of

³Readers particularly interested in these issues will find a more comprehensive review in Westen 1998b. See Fisher and Greenberg (1997) for a discussion of the empirical status of classical Freudian theory, and Westen (1998a) for a discussion of the empirical status of contemporary psychoanalytic theory.

⁴Elsewhere (Westen 1998a, 1999) I review the empirical data on unconscious conflict and compromise. These data are equally striking, both in their corroboration of basic psychoanalytic concepts and in their implications for ways to begin to establish more precisely the mechanisms involved in compromise formations.

psychoanalytic theory and practice is no longer a matter of scientific debate. Critics cannot continue to make pronouncements about the lack of scientific merit in psychoanalytic ideas without themselves offering scientific counterevidence; indeed, it is ironic that most of the currently fashionable critiques do not themselves cite a single scientific investigation. The clear experimental documentation of unconscious thought, feeling, and motivation supports many aspects of psychoanalytic theory and practice. It also poses a challenge to competing therapeutic schools that assume that change can be accomplished relatively quickly and without careful attention to uncovering and altering unconscious associative networks, which guide most behavior and which tend to change gradually.⁵

064

A second conclusion is that the experimental literature may have even more to offer psychoanalysis than the opportunity for a well-deserved “I told you so.” The body of research I will review here has a number of implications, which I will describe briefly at the end of each section, for the way we think and speak about unconscious processes. Among the most important of these is that the concept of “*the unconscious*” has outlived its usefulness, because there are many different kinds of unconscious processes that serve different functions, and many of these processes have very different neuro-anatomical substrates. To the extent that psychoanalysis maintains its essentially functionalist approach—defining structures in terms of functions, and focusing on the functions of symptoms, thoughts, memories, defenses, etc.—the experimental delineation of unconscious processes with different functions will require a change in both our language and our conceptualization.

THE EVIDENCE FOR UNCONSCIOUS COGNITIVE PROCESSES

Fifteen years ago cognitive scientists paid little attention to consciousness. Their models essentially assumed that the most important cognitive processes were conscious; memory was seen as the process

⁵Indeed, a recent meta-analysis of the voluminous research on short-term, primarily cognitive-behavioral treatments of depression, panic, and generalized anxiety finds that, partially excepting the treatment of panic (where the data suggest the importance of exposure-based interventions in even dynamically oriented treatments), short-term treatments have generally been unable to establish any lasting benefits beyond one-year follow-up (Westen and Morrison 1999).

of bringing thoughts into short-term memory, which, for all intents and purposes, meant consciousness (Atkinson and Shiffrin 1968). "Thought" was the process of consciously manipulating ideas and images to solve problems and make decisions (Newell and Simon 1972).

In what is now called the "modal model" (because it was the standard, or "mode," for three decades; Healy and McNamara 1996), memory was described as a multi-stage process involving a series of memory stores: initial sensory registration (memory that lasts a flash of an instant, long enough, for example, to retain the last syllable of a speaker's ongoing flow of words); short-term memory (a roughly thirty-second, seven-item memory store under conscious control, used for such purposes as dialing a phone number); and long-term memory (memory that can last a lifetime). Although by definition information in long-term memory that is not currently conscious must be unconscious—and by implication affective valuations of objects must also be stored unconsciously, along with motives that are not currently conscious—these implications were never developed. Instead, memory researchers assumed that thoughts (and presumably motives and emotions, although these were not explicitly examined) could only influence action to the extent that they were perceived, registered, consciously processed, sent on to long-term memory, and then retrieved into short-term memory (*alias* consciousness).

1065

Implicit and Explicit Memory

In a brief span of years, matters have changed. The consensus among cognitive scientists today is that human thought and memory involve at least two systems, one conscious (called *explicit*) and the other unconscious (called *implicit*). Explicit memory involves conscious retrieval of information such as childhood memories or the name of a friend, whereas implicit memory refers to memory that is observable in behavior but is not consciously brought to mind (Roediger 1990; Schacter 1992, 1995).

One kind of implicit memory is *procedural memory*. (Although much of procedural memory is implicit, many procedures, such as problem-solving strategies, are actually explicit; see Westen 1999.) This refers to "how to" knowledge of procedures or skills: the motor memory involved in throwing a ball or playing on the piano a complex piece that once required considerable conscious attention, or the behaviorally

expressed knowledge of subtle social rules, such as how close to stand to another person in conversation. People typically cannot report how they carry out these procedures, and when they try, their plausible explanations of how they did what they did are often incorrect (see Nisbett and Wilson 1977; Wilson 1996). Conscious reflection can actually disrupt these processes; the surest way for a pianist to make a mistake on a complex piece is to think about what she is doing. Procedural memory, like much implicit memory, is often much faster than conscious retrieval, which is why people can play several measures of music far faster than they can explicitly interpret them, and why analytic supervisors often have to reconstruct the reasons for a technical suggestion to a supervisee *post factum*.

Another kind of implicit memory, of particular relevance to psychoanalysis, is *associative memory*—the formation of associations that guide mental processes and behavior outside of consciousness. Associative memory has been investigated in studies called *priming experiments*. In these, the researcher presents subjects with a word or picture (the *prime*, such as “dog”), which is designed to activate associated thoughts or ideas unconsciously (such as “terrier”). The assumption behind these experiments is that priming can reveal the latent structure of associative networks by examining the impact of the prime on memory or judgment regarding semantically related words.

For example, subjects exposed to the word “dog” might then be asked to press a button as soon as they recognize whether a set of letters flashed on a screen is a word. Subjects who have been primed with “dog” will show shorter response latencies (that is, a faster response) when subsequently presented with the word “terrier” than subjects who have not been primed. According to one model, priming with the word “dog” activates a network of associations, spreading activation to anything on that network (see Collins and Loftus 1977). Because words like “terrier” and “poodle” are thus already at a heightened state of activation, they require less stimulation to be consciously recognized. In the language of contemporary cognitive science, priming has rendered them more *accessible*.

The prime is often presented in a surreptitious way. In some studies, it is presented subliminally—for example, flashed at 100 milliseconds and then followed immediately by a masking stimulus, such as a row of numbers, that blocks conscious recognition. In others, the prime is presented supraliminally, but in a way that the subject does not realize

is related to the subsequent experimental procedure. For example, the experimenter may ask subjects to press a button as soon as they recognize whether a word (which is actually the prime) has a "t" in it—thus exposing the subject to the word without revealing its importance.

One of the most important findings of priming studies from a psychoanalytic standpoint is that subjects show priming effects even under these surreptitious conditions (e.g., Bower and Schacter 1990; Schacter 1992). Exposing subjects to an infrequently used word like "assassin" among a long list of other words renders them more likely a week later to respond with "assassin" when asked to fill in the missing letters of the word fragment A-A-IN. This is true even though they may have no conscious recollection that "assassin" was on the list they learned a week earlier (Tulving, Schacter, and Stark 1982). In other words, they remember implicitly—because the network of associations still has some residual activation—despite their lack of explicit, conscious memory.

One way to study *subliminal* priming is to use dichotic listening tasks, in which subjects listen to two different streams of information simultaneously, one in each of the two channels of a pair of earphones. Subjects are taught to attend to only one channel by a procedure called "shadowing," in which they learn not to be distracted by the information in one channel while repeating the information presented in the other. Through this shadowing procedure, subjects become so adept at attending to the target channel that their conscious recognition memory for information presented in the unattended channel is at chance levels (that is, their ability to guess whether they have heard the word "dog" in the unattended channel is no better than chance). Researchers have produced reliable subliminal priming effects using dichotic listening tasks of this sort. For example, presenting the word pair *taxi: cab* in the unattended channel renders subjects more likely to use the less-preferred spelling of the auditorially presented homophones *fare/fair*, even though they have no idea that they ever heard *taxi: cab* (Nisbett and Wilson 1977; Schacter 1992).

Cognitive neuroscientists have had considerable success tracking down the neural underpinnings of the distinction between implicit and explicit memory. Several years ago Milner and her colleagues (Milner, Corkin, and Teuber 1968) described the memory disruptions in a man who had undergone radical surgery to control intractable seizures, and who came to be known as H.M. The surgery had removed the locus

of the seizures in the temporal lobes. Unfortunately, the hippocampus and connected cortical tissue (the *medial temporal memory system*), which is now known to be essential for learning new information that is consciously retrievable, lies below the cortex within the temporal lobes. Thus, each time H.M. met Milner, he had to be reintroduced. In fact, H.M. developed one of the densest amnesias on record, with a near-complete incapacity to remember anything new.

Milner and her colleagues came to realize, however, that H.M. was in fact capable of certain kinds of learning. He could learn new procedural skills. For example, like most unimpaired people, when given practice over several sessions at learning to write words upside down and backwards, H.M. gradually became more adept at the task—even though he had no idea that he had ever seen the task before. Perhaps more significantly for our later discussion of unconscious emotion, H.M. also showed signs of affective associative learning—that is, he could form new associations between affects and representations—even though he had no conscious recollection that those links had been formed. In one instance, following a visit to his mother in the hospital, H.M. remembered nothing of the visit, but he “expressed a vague idea that something might have happened to his mother” (Milner, Corkin, and Teuber 1968, p. 216). Animal research and subsequent studies of amnesics indicate that the hippocampus is essential for explicit, but not for implicit, memory (Schacter 1987, 1995; Squire 1986; Squire and Zola-Morgan 1991).

Implications for the Psychoanalytic Understanding of Unconscious Processes

These data have implications for the psychoanalytic understanding of unconscious processes, although I can describe them only briefly here. When Freud first introduced the concept of the *system preconscious* (1900), he attributed to it a number of qualities. It included mental contents that were descriptively but not dynamically unconscious (that is, representations stored in memory but readily accessible to consciousness because they were not offensive to it). The preconscious was more rational, disciplined, reality-oriented, and energetically “bound” than the *unconscious*, which Freud characterized as operating on the basis of wishful, associative, instinctual, primary process thought. Throughout his writings Freud (1915, 1939) continued to attribute these characteristics to the preconscious. The major amendment he made to his original description of the system pre-

In psychoanalysis we emphasize the impact of unconsciously active *motives* on conscious thought and behavior, but we have been less alert to the importance of activated unconscious networks of association. Consider a patient who reports a difficult relationship with his father, describes a series of authority conflicts at work, and begins to display subtle signs of disrespect toward the analyst. One can presume that networks of association related to authority figures (or perhaps male authority figures, depending on his particular dynamics) have been activated and, by spreading activation to particular neural networks, are increasing the likelihood of certain ways of interpreting and reacting both to bosses and to features of the analytic situation.

370

The experimental data reviewed here suggest that we would do well to develop a theory of what in the analytic situation primes particular reactions, and what important reactions may *not* be primed that would be worth knowing about. For example, sibling-like transferences may not be optimally accessible to transference analysis because the analytic situation is inherently organized in such a way that it is more likely to activate transference reactions involved in asymmetrical (parentlike) attachment relationships and transferences (Westen 1997). This research also lends credence to the view that the features of any particular analyst do indeed make a difference in the transference reactions that emerge (Gabbard 1996; Gill 1982), *as well as in the associations patients produce*. Characteristics and idiosyncrasies of the analyst (age, gender, activity level, tendency to respond more or less empathically) undoubtedly prime specific networks of association beyond those that we can assume are engendered in an “average expectable” analytic encounter (see Westen and Gabbard 1999a).

The data on unconscious cognitive processes also suggest that Freud’s initial postulation of two systems (preconscious and unconscious), characterized by two different kinds of thought (secondary and primary), is problematic. This distinction continues to persist in various forms in psychoanalytic writing, long after Freud’s shift to the structural model. As priming studies demonstrate, *preconscious* processes often operate by principles of association—a characteristic of primary process thinking ascribed only to dynamically unconscious processes. Freud wanted to distinguish two systems, one unconscious and repressed and the other unconscious but not repressed, but he also wanted to distinguish rational from associationist thinking. He fused these two classification systems into one, but the two are not isomor-

conscious came in *The Ego and the Id* (1923), when he disentangled the function of censorship from the preconscious to which he had originally attributed it (and also emphasized the link between the preconscious and language).

Research on unconscious thought and memory is of more relevance to the system preconscious than to the dynamic unconscious, but it suggests the need for two substantial clarifications and amendments of Freud's model. First, the concept of the preconscious fails to distinguish three very different phenomena that should be denoted by different names: (1) implicit procedural knowledge (such as how to put words together grammatically, how to regulate emotional expression in ways that are socially appropriate, how to tie one's shoes, or how to respond when an authority figure makes a request); (2) descriptively unconscious thoughts that are currently at a high level of activation; (3) and descriptively unconscious thoughts that exist as potentialities in memory but are not currently active.

The first class of preconscious processes, implicit procedural knowledge, can be known about and refined through conscious attention, as when children learn explicit rules of grammar to refine the implicit rules that guide their grammatical constructions, or when patients learn about their patterns of defense. However, procedural knowledge of this sort can never literally "become conscious" or be "made conscious" because it is not encoded in semantic propositions, images, or other forms that can be represented in consciousness.

The second class of preconscious processes—*activated* beliefs, fantasies, networks of association, and representations that are descriptively unconscious—can substantially influence conscious thought and behavior despite their lack of consciousness. The third class of preconscious processes—thoughts, associated affects, and motivational proclivities not currently at a high level of activation, many of which have been acquired through experience—are comparatively inert until activated. The distinction between activated and relatively inaccessible representations is, of course, more a matter of degree than a categorical distinction, but as we will see, it is important clinically as well as conceptually. The reason is that activated associations influence ongoing thought, behavior, and feeling outside awareness, whereas associations that are not currently at a high state of activation have a much less substantial impact. Attending to unconscious dynamics requires careful attention to the *conditions that activate particular associative networks*.

In psychoanalysis we emphasize the impact of unconsciously active *motives* on conscious thought and behavior, but we have been less alert to the importance of activated unconscious networks of association. Consider a patient who reports a difficult relationship with his father, describes a series of authority conflicts at work, and begins to display subtle signs of disrespect toward the analyst. One can presume that networks of association related to authority figures (or perhaps male authority figures, depending on his particular dynamics) have been activated and, by spreading activation to particular neural networks, are increasing the likelihood of certain ways of interpreting and reacting both to bosses and to features of the analytic situation.

170

The experimental data reviewed here suggest that we would do well to develop a theory of what in the analytic situation primes particular reactions, and what important reactions may *not* be primed that would be worth knowing about. For example, sibling-like transferences may not be optimally accessible to transference analysis because the analytic situation is inherently organized in such a way that it is more likely to activate transference reactions involved in asymmetrical (parentlike) attachment relationships and transferences (Westen 1997). This research also lends credence to the view that the features of any particular analyst do indeed make a difference in the transference reactions that emerge (Gabbard 1996; Gill 1982), *as well as in the associations patients produce*. Characteristics and idiosyncrasies of the analyst (age, gender, activity level, tendency to respond more or less empathically) undoubtedly prime specific networks of association beyond those that we can assume are engendered in an “average expectable” analytic encounter (see Westen and Gabbard 1999a).

The data on unconscious cognitive processes also suggest that Freud’s initial postulation of two systems (preconscious and unconscious), characterized by two different kinds of thought (secondary and primary), is problematic. This distinction continues to persist in various forms in psychoanalytic writing, long after Freud’s shift to the structural model. As priming studies demonstrate, *preconscious* processes often operate by principles of association—a characteristic of primary process thinking ascribed only to dynamically unconscious processes. Freud wanted to distinguish two systems, one unconscious and repressed and the other unconscious but not repressed, but he also wanted to distinguish rational from associationist thinking. He fused these two classification systems into one, but the two are not isomor-

phic. Information is encoded in memory along networks of association whether or not the information is conflictual, and these networks can influence thought and behavior to the extent that they become activated unconsciously.

Freud, and particularly the ego psychologists who followed him, did, of course, ascribe considerable rationality to the ego, and the concepts of compromise formation and unconscious fantasy suggest that unconscious cognition can be quite complex. The problem, however, is that the most fundamental characteristic of primary process thought—its associative nature—is in fact not specific to wishful, motivated, or otherwise developmentally primitive thinking. Thus, the distinction between primary and secondary process thinking has to be recast. In fact, the most sophisticated contemporary models of cognition suggest that *all* thought, memory, and perception—including our most complex cognitive processes—may actually involve activation of networks of association, where the units or “nodes” on those networks may be as small as a single neuron or set of neurons (Smith 1998; Read 1997; Rumelhart, McClelland, and the PDP Research Group 1986).

1071

A more parsimonious model than Freud’s two-system (preconscious and unconscious) model of memory suggests that memory is organized along networks of association, some parts of which can become conscious and some parts of which are likely to remain unconscious even when highly activated because their content is threatening and would elicit too much unpleasant affect. When the latter parts of the network threaten to attract the “spotlight” of consciousness, unconscious procedures (defenses) are activated that prevent them from doing so, leaving only derivative signs of their activation.

THE EVIDENCE FOR UNCONSCIOUS AFFECTIVE PROCESSES

Remarkably, given the century-long history of resistance to the concept of unconscious processes, the existence of unconscious cognitive processes is no longer controversial in psychology or cognitive science. The existence of unconscious affective and motivational processes is another matter. Curiously, Freud (1915) himself was unconvinced that affect could be unconscious, although his clinical data and therapeutic technique presupposed it, but analytic theorists began making

the concept of unconscious affect theoretically explicit by the 1960s (see Spezzano 1993).

Several lines of experimental evidence support the notion that affective and motivational processes can be unconscious, and that such processes play an important role in human mental life. I will begin with the data on unconscious affect, and related data on unconscious defenses that protect against the experience of painful feelings. To presage the conclusion: investigations of patients with brain damage, conditioning experiments using humans and other animals, and a variety of other scientifically rigorous studies have unequivocally documented that affective processes can be unconscious and that people can protect themselves against unpleasant feelings with unconscious defenses.

Neurological Data

072 Neurology and cognitive neuroscience are one source of data about unconscious affect. As noted earlier, H.M., who suffered from hippocampal damage, was unable to remember new information but was nevertheless able to *feel* in some vague way that something had happened to his mother. Johnson, Kim, and Risse (1985) reported similar findings in patients with Korsakoff's syndrome, in whom alcohol abuse has typically impaired the ability to form new memories that can be consciously retrieved. In one experiment, Korsakoff's patients read about two fictional characters, one described positively and the other negatively. Approximately 20 days later, they had difficulty recalling any information about the characters, but they preferred the "good" one. Such neurological cases suggest that the neural circuitry for affective associative learning—for learning to connect stimuli with feelings—is distinct from the neural circuitry for conscious, explicit learning, just as implicit and explicit memory are neuroanatomically distinct.

Damasio and his colleagues (Bechara et al. 1995) have shown that subjects with hippocampal lesions, whose explicit memory is impaired, have difficulty learning that two events are connected, but they nevertheless respond *emotionally* as if they know. They can learn to avoid a stimulus associated with an aversive feeling even though they have no capacity to recognize the connection between the two events consciously.

Other research finds that prosopagnosics, who lose the capacity to recognize faces, nevertheless produce different electrophysiological responses to familiar and unfamiliar faces (Bruyer 1991). A prosopag-

which activates associations to it and appraises its meaning. From there, this information is transmitted to the amygdala, which is involved in assessing its emotional significance.

Conditioning Phenomena and Unconscious Affective Processing

Another source of data about unconscious affect comes from research on conditioning processes. This may seem a rather unlikely source of support for psychoanalytic hypotheses, but much behavioral research related to emotion can be readily reinterpreted as describing the way experience leads to associations between representations of stimuli and affects. In many respects, this translation is fairly straightforward because psychoanalysis, cognitive science, and behaviorism all share a common ancestor in the associationism of Hume, Locke, and other British philosophers of the early modern era.

074 In an important early investigation, Lazarus and McCleary (1951) paired nonsense syllables (e.g., *til, gak, fon*) with a mild electric shock, to produce a conditioned anxiety response. In other words, after several such pairings, subjects became anxious (as demonstrated in subjective reports as well as in physiological reactions) when exposed to these particular syllables (but not others) because they had become associatively linked to electric shock. The investigators subsequently exposed subjects to these conditioned stimuli (the nonsense syllables) subliminally, and found that they reliably elicited a galvanic skin response (another name for skin conductance, an index of arousal) even though subjects could not consciously recognize having seen them. Numerous studies, including several using more recent technologies, have produced similar results. Investigators have used a variety of measures of unconscious affective activity, including the electrical brain activity called evoked-related brain potentials (see Ohman 1994; Weinberger n.d.; Wong, Shevrin, and Williams 1994). Subjects can not only *produce* but also *acquire* conditioned emotional responses to stimuli they have never consciously perceived; for example, they can learn to associate electric shock with stimuli presented subliminally (Bunce et al. 1995; Esteves, Dimberg, and Ohman 1994; Wong, Shevrin, and Williams 1994).

Extrapolating to real-life situations, these studies suggest that people can learn to associate aspects of situations (or significant others) with pleasant or unpleasant feelings *without awareness*. As a result, they can respond unconsciously to those cues, approaching or avoiding situations or people who unconsciously match the prototype of the

noscic may not consciously know that the person in front of him is his wife, but he responds emotionally as though she is. Similar findings emerge in the study of split-brain patients, whose two hemispheres have been surgically disconnected (Gazzaniga 1985; LeDoux, Wilson, and Gazzaniga 1977). These neurological conditions may actually point the way toward a better understanding of the neural substrate of the psychoanalytic distinction between cognitive insight and "emotional insight," because the latter appears to involve a *reactivation* of the associational network and not simply a knowledge of it or an attempt to rationalize a reaction.

Relevant to these neurological studies is a body of evidence brought together by Zajonc (1980), which demonstrates that affective evaluations can precede much cognitive processing. For example, using a dichotic listening procedure, Wilson (1975) presented sequences of tones to subjects in the unattended channel. As expected, they were unable to recognize tone sequences they had heard as many as five times, since they had been trained to attend only to the other channel. However, when they were later asked to rate how much they liked each of several tone sequences, they reported liking the tone sequences they had heard better than those they had not. Their preference for the unconsciously familiar tone sequences reflected the *mere exposure effect*, the tendency to prefer familiar stimuli (Zajonc 1968). Thus, subjects were essentially developing affective preferences outside of awareness—toward stimuli they had never consciously registered (see also Bargh 1997; Eagle 1959; Murphy and Zajonc 1993).

The neural basis of such phenomena probably lies in the recent discovery that affect is processed through at least two parallel pathways (LeDoux 1989, 1995). One pathway creates an immediate response based on innate reactions (for instance to a large object moving rapidly toward the face), conditioned responses (for instance to the association of a tone with electric shock, or a feeling of comfort with mother), and such processes as familiarity. This pathway runs directly from the thalamus, which processes sensory information and selectively transmits it to other parts of the brain, to the amygdala, which is involved in attaching emotional significance to objects. Essentially, this first pathway rapidly transmits a crude response to sensory features of a stimulus directly to the amygdala for immediate reaction. The second pathway involves a more sophisticated cortical analysis of the meaning of the stimulus. The thalamus routes sensory information to the cortex,

which activates associations to it and appraises its meaning. From there, this information is transmitted to the amygdala, which is involved in assessing its emotional significance.

Conditioning Phenomena and Unconscious Affective Processing

Another source of data about unconscious affect comes from research on conditioning processes. This may seem a rather unlikely source of support for psychoanalytic hypotheses, but much behavioral research related to emotion can be readily reinterpreted as describing the way experience leads to associations between representations of stimuli and affects. In many respects, this translation is fairly straightforward because psychoanalysis, cognitive science, and behaviorism all share a common ancestor in the associationism of Hume, Locke, and other British philosophers of the early modern era.

074 In an important early investigation, Lazarus and McCleary (1951) paired nonsense syllables (e.g., *til, gak, fon*) with a mild electric shock, to produce a conditioned anxiety response. In other words, after several such pairings, subjects became anxious (as demonstrated in subjective reports as well as in physiological reactions) when exposed to these particular syllables (but not others) because they had become associatively linked to electric shock. The investigators subsequently exposed subjects to these conditioned stimuli (the nonsense syllables) subliminally, and found that they reliably elicited a galvanic skin response (another name for skin conductance, an index of arousal) even though subjects could not consciously recognize having seen them. Numerous studies, including several using more recent technologies, have produced similar results. Investigators have used a variety of measures of unconscious affective activity, including the electrical brain activity called evoked-related brain potentials (see Ohman 1994; Weinberger n.d.; Wong, Shevrin, and Williams 1994). Subjects can not only *produce* but also *acquire* conditioned emotional responses to stimuli they have never consciously perceived; for example, they can learn to associate electric shock with stimuli presented subliminally (Bunce et al. 1995; Esteves, Dimberg, and Ohman 1994; Wong, Shevrin, and Williams 1994).

Extrapolating to real-life situations, these studies suggest that people can learn to associate aspects of situations (or significant others) with pleasant or unpleasant feelings *without awareness*. As a result, they can respond unconsciously to those cues, approaching or avoiding situations or people who unconsciously match the prototype of the

earlier experiences or objects, even though they may have no conscious awareness of the link between the cues and their feelings, or of the memories that left these affective precipitates.

Recent research on attitudes and prejudice (Greenwald and Banaji 1995; Greenwald, McGhee, and Schwartz 1998) provides further evidence of unconscious affective processes. Several studies have shown that people in the U.S. who consider themselves nonracist often have two conflicting sets of attitudes that influence their behavior—a conscious, relatively nonprejudiced (or antiprejudiced) set, and an unconscious, negative one (Devine 1989; Dovidio and Gaertner 1993). Fazio and his colleagues (Fazio et al. 1995) have demonstrated that conscious and unconscious racial attitudes can be entirely uncorrelated—that is, completely independent of each other. To measure unconscious associations to blacks, the investigators presented a series of black and white faces followed by either a positive or negative adjective. The subject's task was simply to press a key indicating whether the adjective was positive or negative. The theory behind this measurement strategy was that negative associations to blacks should facilitate (prime) responses to negative adjectives because both are associatively linked to negative feelings. Thus, response latency (the amount of time taken to respond) to negative words following priming with a black face could be used as a measure of the affective quality of unconscious associations. In other words, if subjects have negative unconscious associations to blacks, they should more quickly recognize negative words following priming with black faces, which activate negative networks of association.

In fact, this measure of implicit attitudes predicted an ingenious implicit behavioral index of racism: at the end of the study, subjects were debriefed by a black undergraduate, who subsequently rated them on how friendly and interested they seemed in what she had to say. Subjects whose responses to negative adjectives showed the most robust impact of priming—that is, those whose associations to blacks were most negative—were rated by the undergraduate as least friendly and interested. Their unconscious associations did not, however, predict their *conscious* attitudes when asked to respond to some questions about the Rodney King beating and the ensuing riots in Los Angeles. In contrast, a measure of conscious racism predicted subjects' responses to these attitude questions, but not their behavior with the black confederate. Similar findings have emerged in research on implicit and explicit attitudes toward gender, which appear to be only minimally correlated (Banaji and Hardin 1997).

These studies demonstrate that when people are attending to their conscious attitudes, these attitudes influence their behavior. When they are not, which is much of the time in everyday life, their unconscious affective associations may guide their actions (causing them to check their wallets after a black man passes by, behave toward women in condescending ways, or respond to the analyst with subtle devaluation while consciously reporting no such feelings).

176 In a remarkable series of studies, Steele (1997) has demonstrated how negative unconscious racial associations can affect even the people who are the targets of them. In one experiment, Steele and his colleagues presented black and white Stanford undergraduates with the most difficult verbal items from the Scholastic Assessment Test (SAT). Black and white students were matched on SAT scores, so they were of similar intellectual ability. In one condition, students were told that the test did not measure anything significant about them. In the other condition, they were told that it measured their intellect. Black and white students in the first condition performed equally well, as one would expect, since they had similar SAT scores entering college. In the second condition, however, the performance of black students dropped substantially.

According to Steele, the second condition activated stereotype threat. Black students, like white students, have been exposed to negative stereotypes about the intellectual abilities of blacks. Thus, when black students take a test believed to be diagnostic of their ability, these associations become active, generating performance anxiety, which can lead to diminished performance. In a second experiment of similar design, Steele demonstrated how powerful these associations can be. In both of the two experimental conditions students filled out a demographic questionnaire before taking the test, but in only one of those conditions did the questionnaire ask them to report their race. That simple manipulation led to a dramatic decline in the performance of black students.

Although Steele argues that these results reflect *knowledge* of stereotypes but not *internalization* of them, his research (together with a consistent body of evidence over several decades showing that black and white students do not differ in self-reported self-esteem) once again documents the distinction between conscious and unconscious feelings. For example, in what is essentially a projective test (see Westen, Feit, and Zittel 1999), Steele gave subjects a word-stem

completion task, on which they were asked to complete word stems like *lo-* and *du-* with whatever words first came to mind. Black students were more likely to complete these stems with words reflecting low unconscious self-esteem (such as *loser* and *dumb*). They were also more likely to complete word stems such as *la-* with words related to negative racial stereotypes (*lazy*).

Psychoanalytically Inspired Studies Relevant to Unconscious Affect

Beginning in the 1940s and 1950s, psychoanalytically inspired researchers began using subliminal presentation of stimuli to test hypotheses about unconscious processes, many of which document the existence of unconscious affective processes (see Broadbent 1977; Dixon 1971, 1981; Erdelyi 1985). In a classic study, McGinnies (1949) demonstrated: first, that people tend to recognize neutral words more rapidly than taboo words presented briefly on a screen; and second, that during the presentation of the taboo words, skin conductance (GSR) is higher before they are consciously recognized. These results suggest a preconscious stage of processing in which information is evaluated for its affective content, a position arrived at more recently by Bargh (1997).

1077

Another study showed that people not only censor threatening information outside of awareness, but that they are particularly vigilant about it even though they cannot consciously perceive it (Blum 1954). The experimenter exposed subjects to threatening and nonthreatening images (such as castration-related images) at speeds either far below or near the threshold for conscious perception. At the longer exposures, as in the McGinnies study, neutral stimuli were more easily perceived; thus, anxiety-provoking stimuli took longer to recognize consciously. At the brief exposures, subjects had no idea what they had seen, but when asked which stimuli stood out most, they indicated that the threatening images seemed most salient. Thus, in this study, subjects appeared unconsciously both to recognize the affective meaning of subliminally presented stimuli, and to defend against those that were threatening.

Other investigators (cited in Shevrin and Dickman 1980) have used electroencephalographic (EEG) data to study responses to subliminally presented stimuli, focusing on differences in amplitude of evoked-related potentials in response to emotional versus neutral words presented subliminally. Heinemann and Emrich (1971) found that emotional words presented with gradually increasing intensity (beginning with an imperceptible intensity) evoked more alpha waves as

assessed by EEG than neutral words, and did so *prior to conscious recognition*, again suggesting that their emotional content was processed before they were consciously recognized. More recently, Shevrin and his colleagues (1995; Shevrin et al. 1996) examined the impact of subliminal and supraliminal presentation of words selected by clinicians on the basis of extensive interview data as relevant to the conflicts underlying particular patients' symptoms. The results suggest a different pattern of response to subliminal and supraliminal presentation of words consciously related to the symptom and those hypothesized to be unconsciously related to it.

Silverman and his colleagues (Weinberger and Hardaway 1990; Silverman and Weinberger 1988; Weinberger n.d.) have demonstrated that subliminal presentation of stimuli hypothesized to be psychodynamically meaningful can affect a wide range of behavior. Particularly important are the results of a meta-analysis, a statistical procedure that calculates the average impact, or effect size, of experimental manipulations across a number of experiments, and thus provides a quantitative estimate of the robustness of the phenomenon. Analyzing the results of over 100 studies with this technique, Weinberger and Hardaway (1990) found that subliminal stimulation of this sort does indeed influence subjects' responses. For example, male subjects presented subliminally with the stimulus "Beating dad is OK" tend to show better performance on a competitive dart-throwing task than subjects presented with control stimuli such as "Being a doctor is OK" (see Palumbo and Gillman 1984; Silverman 1983).

Unconscious Affect and Defensive Processes

Discussion of unconscious affect invariably leads to literatures pertaining to psychological defense, since the function of defensive processes is to protect people from experiencing unpleasant emotional states such as anxiety and guilt, or to ward off thoughts or memories that could activate those states. The most important research in this area is the work of Vaillant (Roston, Lee, and Vaillant 1992; Vaillant 1977). Vaillant and colleagues arranged reliably scored defenses into levels of adaptiveness, including reality-distorting defenses (such as gross denial), neurotic defenses (such as repression), and mature defenses (such as sublimation and humor). In multiple studies they have shown that these defenses have predictable correlates, such as the presence of a personality disorder, longitudinally as well as at a single time (Vaillant and

Drake 1985). Perry and Cooper (1989) have produced similar findings using a complex rating procedure to assess defenses in process during interviews.

Other researchers have studied defense mechanisms empirically as well (see Cramer 1991; Erdelyi 1990; Paulhus, Fridhandler, and Hayes 1997; Smith and Westerlundh 1980; Westen et al. 1997). For example, Davidson and MacGregor (1995) found that the self-reports of subjects low on general defensiveness tend to correlate relatively highly with descriptions of them by other people who know them well. The same is not true, however, for defensive subjects, who do not see themselves as they are seen by others. Hedegard (1969) experimentally manipulated anxiety levels using hypnosis and then measured the impact on defenses assessed projectively. As predicted by theories that view defenses as hierarchically organized (A. Freud 1936; Vaillant 1977), she found that more intense anxiety evokes less mature defenses.

Several studies comparing self-reports and physiological indices of sexual arousal provide additional evidence of unconscious affect and defense. A recent study using genital plethysmography (which, in males, measures penile circumference, and hence degree of erection) provides evidence for the classic psychoanalytic theory of homophobia as a defense against threatening homosexual feelings (Adams, Wright, and Lohr 1996). Male subjects were first identified as either homophobic or nonhomophobic by questionnaire. They were then shown videotapes of heterosexual, lesbian, and gay sex. Although both groups of men showed arousal at videotapes involving women performing sexual acts, the homophobic men, unlike their nonhomophobic counterparts, also showed increases in penile circumference (indicating arousal) while watching men engaged in homosexual sex.

Other studies demonstrate dissociations between conscious and unconscious sexual arousal. For example, Morokoff (1985) assessed sexual arousal in females using self-report and genital plethysmography while subjects viewed an erotic (heterosexual) videotape. Women high in self-reported sexual guilt self-reported less arousal. Their bodies, however, told a different story: these women showed greater physiological arousal than those low in sexual guilt.

The concept of repression has long been a lightning rod for disagreement between psychodynamic and other psychologists, and more generally between clinicians and experimental researchers (e.g., Holmes 1990). Claims of childhood sexual abuse and counterclaims of

fabricated memories have now made the concept of repression and repressed memories the centerpiece of new controversy (see Loftus 1993).

The clearest empirical evidence for repressed memories comes from a study of women who had been treated at a hospital for sexual molestation when they were children (Williams 1994). Seventeen years after their documented abuse, 38 percent were amnesic for the incident, even though many reported other traumas, including later incidents of sexual abuse. The argument that these subjects may simply have forgotten the events is untenable, since having one's genitals violated with sufficient damage to require medical intervention is hardly a memory that simply dissipates with time. Indeed, qualitative data from the study document dynamic unconscious processes of defensive memory reconstruction. When asked if any family members had ever gotten into trouble for their sexual behavior, one subject who denied sexual abuse reported that before she was born an uncle had apparently molested a little girl and was stabbed to death by the girl's mother. Examination of newspaper reports seventeen years earlier found that the subject herself had been one of the uncle's two victims, and that the mother of the other victim had indeed stabbed the perpetrator.

080

Several other areas of research conducted by social psychologists, few of whom consider themselves psychodynamic, have nevertheless provided extensive experimental documentation of defensive processes (see Westen 1994). For example, most people tend to view themselves as above average on most positive characteristics such as intelligence; in reality, of course, not everyone can be above average on most characteristics (see Epstein 1992; Greenwald and Pratkanis 1984).

Recent research on narcissism is of particular significance in this respect. John and Robins (1994) had eleven psychologists provide quantified personality descriptions of MBA students after observing them for a weekend. The students worked in teams of six to solve problems in a realistic simulation of a corporate decision-making meeting. The psychologists not only watched them during these meetings, but also interacted with them over the course of the weekend. Aside from describing their personalities, the observers ranked subjects' contributions to the team effort. Subjects also ranked themselves and their peers on their performance, from one to six. Most people inflated their rankings by about one point; that is, if others saw them as the third most important contributor out of the six team members, they saw themselves as second most important, suggesting a defensive bias. Perhaps more

important, people independently observed to be narcissistic tended to give themselves ranks two or more higher than their peers and the independent observers ranked them. In fact, the tendency of subjects to view themselves more positively than others viewed them correlated extremely strongly with psychologists' ratings of their narcissism.

In a longitudinal study, Robins and Beer (1996) documented some of the costs of defensive grandiosity. They compared two groups of college freshman matched for ability on high school grades and GRE scores. One group was defensively self-enhancing; their reports of their academic competence and their expectations of how they would perform in college were much higher than their actual past performance (documented by admission records) would predict. Subjects in the other group were relatively accurate in their assessments of their own abilities. At the end of their sophomore year, the self-enhancers were consciously just as pleased with their performance as the more realistic group, but, again, the telltale sign of defensiveness lay not in their self-reports but in their behavior: the self-enhancers were 32 percent more likely to have dropped out of school. A series of studies by Colvin, Block, and Funder (1995) has provided further empirical documentation of the psychological cost of narcissistic defenses.

1081

The Defense Against Unpleasant Emotion and Its Physiological Correlates

Lack of attunement to one's own affective states also leads to *psychophysiological* costs, as demonstrated by several literatures bearing on psychological defense. Dozier and Kobak (1992) studied defensive processes in adults with avoidant attachment styles—that is, people who are particularly defensive about their feelings in attachment relationships. In one study, they used physiological measures to document the discordance between what these individuals know and feel consciously, and what they know and feel unconsciously. When asked about their relationships with their parents (and other attachment figures such as lovers), people with avoidant attachment styles tend to dismiss the importance of attachment relationships or offer idealized generalizations about the relationships which they are unable to back up with any specific examples (Main, Kaplan, and Cassidy 1985). Linking this style of affect regulation in close relationships to psychophysiology, Dozier and Kobak monitored skin conductance while subjects were asked to recall memories of separation, rejection, and threat involving their parents. As predicted, the more the subjects used

avoidant strategies (disavowing unpleasant feelings in their attachment relationships or providing sparse descriptions of emotionally significant interpersonal events), the more physiological reactivity they manifested while answering affectively evocative questions about separations, rejections, and parental threats.

Two entirely different lines of research have produced parallel findings. Shedler, Mayman, and Manis (1993) hypothesized that people who remain unaware of their own considerable distress—whom they described as having *illusory mental health*—would pay a price in terms of cardiac reactivity. They constructed two studies of people who reported themselves to be free of psychological distress and symptomatology, but whose descriptions of their early memories showed signs of psychological disturbance. Subjects underwent a mildly stressful procedure that can be disturbing to someone who is highly defensive (reading aloud, performing a phrase association test, or providing projective stories). Subjects who described themselves as psychologically healthy but showed unconscious evidence of distress in their early memories manifested significantly more cardiac reactivity on a measure related to heart disease than subjects whose self-reports and early memories were concordant—that is, who were either high or low on anxiety as assessed both ways.

Thus, people who denied their unpleasant feelings, *unlike those who were distressed but knew it*, showed hyperarousal while performing a mildly threatening task. They also showed more indirect signs of anxiety (such as stammering, sighing, and avoiding the content of the stimulus) than the other groups, all the while declaring themselves to be the *least* anxious during these tasks. In more recent research, subjects with illusory mental health made significantly more trips to the doctor than subjects who were either genuinely healthy mentally or who acknowledged distress, suggesting that keeping oneself unaware of negative feelings translates into poorer physical health, increased hypochondriasis, or both (Cousineau and Shedler 1995).

Similar findings emerge from studies of *repressive coping style*. This style of regulating affect refers to a tendency to avoid feeling emotions as a way of managing distress. (It is more akin to intellectualization, isolation of affect, and obsessive style in Shapiro's [1965] sense than to repression.) Research in this area documents a direct link between the defensive disavowal of affect, particularly anger, and

physical illness (Schwartz 1990; Weinberger 1990, 1992). Individuals high in this trait, like the avoidants in the Dozier and Kobak study and the subjects with illusory mental health in the studies by Shedler and colleagues, report low levels of anxiety while demonstrating marked physiological reactivity. Daniel Weinberger and his colleagues have demonstrated a link between this defensive style (particularly the suppression of aggressive or angry feelings) and both cholesterol levels and asthma. Other research has uncovered an association between these defensive strategies and vulnerability to cancer (Jensen 1987; Weinberger 1992). Apparently, inhibiting conscious access to one's emotions places the body, particularly the heart and the immune system, under considerable stress (see also Gross and Levenson 1993). Freud may be dead, but his theories are proving increasingly useful in predicting who will be joining him sooner rather than later.

These studies are important in that they demonstrate the existence not only of unconscious affective processes, but also of *dynamically* unconscious processes. Of particular relevance to psychoanalytic *treatment* is research by Pennebaker (1989, 1997), who has demonstrated that writing about or discussing painful experiences (such as job loss in unemployed professionals) in an emotionally evocative way produces increases in immune functioning, physical health, and adaptive behavior (such as getting a new job). Pennebaker and his colleagues (Hughes, Uhlmann, and Pennebaker 1994) have begun studying the moment-to-moment psychophysiological changes that occur as subjects write about painful or traumatic events that they have not previously discussed. The researchers recorded somatic changes that occurred as subjects typed each new word or phrase. Among other things, they found that skin conductance increased when subjects used words expressing unpleasant emotion, but also at the precise moments when their words were independently rated as evidencing denial or defensiveness.

In the short run, expressing unpleasant emotion leads to a momentary increase in arousal, but over the long run, doing so *decreases* arousal (Pennebaker 1997). In contrast, keeping oneself unaware of what one really feels appears to maintain arousal continuously. Of relevance to these findings is a study in which group psychotherapy for women with advanced breast cancer extended their lives by an average of eighteen months relative to control subjects matched for stage of the illness (Spiegel et al. 1989).

Implications for the Psychoanalytic Understanding of Unconscious Processes

This evidence on unconscious affective processes leads to a number of conclusions relevant to the psychoanalytic understanding of unconscious processes, and some of these have potential treatment implications. First, the data provide incontrovertible evidence that considerable affective processing occurs unconsciously in daily life, and that people can protect themselves against unconsciously threatening thoughts and feelings by altering them outside of awareness, just as psychoanalysis has argued for years, based on clinical observation.

A second and related point is that affective processing occurs outside of awareness *whether or not the person is responding defensively*. People may not know what they feel because they do not want to know, but they may also not know what they feel, or what caused a feeling, because they are unaware of the unconscious associations that triggered their affects (see Westen 1985, chapter 2). Much of learning involves the unconscious association of representations with affects. As the neurological data described above attest, there are forms of associative learning that are mediated by different neural structures from those involved in consciousness. In other words, we are unaware of many of our emotional reactions to people and other stimuli *simply because the associative processes that link affects and representations do not require consciousness*. This suggests two distinct reasons for the usefulness of free association as a therapeutic technique: (1) it bypasses defensive processes that inhibit conscious attention to certain thoughts, feelings, or motives; and (2) it is useful in mapping out the unconscious networks of association and the affects encoded along them that may underlie many forms of psychopathology (see Gabbard and Westen 1999).

A third implication of these studies has a bearing on what it means to *remember* a traumatic event. A traumatic memory may be represented in multiple modes—including sensory and verbal—and may be available to various degrees for conscious representation. On the other hand, such a memory, particularly one that was overwhelming or that occurred preverbally, may also be encoded as a procedural memory (a tendency to behave in a particular way under certain circumstances) or as a tendency to experience certain feelings, which may in turn evoke a set of affect-regulatory tendencies (such as defensive processes or impulsive actions). More commonly, a traumatic memory or series of traumatic events is encoded in both ways, so that therapeutic

work must be aimed not only at retrieving conscious representations of the event (what cognitive scientists call *episodic memory*, or memory of specific episodes) but also at altering the automatically elicited feelings, and ways of regulating those feelings, that are part of the implicit memory system. This harks back to Freud's early formulation that hysterics suffer from reminiscences—that is, from bodily or other memories that occur in the absence of explicitly recalled or recallable events.

A fourth implication is even more treatment-specific. Affective associations can occur through classical conditioning processes (which, as noted above, in more psychoanalytic terms often entail the association of representations of stimuli with affect) without any cortical involvement and certainly without conscious involvement. This simply means that people often respond to other people and situations in patterned ways, unknowingly, based on their prior experiences with them or with others who share common features with them. Therapeutically, this provides experimental grounding for the use of psychoanalytic techniques such as free association, transference analysis (since affective reactions to the analyst are similarly triggered by cues of which the person may be unaware), and interpretation.

1085

Phenomena of this sort, however, also imply potential limits to the insight-oriented treatment of cognitive-affective associations that have become automatized and require little or no cortical involvement, as in many intense phobic reactions. Reconstructing the way fear became associated with a particular representation (*explicit* knowledge) does not necessarily weaken the *implicit* neural connections between the representation of an object (particularly a primitive sensory representation at the thalamic level) and an affective response. Helping a patient change an emotional response of this sort, whatever the origin of the fear (such as an automatic, instantaneous phobic reaction to public speaking) may require a move back toward some of Freud's earlier, more directive approaches to treatment. Freud insisted that insight alone will not eliminate a phobia if the person does not use this insight to force himself to confront it. His own views suggest the potential importance of adjunctive or integrative use of cognitive-behavioral techniques that emphasize *exposure* to the feared stimulus in the treatment of anxiety (see Wachtel 1997; Westen 1999). For unconscious affective associations to change, a person must come, through experience, to associate a representation with a different affective state.

This issue may have implications for psychoanalytic technique far beyond the treatment of phobias. Conditioned emotional responses (that is, feelings that arise spontaneously when a person thinks about or is confronted with someone or something associated with an emotion) can not only be triggered unconsciously, but can be defended against unconsciously as well, so that neither the trigger nor the affect is apparent. Processes of this sort are not limited to phobias or other anxiety disorders. Consider the case of Mr. R, a patient who had received minimal encouragement as a child for his notable artistic talents, and who had in fact been repeatedly deeply humiliated by his parents (particularly his father) for his efforts to master his craft, which his father considered unmanly. Mr. R repeatedly prevented himself from attaining career goals that were within his grasp by not following through with the requisite phone calls, letters of inquiry, or presentations of his work. When galleries did not spontaneously offer to show his pieces, he took this as evidence that he was, in fact, as incompetent as he feared. Thus, his actions led to consequences that confirmed his view that his father was right, and to the strengthening of a childhood association between wishing and disappointment. For Mr. R, as for many patients with depressive dynamics who are uncomfortable with compliments and who often achieve far below their capacity, positive self-representations were dreaded. Such representations felt fraudulent, like a betrayal of his parents; they threatened an identificatory link between himself and his parents (who at least shared his negative views of himself); and they activated wishes that had become associated with further disappointment.

An important part of Mr. R's treatment was to have him sit with and elaborate memories of instances in which he received praise, since praise was so uncomfortable for him. Experiencing praise and pride in himself without any adverse consequences was a direct psychoanalytic analog to behavioral treatments that expose phobic patients to phobic stimuli as a way of producing habituation or extinction of the emotional response (see Wachtel 1997). In many respects, of course, this can be understood as a corrective emotional experience or as the disconfirmation of a pathogenic unconscious belief (Weiss 1993). At times, however, the link between the feeling and the defense against it is so strong and automatic that the affect-defense constellation takes on a functional autonomy independent of the beliefs or unconscious fantasies underlying it.

An important technical question arises: whether or not altering affective associations of this sort requires the occasional introduction in treatment of more structured and deliberate interventions than are normative in psychoanalysis. In fact, I suggested to Mr. R, when his defenses against pride and the negative affect he associated with it became clear, that we spend some time examining the successes and achievements he never mentioned in treatment. Perhaps years later he might have done so spontaneously, and we would have taken that as an index of structural change. However, when a patient is treating a thought, memory, or affect (in this case, pride) like a phobic stimulus and avoiding it as a way of escaping the anxiety it engenders, waiting for him spontaneously to overcome the anxiety and face the fear may be a Catch-22. At the very least it is likely to be a very inefficient technical stance, since the best way to overcome a fear is to expose oneself to the conditions that elicit it and to begin forming new associations to it. Doing so may also allow access to associations that would be less readily accessible if not primed by the very behaviors and free-associative material the patient habitually avoids.

1087

Further, because this patient had a tendency to filter out compliments and avoid ways of obtaining them, another part of the treatment involved working with him to *produce* the actions he was avoiding, so as to *elicit* positive feelings from others and toward himself, and to give him carefully titrated doses of realistically positive feedback on his successes. The former allowed us to explore the feelings he associated with praise and to begin to develop new associations to it (since he was now receiving praise and having to confront his ambivalence toward it). The latter allowed us to do the same thing directly in the therapeutic relationship, exploring his fantasies that I was being fooled, that I would be disappointed, that I was being disingenuous, that I would "turn on him" like his parents, that I might be hurt or feel diminished by his successes, and the like.

Note that the theoretical rationale for this technical move was less a self-psychological mirroring than a view, based on decades of research, that exposure is a key ingredient in altering chronic, automatically activated affective responses, combined with a dynamic understanding of the defenses that such responses can engender. It is important to note as well how this stance fostered rather than retarded insight into some central dynamics. It allowed access to associations that were previously unavailable, since Mr. R had been behaving in

ways that prevented him from receiving acclaim and hence activating associations to it. It is crucial to note, however, that any complimentary statements on my part were not gratuitous or euphemistic, and their meanings to him were always examined in relation to our ongoing relationship. Such comments were typically prefaced with an implicit or explicit defense interpretation (e.g., "I know you aren't fond of compliments, but . . .") aimed not only at allowing these comments to "register," but also to foster exploration of how he experienced positive feedback in a relationship with a transference object who mattered to him—feedback which, in a prior era, might have been viewed as gratuitous "gratification."

UNCONSCIOUS MOTIVATION

1088

The data on defensive processes reviewed above provide evidence also for dynamic unconscious *motivational* processes, since a defense is by definition a motivated unconscious effort to minimize painful, or maximize pleasurable, emotion. A growing body of evidence from other quarters, however, provides even more direct evidence for the existence of unconscious motivation.

Experimental Demonstrations of Unconscious Motivation

Some of the best data come from research comparing the two major ways psychologists have assessed motives: through self-reports and through projective tests, notably the Thematic Apperception Test (TAT). The correlation between these two types of measures typically hovers around zero—for example, self-reported and projective assessments of the need for power tend to show no relation to each other (McClelland, Koestner, and Weinberger 1989). In other words, conscious and unconscious motives appear to reflect the operations of autonomous systems.

Despite their lack of correlation with one another, each of these two types of measure nevertheless predicts relevant behavior. For example, over the long run, assessment of motives from TAT stories is much more predictive of entrepreneurial or managerial success than self-report measures of need for achievement or power. On the other hand, if subjects are told that they are about to take a test of intelligence or achievement, their self-reported achievement motivation will be a better predictor of their effort and performance than motives assessed from TAT responses.

How do we make sense of these findings? McClelland and colleagues propose a simple but subtle answer: When conscious motives are activated, they guide behavior and can override unconscious motives. When they are not, which is much of the time, unconscious motives guide behavior.

Bargh (1997; Bargh and Barndollar 1996) has documented the existence of unconscious motivational processes experimentally. He argues that motives, like thought processes, get automatized—that is, activated and carried out with little or no conscious awareness—through repeated use in given situations. For some patients, behaving in a passive-aggressive way may become automatized as a routine way of responding to the requests of authority figures, because it simultaneously allows the gratification of aggressive wishes while it minimizes the chances of retaliation. Although this example links automatized motives to a pathological compromise formation, Bargh takes issue with the view of unconscious processes as largely irrational. He argues that the habitual and automatic unconscious motives people develop through repeated experiences in a given situation are often better guides to action than the conscious, presumably “rational” analyses they might construct in any specific instance, which may not be adequately informed by their history of prior learning.

1089

Although we are not accustomed to thinking this way about unconscious motives in psychoanalysis, this intriguing argument fits with experimental work by Wilson (Wilson and Schooler 1991; Wilson et al. 1993) that finds that people’s “gut level” feelings are often more effective guides to action, and lead to more subsequent satisfaction, than their reasoned reflections. For example, in one study, undergraduate subjects rated how much they liked five art posters. In one condition, they were asked to give reasons before stating their preferences—to think about their preferences carefully—whereas in a control condition, subjects simply chose the poster they liked the most. The investigators hypothesized that people do not have conscious access to the reasons behind affective judgments of this sort, and that the *post hoc* explanations they offer might actually momentarily alter their perceived preferences, leading them to believe they prefer posters that they would not select based on their feelings alone.

At the end of the rating procedure, subjects were allowed to choose one poster to take home. A few weeks later the experimenters contacted them and asked how satisfied they were with their choice. Subjects who had offered reasons for their preferences were significantly less

satisfied with their choices than were subjects who had chosen without reflection.

Bargh has found that the same kind of priming procedures used in studies of cognition can actually be used to activate motives. For example, he and his colleagues surreptitiously primed subjects with words related either to achievement (e.g., "strive") or to affiliation (e.g., "friend") using a scrambled sentence task, in which subjects unscrambled sentences that included achievement- or affiliation-related words. The investigators then asked subjects to participate in a seemingly unrelated "second experiment" that placed them in a situation of motivational conflict. They were asked to work with an incompetent partner on a puzzle task for which they received a joint score. Subjects could either succeed, and thus make their partner feel humiliated and stupid, or protect the confederate's self-esteem at the cost of their own success.

1090

As predicted, subjects who had been primed with achievement words outperformed subjects primed with affiliation words (and also the control subjects), even though, when asked later, they were unaware of the influence of the primes. In other words, simply exposing them to words like "success" increased the level of activation of unconscious achievement motives, momentarily increasing the strength of one side of the conflict. In some respects, this bears similarities to Freud's early discovery that hypnosis could temporarily strengthen the conscious will against an unconscious counterwill by increasing the strength of the dynamics on one side of a conflict (see Erdelyi 1985). Not surprisingly, the experimental manipulation in this study, which was relatively minor (priming with a few words), wore off after a few trials. Interestingly, though, a variable that *then* predicted success was an enduring motive *assessed by the TAT*. In other words, after the effects of recent activation of a network of association related to achievement decayed, chronically active unconscious motives resumed control over behavior.

Other research into transference-related phenomena has documented unconscious motivational processes as well. Lewicki (1985) demonstrated an unconscious transference process of sorts, in which subjects avoided a person whose physical appearance resembled an experimenter with whom they had a single, brief, unfriendly encounter. Subjects who did not have an unfriendly encounter with the experimenter did not show the same avoidance of the confederate. When the

investigators asked subjects who avoided the person why they did so, almost all replied that their choice was random. In other words, the interaction produced an affective association of which they were unaware, but which influenced their subsequent motivation.

Andersen and her colleagues have experimentally documented processes relevant to transference in ways that bear on the issue of unconscious motivation. In one study, they asked subjects to describe a significant other, and then embedded a piece of that description in the description of a fictional character (Andersen and Cole 1991). Thus, if a subject described his mother as gentle, intelligent, feminine, and courageous, the investigators would create a fictional character who was described, among other things, as courageous. When subjects were later asked to remember as much as they could about the fictional character, they attributed other characteristics of the significant other (such as intelligence) to the character, even though these had not been part of the character's initial description. In subsequent research, Andersen and Baum (1994) found a similar transference of *affect* from significant others to fictional characters.

Andersen and colleagues (1996) subsequently linked these findings to motivation. In a procedure similar to the above, subjects were led to believe that the fictional person was sitting in the room next door, and were asked about their desires to meet or avoid the person. Embedding traits from the significant other into the description of the "person next door" influenced motivation to meet him or her. In their most recent work, Andersen and colleagues demonstrated similar results when traits from the significant other were associated with the fictional person through *subliminal* presentation (see Glassman and Andersen 1999). This research thus documents that unconscious feelings can be transferred from one person to another and motivate behavior towards the second person.

Research with neurologically impaired patients has also documented unconscious motivational processes. An early demonstration occurred almost a century ago, when Claparede (described in Cowey 1991) shook hands with an amnesic patient suffering from Korsakoff's disorder. Claparede had concealed a pin between his fingers, which pricked the patient as their hands clasped. Upon meeting again, the patient was unable to recognize Claparede (because of her amnesia for recent events) but was nonetheless unwilling to shake his hand. Because of her deficits in explicit knowledge, she was unable to

describe the reasons for her actions. Gazzaniga (1985; see Bargh 1997) has similarly described the behavior of split-brain patients who can carry out instructions to produce some action presented to their right hemisphere (by sending the information exclusively to their left visual field). When subsequently asked what they are doing, they offer seemingly sensible but incorrect rationalizations for their behavior, since the motivation is inaccessible to their left hemisphere, which plays a greater role in consciousness and linguistic processing.

Implications for the Psychoanalytic Understanding of Unconscious Processes

1092

Once again, these data not only support some of the most fundamental assumptions and assertions of psychoanalytic theory; they also suggest refinements in our understanding of unconscious processes. First, we need a better theory of the conditions that activate unconscious motives and that lead them to influence conscious mental life and behavior. In *The Interpretation of Dreams*, Freud (1900, chapter 7) postulated that unconscious motives *are always active*. Although in some sense this may be true, particular motives are more active at some times than others, vary in their strength in different individuals and at different times, and are triggered by thoughts, feelings, and environmental events in ways that are crucial for understanding how people act (Westen 1997). The research by Bargh, for example, showed how even a seemingly trivial manipulation (surreptitious presentation of a word associated with achievement or affiliation) could lead to changes in behavior. Research on the constructs people use to process information about themselves and others (in psychoanalytic terms, representations of self, others, and relationships) consistently shows that when people process new information about someone, such as whether the person intended something hostile in an ambiguous statement, their inferences are influenced both by *chronically used* (characterological) and by *recently used* (primed) constructs (Higgins 1990). The same appears to be true of motives: people differ in the extent to which one motive or another is likely to “move” them, but their motives will not influence their behavior unless something has activated them.

Indeed, one of the aims of psychoanalytic treatment is to decrease the intensity and frequency with which maladaptive motives forged in childhood control behavior, because old motives are less likely to disappear entirely than to decrease in their power over behavior with treatment. What this means from the perspective of contemporary cognitive

neuroscience is that the strength of the associations between the motive and the conditions that elicit it, which are essentially encoded in the synaptic connections between the neurons that link the two networks, are weakened. Precisely how this occurs, and whether alterations in psychoanalytic technique may facilitate it, are exciting potential areas for investigation, particularly given the relative dearth of theory and research on how *motives* change (that is, how patients actually give up competitive or oedipal wishes, or how they actually internalize a soothing object in a way that decreases the intensity of dependent wishes).

Second, the research literature on unconscious motives, particularly the work of Bargh and Wilson, suggests the importance of disentangling *unconscious* motives from *primitive* motives. Motives of all sorts can become automatic and thus be elicited unconsciously, whether or not they are developmentally primitive or repressed. We are likely to be unaware of many of the motives that control our behavior and enter into compromise formations simply because consciousness does not have enough "processing space" to register all of the thoughts, motives, affects, and perceptions that are relevant at any given moment. As we work with our patients, for example, our behavior is likely to be influenced by a host of motives, such as the wish to be helpful, the wish to please internalized representations of supervisors, the wish to meet ideals of competence that began in the second year of life but have obviously developed since that time, the wish to know, the wish to be or feel omnipotent or omniscient, fears of making mistakes, and fears of acting out various countertransference dynamics. We simply could not be conscious of all of these motives, even the ones about which we have less conflict, while remaining able to listen with even a second ear.

1093

Third and related, these findings challenge the concept of a primitive id as the primary repository of all motivation. Beginning in 1923, Freud described psychic structures in terms of function rather than level of consciousness. The function of the id is motivation; of the ego, adaptation; and of the superego, values and self-control. However, with the move from the topographic to the structural model, Freud's description of the id took over too many attributes of the system unconscious from the topographic model, notably its nonadaptive, primitive character. Unless we want to describe all human motivation as primitive, we have to distinguish among motivational structures that range from developmentally primitive to quite refined, none of which are tied to any particular level of consciousness, except to the

extent that one might suppose that more primitive motives are more likely to require repression.

One way to dodge this theoretical bullet, of course, is to spread motives across all of Freud's psychic structures, as in ascribing realistic motives to the ego. To do so, however, is to undo the structural model, which identified the sets of *functionally* related dynamics that constituted Freud's structures. If the function of the ego can include motivation, and "the ego" is not a homunculus, then what is the function of the id? Even if some readers feel comfortable preserving the structural model with modifications of this sort, it is time to develop a theory of motivation that does not assume that all important motives are primitive or unconscious (see Westen 1997). To the extent that we remain convinced that understanding development is crucial to understanding adult functioning and conflicts, then we will need to "weaken the association" among the terms *motive*, *unconscious*, and *primitive*.

CONCLUSION: THE FATE OF "THE UNCONSCIOUS"

1094

This review has necessarily been incomplete, particularly with respect to its coverage of the "New Look" research from the 1950s that demonstrated the influence of unconscious processes on perception (see Dixon 1971, 1981; Erdelyi 1985; Weinberger n.d.). Nevertheless, I believe that, taken together, the studies described here lead to a single conclusion: Freud was right in his central hypothesis that much of mental life, including thought, feeling, and emotion, is unconscious. The findings of these studies are so robust, and taken from so many unrelated areas of psychological research, that the hypothesis of the existence and importance of unconscious processes is probably as close as any hypothesis in the history of psychology to being able to claim the status of fact.⁶ Indeed, that this hypothesis has led to such

⁶In a curious turn of affairs, one could argue that the scientific investigation of unconscious processes has laid the foundation for psychoanalysis as a hermeneutic or interpretive art. What hermeneuticists who have tried to evade the jaws of science have never realized is the extent to which their epistemology is dependent upon a series of assertions about the mind that are *empirical propositions*, such as the assertion that the mind works in such a way as to produce surface manifestations of deeper, underlying structures or meanings that require interpretation. The research reviewed here provides an empirical rationale for that assumption: to the extent that networks of association operate unconsciously, and to the extent that pieces of those networks can be inaccessible to consciousness, the art of interpretation of the gaps in consciousness becomes essential not only to clinical work but to the science of the mind.

heated debate for a century is ironic, given that developmental research shows that *children* in our culture begin to recognize the nature and functions of unconscious processes, such as the tendency to deny upsetting realities, by the time they are ten to twelve years old (Chandler, Paget, and Koch 1978). How such processes could, therefore, have eluded so many psychologists, psychiatrists, and humanities professors is an interesting question. I suspect that the answer may require the kind of *ad hominem* explanations to which Freud has so often been subjected, but I will leave this to intellectual historians and readers' aggressive fantasies.

There is, however, another message worth taking away from this body of literature. I have attempted to suggest it gradually by addressing at the end of each section some of the implications of the research for the psychoanalytic understanding of unconscious processes. Researchers have studied a multitude of unconscious processes that serve many functions, ranging from sensation and perception to memory, decision-making, emotion, and motivation. When we normally describe properties of mental processes—their function, their adaptiveness, their speed, their effectiveness, the degree to which they distort reality, the degree to which they lead to distress, etc.—we speak adjectivally, not nominally. That is, we do not group a class of cognitive processes together and call them “the cognitive,” any more than we speak of “the efficient,” “the adaptive,” or “the distressing.” Nor should we lump a large set of processes together and call them “*the unconscious*,” as if they all do the same thing, serve the same function, or operate on the same principles. *We should instead speak of unconscious processes.* Let me now say why I do not think this is just semantic quibbling.⁷

1095

Writing about “the unconscious” made sense to Freud given the intellectual context of his era. Philosophers were speculating that deep inside the human soul is a driving force that is greater than us all, that impels us to act in ways that do its bidding, rather than ours. Freud converted this quasi-religious notion into a set of secular propositions about the mind, and in the process changed human self-understanding (see Ellenberger 1970; Weinberger n.d.). He recognized that his patients often seemed to act on impulses outside of their awareness, and he linked this with the notion of a mind ruled by animal instincts

⁷Analytic theorists have made similar arguments against reifying concepts from Freud's structural model since the 1960s.

beyond the control of the hapless rider trying to rein them in and domesticate them.

The linking of the unconscious to the primitive and instinctual, however, was not altogether accurate, and Freud began to rectify this with his move from the topographic to the structural model, since he realized that many ego and superego processes are unconscious. Vestiges of the earlier way of thinking, however, remained in his thought (particularly in his concept of the id), and can be seen today when clinicians and theorists speak of “the unconscious” as though it were a unified and isolated sector of the mind. Although as clinicians we focus on unconscious processes gone awry, from an evolutionary standpoint the capacity to process information, form affect-laden associations, and behave on the basis of wishes and fears that are unconscious is of tremendous adaptive significance—and much older than the capacity for reflective consciousness. Phobias are maladaptive, but fears are not, and they can be learned and can guide behavior in adaptive directions unconsciously. Similarly, we may have no awareness of the processes that lead us to prefer some foods to others, but many of these processes have been naturally selected over millenia because they impel us to consume foods that supply nutrients and avoid others that are potentially toxic.

096

When feelings from the past influence current action, they can certainly be maladaptive. This is particularly likely to be the case when the current situation bears only a distant relation to the reality of prior experiences, such as unpleasant childhood interactions with parents—or when current experiences *need not* resemble these prior experiences but end up doing so because the patient continually recreates them. On the other hand, as we have seen, relatively unreflective emotional responses can also lead to *better* decisions than carefully reasoned choices (Wilson and Schooler 1991) because affects are guides for action, and they are typically generated unconsciously. Similarly, many skills are unconscious, but they are hardly irrational or childish. The art of clinical supervision, for example, lies in making the implicit explicit: taking the unconscious “grammars” we use to understand and treat patients and articulating them so that another generation of clinicians can benefit from them. If research in cognitive science and psycholinguistics provides any indication, most clinicians can probably articulate only a small percentage of the rules they use to interpret meaning or to time their interventions so their patients can hear them.

We are all much more expert unconsciously than consciously, because expertise implies automatization of processes that once required conscious attention.

The vestiges of the nineteenth-century "unconscious" can be seen, as well, in Freud's concept of primary process, which confounds a mode of cognition (associative thought) with a primitive form of motivation. Ideas, thoughts, and feelings are arranged along associative networks, and these associations unconsciously guide behavior. As noted above, that is one of the main reasons free association is so useful: It gives us access to these networks, which are unconscious *whether or not* they are conflict-laden or connected with developmentally primitive wishes. Networks of association are crucial to adaptive behavior because they provide information about the regularities of the social and nonsocial world and therefore allow us to predict, categorize, and respond.

Associative thinking is not wishful thinking. In fact, it can just as easily be fear-laden, depending on what objects and affects the person through experience has come to associate. Neither dreams nor the poorly regulated associative processes of psychotic patients support Freud's assertion of a linkage between wishful and associative thinking, since they are as likely (if not more likely, in the case of psychotic thought) to be frightening as wish-fulfilling. The only reason Freud had to go to such extraordinary efforts in *The Interpretation of Dreams* to explain nightmares as wish-fulfilling was that he was constrained by his unconscious assumption that several antinomies could be reduced to a single distinction: conscious/unconscious, rational/irrational, mature/primitive, and civilized/instinctive. These four antinomies are not, however, synonyms. And we would do well, at last, to retire the concept of *the* unconscious.

I hope readers are convinced at this point that empirical research can be useful not only to test basic psychoanalytic hypotheses and models, but also to refine them. But that is only a secondary message of this paper. The primary message should be clear: after a hundred years of controversy, we can now put to rest the criticism of psychoanalysis that its most fundamental assertion—the importance of unconscious processes—is mistaken or without empirical foundation. The data are incontrovertible: consciousness is the tip of the psychic iceberg that Freud imagined it to be.

REFERENCES

- ABLON, J.S., & JONES, E.E. (1998). How expert clinicians' prototypes of an ideal treatment correlate with outcome in psychodynamic and cognitive-behavioral therapy. *Psychotherapy Research* 8:71-83.
- ANDERSEN, S., & BAUM, A. (1994). Transference in interpersonal relations: Inferences and affect based on significant-other representations. *Journal of Personality* 62:460-497.
- & COLE, S. (1991). Do I know you? The role of significant others in general social perception. *Journal of Personality and Social Psychology* 59:384-399.
- REZNIK, I., & MANZELLA, L. (1996). Eliciting facial affect, motivation, and expectancies in transference: Significant-other representations in social relations. *Journal of Personality and Social Psychology* 71: 1108-1129.
- ANDERSON, J.R. (1995). *Learning and memory: An integrated approach*. New York: Wiley.
- BANAJI, M., & HARDIN, C. (1996). Automatic stereotyping. *Psychological Science* 7:136-141.
- 998 BARGH, J. (1997). The automaticity of everyday life. In *The Automaticity of Everyday Life: Advances in Social Cognition, Vol. 10*, ed. R.S. Wyer, Jr. Mahwah, NJ: Erlbaum, pp. 1-61.
- & BARNDOLLAR, K. (1996). Automaticity in action: The unconscious as repository of chronic goals and motives. In *The Psychology of Action: Linking Cognition and Motivation to Behavior*, ed. P.M. Gollwitzer & J. Bargh. New York: Guilford Press, pp. 457-481.
- BECHARA, A., TRANEL, D., DAMASIO, H., ADOLPHS, R., ROCKLAND, C., & DAMASIO, A. (1995). Double dissociation of conditioning and declarative knowledge relative to the amygdala and hippocampus in humans. *Science* 29:1115-1118.
- ——— ——— & DAMASIO, A. (1996). Failure to respond automatically to anticipated future outcomes following damage to prefrontal cortex. *Cerebral Cortex* 6:215-225.
- BLUM, G.S. (1954). An experimental reunion of psychoanalytic theory with perceptual vigilance and defense. *Journal of Abnormal and Social Psychology* 49:94-98.
- BOWERS, J.S., & SCHACTER, D.L. (1990). Implicit memory and test awareness. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 16:404-416.
- BROADBENT, D.E. (1977). The hidden preattentive processes. *American Psychologist* 32:109-118.
- BRUYER, R. (1991). Covert face recognition in prosopagnosia: A review. *Brain and Cognition* 15:223-235.

- BUNCE, S., BERNAT, E., WONG, P., & SHEVRIN, H. (1995). Event-related potential and facial EMG indicators of emotion-relevant unconscious learning. Presented at the 103rd Annual Convention of the American Psychological Association, New York.
- CHANDLER, M.J., PAGET, K., & KOCH, D. (1978). The child's demystification of psychological defense mechanisms. *Developmental Psychology* 14:197-205.
- COLLINS, A., & LOFTUS, E. (1975). A spreading-activation theory of semantic processing. *Psychological Review* 82:407-428.
- COLVIN, R., BLOCK, J., & FUNDER, D. (1995). Overly positive self evaluations and personality: negative implications for mental health. *Journal of Personality and Social Psychology* 68:1152-1162.
- COWEY, A. (1991). Grasping the essentials. *Nature* 349:102-103.
- CRAMER, P. (1991). Anger and the use of defense mechanisms in college students. *Journal of Personality* 59:39-55.
- CREWS, F. (1993). The unknown Freud. *New York Review of Books*, November 18, pp. 55-67.
- (1996). The verdict on Freud. *Psychological Science* 7:63-67.
- DAMASIO, A.R. (1994). *Descartes' error: Emotion, Reason, and the Human Brain*. New York: Grosset/Putnam.
- DAVIDSON, K., & MACGREGOR, B.A. (1995). Clinically-judged defensiveness as a moderator of self-friend neuroticism consensus. Presented at the 103rd Annual Convention of the American Psychological Association, New York.
- DAVIS, P., & SCHWARTZ, G. (1987). Repression and the inaccessibility of affective memories. *Journal of Personality and Social Psychology* 52:155-162.
- DEVINE, P. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology* 56:5-18.
- (in press). Prejudice and outgroup perception. In *Constructing Social Psychology*, ed. A. Tesser. New York: McGraw-Hill.
- DIXON, N.F. (1971). *Subliminal Perception: The Nature of a Controversy*. New York: McGraw-Hill.
- (1981). *Preconscious Processing*. New York: Wiley.
- DOVIDIO, J., & GAERTNER, S. (1993). Stereotypes and evaluative intergroup bias. In *Affect, Cognition, and Stereotyping: Interactive Processes in Group Perception*, ed. D. Mackie & D. Hamilton. San Diego: Academic Press, pp. 167-193.
- DOZIER, M., & KOBAC, R. (1992). Psychophysiology in attachment interviews: Converging evidence for deactivating strategies. *Child Development* 63:1473-1480.
- ELKIN, I., SHEA, M.T., WATKINS, J., & IMBER, S. (1989). National Institute of Mental Health Treatment of Depression Collaborative Research

- Program: General effectiveness of treatments. *American Journal of Psychiatry* 46:971-982.
- EMMONS, R., & KING, L.A. (1988). Conflict among personal strivings: Immediate and long-term implications for psychological and physical well-being. *Journal of Personality and Social Psychology* 54:1040-1048.
- EPSTEIN, S. (1992). Coping ability, negative self-evaluation, and overgeneralization: Experiment and theory. *Journal of Personality and Social Psychology* 62:826-836.
- ERDELYI, M. (1985). *Psychoanalysis: Freud's Cognitive Psychology*. San Francisco: W.H. Freeman.
- ESTEVEZ, F., DIMBERG, U., & OHMAN, A. (1994). Automatically elicited fear: Conditioned skin conductance responses to masked facial expressions. *Cognition and Emotion* 8:393-413.
- FAZIO, R., JACKSON, J.R., DUNTON, B., & WILLIAMS, C.J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology* 69:1013-1027.
- FONAGY, P., & MORAN, G.S. (1990). Studies on the efficacy of child psychoanalysis. *Journal of Consulting and Clinical Psychology* 58:684-695.
- 100 FREUD, S. (1900). The interpretation of dreams. *Standard Edition* 4:1-338.
- (1915). The unconscious. *Standard Edition* 14:159-214.
- (1923). The ego and the id. *Standard Edition* 19:1-66.
- (1939). An outline of psycho-analysis. *Standard Edition* 23:139-207.
- GABBARD, G. (1996). The analyst's contribution to the erotic transference. *Contemporary Psychoanalysis* 32:249-273.
- & WESTEN, D. (1999). Toward a clinically and empirically sensible theory of thinking, Part 3: Implications for theories of therapeutic action. Unpublished manuscript, Harvard Medical School.
- GAZZANIGA, M.S. (1985). *The Social Brain: Discovering the Networks of the Mind*. New York: Basic Books.
- GILL, M. (1982). *Analysis of Transference, Vol. I. Theory and Technique*. Psychological Issues Monograph 53. New York: International Universities Press.
- GLASSMAN, N., & ANDERSEN, S.M. (1999). Streams of thought about the self and significant others: Transference as the construction of interpersonal meaning. In *At Play in the Fields of Consciousness: Essays in Honor of Jerome L. Singer*, ed. J.A. Dinger and P. Salovey. Mahwah, NJ: Erlbaum, pp. 103-140.
- GREENWALD, A., MCGHEE, D., & SCHWARTZ, J. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology* 74:1464-1480.
- & PRATKANIS, A. (1984). The self. In *Handbook of Social Cognition*, Vol. 3, ed. R. Wyer & T. Srull. Hillsdale, NJ: Erlbaum, pp.129-178.

- & BANAJI, M. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review* 102:4–27.
- GROSS, J.J., & LEVENSON, R. (1993). Emotional suppression: Physiology, self-report, and expressive behavior. *Journal of Personality and Social Psychology* 64:970–986.
- GRUNBAUM, A. (1984). *The Foundations of Psychoanalysis: A Philosophical Critique*. Berkeley: University of California Press.
- HEDEGARD, S. (1969). A molecular analysis of psychological defenses. Ph.D. dissertation, University of Michigan.
- HEINEMANN, L., & EMRICH, H. (1971). Alpha activity during inhibitory brain processes. *Psychophysiology* 7:442–450.
- HIGGINS, E.T. (1990). Personality, social psychology, and person-situation relations: Standards and knowledge activation as a common language. In *Handbook of Personality: Theory and Research*, ed. L. Previn. New York: Guilford Press, pp. 301–338.
- HOLYOAK, K., & SPELLMAN, B. (1993). Thinking. *Annual Review of Psychology* 44:265–315.
- HUGHES, C., UHLMANN, C., & PENNEBAKER, J. (1994). The body's response to processing emotional trauma: Linking verbal text with autonomic activity. *Journal of Personality* 62:565–585.
- JENSEN, M.R. (1987). Psychobiological factors predicting the course of breast cancer. *Journal of Personality* 55:317–342.
- JOHN, O., & ROBINS, R.W. (1994). Accuracy and bias in self-perception: Individual differences in self-enhancement and the role of narcissism. *Journal of Personality and Social Psychology* 66:206–219.
- JOHNSON, M.K., KIM, J.K., & RISSE, G. (1985). Do alcoholic Korsakoff's syndrome patients acquire affective reactions? *Journal of Experimental Psychology: Learning, Memory, and Cognition* 11:22–36.
- JONES, E.E., & PULOS, S.M. (1993). Comparing the process in psychodynamic and cognitive-behavioral therapies. *Journal of Consulting and Clinical Psychology* 61:306–316.
- KATZ, I., & HASS, R. (1988). Racial ambivalence and American value conflict: Correlational and priming studies of dual cognitive structures. *Journal of Personality and Social Psychology* 55:893–905.
- KERNBERG, O. (1980). *Internal World and External Reality: Object Relations Theory Applied*. New York: Jason Aronson.
- KIHLSTROM, J. (1987). The cognitive unconscious. *Science* 237:1445–1452.
- KOSSLYN, S. (1995). Freud returns. In *The Science of the Mind: 2001 and Beyond*, ed. R.L. Solso & D.W. Massaro. New York: Oxford University Press, pp. 90–106.
- KUNDA, Z. (1990). The case for motivated reasoning. *Psychological Bulletin* 108:480–498.
- LAZARUS, R.S., & MCCLEARY, R.A. (1951). Autonomic discrimination without

- awareness: A study of subception. *Psychological Review* 58:113–122.
- LEDoux, J. (1989). Cognitive-emotional interactions in the brain. *Cognition and Emotion* 3:267–289.
- (1995). Emotion: Clues from the brain. *Annual Review of Psychology* 46:209–235.
- LEVENTHAL, H., & EVERHART, D. (1979). Emotion, pain, and physical illness. In *Emotion in Personality and Psychopathology*, ed. C.E. Izard. New York: Plenum.
- LEWICKI, P. (1985). Nonconscious biasing effects of single instances on subsequent judgments. *Journal of Personality and Social Psychology* 48:563–574.
- (1986). *Nonconscious social information processing*. New York: Academic Press.
- MAIN, M., KAPLAN, N., & CASSIDY, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. In *Growing Points of Attachment Theory and Research*. Monographs of the Society for Research in Child Development 50 (1–2), ed. I. Bretherton & E. Waters, pp. 67–104.
- MCCLELLAND, D.C., KOESTNER, R., & WEINBERGER, J. (1989). How do self-attributed and implicit motives differ? *Psychological Review* 96:690–702.
- MCCONAGHY, N. (1976). Is a homosexual orientation irreversible? *British Journal of Psychiatry* 129:556–563.
- MCGINNIES, E. (1949). Emotionality and perceptual defense. *Psychological Review* 56:244–251.
- MILNER, B., CORKIN, S., & TEUBER, H.L. (1968). Further analysis of the hippocampal amnesic syndrome: Fourteen year follow-up study of H.M. *Neuropsychologia* 6:215–234.
- MOROKOFF, P.J. (1985). Effects of sex guilt, repression, sexual “arousability,” and sexual experience on female sexual arousal during erotica and fantasy. *Journal of Personality and Social Psychology* 49:177–187.
- MURPHY, S.T., & ZAJONC, R. (1993). Affect, cognition, and awareness: Affective priming with optimal and suboptimal stimulus exposures. *Journal of Personality and Social Psychology* 64:723–739.
- NISBETT, R., & WILSON, T. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review* 84:231–259.
- OHMAN, A. (1994). “Unconscious anxiety”: Phobic responses to masked stimuli. *Journal of Abnormal Psychology* 103:231–240.
- PALUMBO, R., & GILLMAN, I. (1984). Effects of subliminal activation of Oedipal fantasies on competitive performance. *Journal of Nervous and Mental Disease* 172:737–741.
- PAULHUS, D., FRIDHANDLER, B., & HAYES, S. (in press). Psychological defense: Contemporary theory and research. In *Handbook of Personality*

- Psychology*, ed. R. Hogan, J. Johnson, & S.R. Briggs. San Diego: Academic Press.
- PENNEBAKER, J. (1989). Stream of consciousness and stress: Levels of thinking. In *Unintended Thought*, ed. J.S. Uleman & J.A. Bargh. New York: Guilford Press, pp. 327–350.
- PERRY, J.C., & COOPER, S.H. (1989). An empirical study of defense mechanisms: I. Clinical interview and life vignette ratings. *Archives of General Psychiatry* 46:444–460.
- RACHMAN, S.J. (1978). *Fear and Courage*. San Francisco: W. H. Freeman.
- READ, S.J., VANMAN, E.J., & MILLER, L.C. (1997). Connectionism, parallel constraint satisfaction processes, and Gestalt principles: (Re)introducing cognitive dynamics to social psychology. *Personality and Social Psychology Review* 1:26–53.
- REBER, A. (1992). The cognitive unconscious: An evolutionary perspective. *Consciousness and Cognition* 1:93–133.
- ROBINS, R.W., & BEER, J.S. (1996). A longitudinal study of the adaptive and maladaptive consequences of positive illusions about the self. Unpublished manuscript, University of California at Berkeley.
- & CRAIK, K. (1994). A more appropriate test of the Kuhnian displacement thesis. *American Psychologist* 49:815–816.
- ROEDIGER, H.L. (1990). Implicit memory: Retention without remembering. *American Psychologist* 45:1043–1056.
- ROSTON, D., LEE, K., & VAILLANT, G. (1992). A Q-sort approach to identifying defenses. In *Ego Mechanisms of Defense: A Guide for Clinicians and Researchers*, ed. G. Vaillant. Washington, DC: American Psychiatric Association Press, pp. 217–233.
- RUMELHART, D.E., MCCLELLAND, J.L., & THE PDP RESEARCH GROUP (1986). *Parallel Distributed Processing: Explorations in the Microstructure of Cognition, Vol. 1: Foundations*. Cambridge: MIT Press.
- SCHACTER, D.L. (1992). Understanding implicit memory: A cognitive neuroscience approach. *American Psychologist* 47:559–569.
- SCHWARTZ, G., KRUPP, N., & BYRNE, D. (1971). Repression-sensitization and medical diagnosis. *Journal of Abnormal Psychology* 78:286–291.
- SCHWARTZ, G.E. (1990). Psychobiology of repression and health: A systems perspective. In *Repression and Dissociation: Defense Mechanisms and Personality Styles: Current Theory and Research*, ed. J.L. Singer. Chicago: University of Chicago Press, pp. 405–434.
- SHEDLER, J., & BLOCK, J. (1990). Adolescent drug use and psychological health: A longitudinal inquiry. *American Psychologist* 45:612–630.
- MAYMAN, M., & MANIS, M. (1993). The illusion of mental health. *American Psychologist* 48:1117–1131.
- SHEVRIN, H. (1995). Is psychoanalysis one science, two sciences, or no science at all? A discourse among friendly antagonists. *Journal of the*

- American Psychoanalytic Association* 43:963–986.
- & DICKMAN, S. (1980). The psychological unconscious: A necessary assumption for all psychological theory? *American Psychologist* 35:421–434.
- BOND, J., BRAKEL, L., HERTEL, R., & WILLIAMS, W.J. (1996). *Conscious and Unconscious Processes: Psychodynamic, Cognitive, and Neurophysiological Convergences*. New York: Guilford Press.
- SILVERMAN, L., & WEINBERGER, J. (1985). Mommy and I are one: Implications for psychotherapy. *American Psychologist* 12:1296–1308.
- SINCOFF, J. (1992). Ambivalence and defense: Effects of a repressive style on normal adolescents' and young adults' mixed feelings. *Journal of Abnormal Psychology* 101:251–256.
- SMITH, G.J.W., & WESTERLUNDH, B. (1980). Perceptogenesis: A process perspective on perception-personality. In *Review of Personality and Social Psychology*, ed. L. Wheeler. London: Sage, pp. 94–124.
- SNYDER, D.K., WILLS, R.M., & GRADY-FLETCHER, A. (1991). Long-term effectiveness of behavioral versus insight-oriented marital therapy: A 4-year follow-up study. *Journal of Consulting and Clinical Psychology* 59:138–141.
- SPEZZANO, C. (1993). *Affect in Psychoanalysis: A Clinical Synthesis*. Hillsdale, NJ: Analytic Press.
- 1104 SPIEGEL, D., BLOOM, J.H., KRAEMER, H.C., & GOTTHEIL, E. (1989). Effect of psychosocial treatment on survival of patients with metastatic breast cancer. *Lancet* 11: 888–891.
- SQUIRE, L.R. (1986). Mechanisms of memory. *Science* 232:1612–1619.
- (1987). *Memory and Brain*. New York: Oxford University Press.
- & ZOLA-MORGAN, S. (1991). The medial temporal lobe memory system. *Science* 253:1380–1386.
- STEELE, C. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist* 52:613–629.
- TARGET, M., & FONAGY, P. (1994). Efficacy of psychoanalysis for children with emotional disorders. *Journal of the American Academy of Child and Adolescent Psychiatry* 33:361–371.
- TULVING, E. (1972). Episodic and semantic memory. In *Organization of Memory*, ed. E. Tulving & W. Donaldson. New York: Academic Press, pp. 381–403.
- SCHACTER, D., & STARK, H.A. (1982). Priming effects in word-fragment completion are independent of recognition memory. *Journal of Experimental Psychology: Learning, Memory, & Cognition* 8:336–342.
- ULEMAN, J.S., & BARGH, J.A. (1989). *Unintended Thought*. New York: Guilford Press.
- VAILLANT, G. (1977). *Adaptation to Life*. Boston: Little, Brown.
- & DRAKE, R. (1985). Maturity of defenses in relation to DSM-III Axis II personality disorders. *Archives of General Psychiatry* 42:597–601.
- VAN IJZENDOORN, M. (1995). Adult attachment representations, parental

- responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin* 117:387-403.
- WEGNER, D. (1992). You can't always think what you want: Problems in the suppression of unwanted thoughts. *Advances in Experimental Social Psychology* 25:193-225.
- SHORTT, J., BLAKE, A.W., & PAGE, M.S. (1990). The suppression of exciting thoughts. *Journal of Personality and Social Psychology* 58:409-418.
- WEINBERG, N.M., GOLD, P.E., & STERNBERG, D.B. (1984). Epinephrine enables Pavlovian fear conditioning under anesthesia. *Science* 223:605-607.
- WEINBERGER, D. (1990). The construct validity of the repressive coping style. In *Repression and Dissociation*, ed. J. Singer. Chicago: University of Chicago Press, pp. 337-386.
- (1992). Not worrying yourself sick: The health consequences of repressive coping. Presented at the annual convention of the American Psychological Association, Washington, DC.
- WEINBERGER, J. (n.d.). *Unconscious Processes*. New York: Guilford Press, forthcoming.
- & HARDAWAY, R. (1990). Subliminal activation: separating science from myth in subliminal psychodynamic activation. *Clinical Psychology Review* 10:727-756.
- WESTEN, D. (1991). Social cognition and object relations. *Psychological Bulletin* 109:429-455.
- (1994). Toward an integrative model of affect regulation: Applications to social-psychological research. *Journal of Personality* 62:641-647.
- (1997). Toward a clinically and empirically sensible theory of motivation. *International Journal of Psycho-Analysis* 78:521-548.
- (1998a). The scientific legacy of Sigmund Freud: Toward a psychodynamically informed psychological science. *Psychological Bulletin* 124:333-371.
- (1998b). Unconscious thought, feeling, and motivation: The end of a century-old debate. In *Empirical perspectives on the Psychoanalytic Unconscious. Empirical Studies of Psychoanalytic Theories, Vol. 7*, ed. R. Bornstein & J. Masling. Washington, DC: American Psychological Association Press, pp.1-43.
- (1999). Toward a clinically and empirically sensible theory of thinking, Part 1: From cognitive neuroscience and connectionism to conflict and compromise. Unpublished manuscript, Harvard Medical School.
- FEIT, A., & ZITTEL, C. (1999). Methodological issues in research using projective techniques. In *Handbook of Research Methods in Clinical Psychology, 2nd ed.*, ed. P.C. Kendall, J.N. Butcher, & G. Holmbeck. New York: Wiley, pp. 224-240.
- & GABBARD, G. (1999). Toward a clinically and empirically sensible

- theory of thinking, Part 2: Implications for theories of transference. Unpublished manuscript, Harvard Medical School.
- (1999). Psychoanalytic approaches to personality. In *Handbook of Personality: Theory and Research*, 2nd ed., ed. L. Previn & O. John. New York: Guilford Press, pp. 57–101.
- & MORRISON, K. (1999). How empirically valid are empirically validated therapies? Unpublished manuscript, Harvard Medical School.
- MUDERRISOGLU, S., FOWLER, C., SHEDLER, J., & KOREN, D. (1997). Affect regulation and affective experience: Individual differences, group differences, and measurement using a Q-sort procedure. *Journal of Consulting and Clinical Psychology* 65:429–439.
- WILLIAMS, L.M. (1994). Recall of childhood trauma: A prospective study of women's memories of child sexual abuse. *Journal of Consulting and Clinical Psychology* 62:1167–1176.
- WILSON, T. (1996). The validity and consequences of verbal reports about attitudes. In *Answering Questions: Methodology for Determining Cognitive and Communicative Responses in Survey Research*, ed. N. Schwarz & S. Sudman. San Francisco: Jossey-Bass, pp. 91–114.
- WILSON, T.D., & SCHOOLER, J.W. (1991). Thinking too much: Introspection can reduce the quality of preferences and decisions. *Journal of Personality and Social Psychology* 60:181–192.
- LISLE, D., SCHOOLER, J., HODGES, S.D., KLAAREN, K., & LAFLEUR, S. (1993). Introspecting about reasons can reduce post-choice satisfaction. *Personality and Social Psychology Bulletin* 19:331–339.
- WILSON, W.R. (1975). Unobtrusive induction of positive attitudes. Ph.D. dissertation, University of Michigan.
- WONG, P., SHEVRIN, H., & WILLIAMS, W.J. (1994). Conscious and nonconscious processes: An ERP index of an anticipatory response in a conditioning paradigm using visually masked stimuli. *Psychophysiology* 31:87–101.
- ZAJONC, R. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology* Monograph No.9.
- (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist* 35:151–175.
- ZILLMANN, D. (1978). Attribution and misattribution of excitatory reactions. In *New Directions in Attribution Research*, Vol. 2, ed. J.H. Harvey, W. Ickes, & R.F. Kidd. Hillsdale, NJ: Erlbaum.

Center for Anxiety and Related Disorders
Department of Psychology
Boston University
648 Beacon Street
Boston, MA 02215
E-mail: Dwesten@aol.com