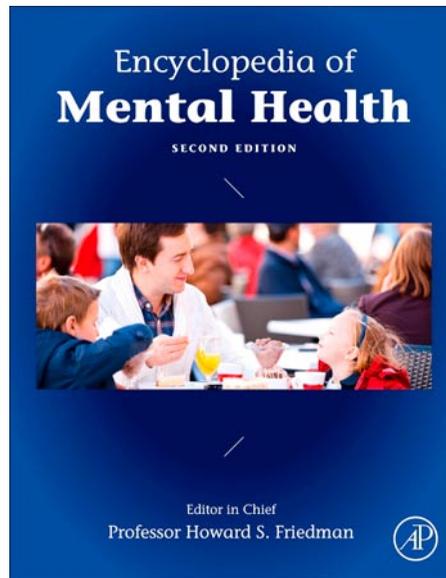


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Unconscious Mental Life

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Glossary

Automatic processes Perceptual-cognitive processes that are initiated involuntarily, executed outside phenomenal awareness, and consume no attentional resources.

Explicit memory Conscious recollection, as manifested in a person's ability to recall or recognize some past event.

Implicit memory Any effect on task performance that is attributable to a past event, independent of conscious recollection of that event.

Preattentive processing Perceptual-cognitive processing that occurs before attention has been paid to a stimulus.

Priming The facilitation of perceptual-cognitive processing of a stimulus (known as a target) by presentation of a prior stimulus (known as a prime). In repetition priming, the prime and target are physically similar. In semantic priming, prime and target are related in terms of meaning.

Introduction

The term 'unconscious mental life' refers to the idea that mental states and processes affecting cognition, emotion, and motivation can influence ongoing experience, thought, and action outside of phenomenal awareness and voluntary control.

The Psychological Unconscious

We ordinarily identify mental life with our conscious thoughts, feelings, and desires. And accordingly, psychological explanations of behavior typically refer to conscious mental states – that we did *A* because we believed *X*, felt *Y*, or desired *Z*. But consciousness might not be all that there is to the mind. The concept of unconscious mental life refers to the idea that mental states and processes – cognitions, emotions, and motives – can influence our ongoing experience, thought, and action outside of phenomenal awareness and voluntary control. Many natural processes are 'unconscious' in the broadest sense of the term: the expansion of the universe, planetary motion, tectonic movement, photosynthesis, mitosis, and meiosis, to give just a few examples. But the descriptor *unconscious* is only properly applied to things that could also be *conscious* – namely, mental states and processes. As such, the term *psychological unconscious* is something of a redundancy; but it does clarify that 'unconscious' is a descriptor that properly applies only to mental life.

Although the 'discovery' of the unconscious is commonly attributed to Sigmund Freud, [Ellenberger \(1970\)](#) showed that interest in unconscious mental states and processes goes back

at least to Gottfried Wilhelm Leibnitz (1646–1716), who argued in his *New Essays Concerning Human Understanding* for the psychological importance of *petites perceptions* (we would now call them subliminal) and *appetitions* (strivings). In the 19th century, Hermann von Helmholtz, who argued that conscious perception results from unconscious inferences about environmental stimuli. Within contemporary cognitive psychology and cognitive science, current interest in the psychological unconscious is almost entirely divorced from Freud and psychoanalysis.

Preconscious Processing and Automaticity

In early cognitive psychology, the psychological unconscious was conceived as part wastebasket and part file cabinet. On the one hand, it was the repository for unattended inputs, or for those contents of the sensory registers and short-term memory (STM) which had been rendered unavailable by virtue of decay or displacement. On the other hand, the unconscious was also identified with the latent contents of long-term memory (LTM), which are brought into awareness when they are transferred from LTM to STM. The upshot was the identification of consciousness with attention, and the unconscious with the unattended. If attention was devoted to an event, that event perforce became conscious. This, in turn, gave rise to a debate over the scope of *preattentive*, or *preconscious*, processing. 'Early selection' theorists argued that preconscious processing was limited to the physical features of stimuli; 'late-selection' theorists allowed that at least some degree of semantic processing was possible, even preattentively.

The debate between early and late selection was resolved by the introduction of another distinction, between automatic and controlled processing. *Automatic processes* are initiated independent of conscious intentions, are executed outside of awareness, and cannot be terminated until they have run off to completion. Moreover, it appears that their execution consumes no attentional resources, so that automatic processes do not interfere with other ongoing perceptual-cognitive activities. In some respects, the models for automatic processes are innate reflexes, taxes, and instincts, as well as learned stimulus-response connections formed through classical and instrumental conditioning. However, even complex semantic analyses can be automatized, provided that they have been practiced enough. The classic example is reading, where the automatic analysis of a word's meaning gives rise to the 'Stroop effect.' In the present context, automaticity potentially expands the scope of preconscious or pre-attentive processing; even very deep semantic processing can be performed unconsciously, provided that the processes involved have been automatized through extensive practice.

Automatic processes are unconscious in the strict sense of the term: they are never directly available to conscious awareness, and are known only by inference from task performance. The distinction between automatic and controlled processing gave rise to a number of 'dual-process' theories in cognitive, social, and clinical psychology (Hassin *et al.*, 2005). According to these theories, performance of any cognitive activity is mediated by some mix of automatic and controlled processes. Among the most prominent of these is Kahneman's distinction between automatic 'System 1' and controlled 'System 2' thinking. To some extent, the precise mix of automatic and controlled processing is determined by situational or personal considerations. When people lack the time or motivation to engage in deliberate, controlled processing, they may slip into 'automatic' mode. Experimental paradigms, such as Jacoby's 'process dissociation procedure' (PDP), have been developed to determine the relative contributions of automatic and controlled processing.

Some theorists have gone so far as to claim that, in the ordinary course of everyday living, our experience, thought, and action is overwhelmingly dominated by automatic processes. And some within this camp have gone so far as to argue that free will, in the sense of having conscious control over our thoughts, feelings, and behaviors, is illusory. However, the empirical literature does not justify such radical claims. Many ostensible demonstrations of automaticity in social interaction, for example, do not employ a rigorous definition of automaticity, or confuse the truly automatic with the merely incidental. Most fail to compare automatic and controlled processing, and the few that include such a comparison generally show that, under ordinary conditions, controlled processing has the greater influence on task performance. It should surprise no one that response in the first half-second or so after a stimulus is dominated by automatic processing. Still, the wide acceptance of the concept of automaticity is a milestone in the scientific acceptance of the concept of unconscious processing.

Explicit and Implicit Cognition

Mental processes may be more or less automatic and unconscious, but we normally regard mental states themselves as

conscious: we are aware of our thoughts, feelings, and desires. So the next question is whether these mental states can also operate unconsciously. For most of the 20th century, this was Freudian territory, and the possibility of unconscious thought was viewed as almost a contradiction in terms – that is, when psychologists thought about it at all. Beginning in the 1970s, however, a wealth of evidence began to converge, from studies involving brain-damaged patients, hypnosis, and even college students performing standard laboratory tasks, that our experience, thought, and action can be affected by percepts, memories, and the like of which we are not consciously aware (Reder, 1996).

For example, neurological patients with bilateral lesions to the hippocampus and associated structures in the medial temporal lobe display an anterograde amnesia, meaning that they cannot remember events that occurred since the onset of their brain damage. Nevertheless, these same patients show priming effects, in which the unremembered events influence their performance on various laboratory tasks. Similar priming effects are observed in neurologically intact subjects who study wordlists under experimental conditions that lead to poor recall and recognition. Findings like these motivated a distinction between *explicit memory*, defined as the ability to consciously recall or recognize past events, and *implicit memory*, defined as any effect on task performance that is attributable to a past event. Priming in the absence of recall or recognition shows that explicit and implicit memory can be dissociated, so that the patients or subjects are affected by events, recorded in memory, which they cannot consciously remember – that is, by unconscious memories.

There are two broad classes of priming effects. Consider a subject who has studied the word *water*. In *repetition* or *perceptual* priming, the prime and target are physically similar. For example, the subject might be asked to complete the stem *wat-* with an English word. Priming occurs when the subject generates the word *water* instead of an alternative, such as *watch*. In these cases, the priming is based on a perceptual representation of the physical structure of the prime. In *semantic* priming, the prime and target are related in meaning. For example, the subject might be asked to free-associate to the word *ocean*, and generate *water* as opposed to *spray*. In this case, prime and target are not linked by physical resemblance but by meaning. Obviously, the most interesting cases of implicit memory reflect semantic priming.

The explicit-implicit distinction can be extended to other aspects of cognition as well. In perception, for example, there is considerable evidence that stimuli which are presented subliminally (presented at very low energy levels, or for very short durations, or masked by another stimulus) can generate semantic as well as repetition priming effects. In cases of 'blindsight,' patients who have suffered damage to the striate cortex of the occipital lobe are able to respond appropriately to visual stimuli even though they are unable to see them (Weiskrantz, 1986). Something similar has been observed in patients with damage to the right parietal lobe, who tend to 'neglect' objects in their left visual fields; and in prosopagnosia, where patients with damage in the fusiform area cannot consciously recognize faces that are, objectively, familiar.

These experimental outcomes illustrate a distinction between explicit and *implicit perception*, analogous to the

explicit-implicit distinction in memory. Explicit perception refers to conscious perception of current events, as exemplified by our ability to locate and identify objects. By contrast, implicit perception refers to any effect of a current event on ongoing experience, thought, or action, in the absence (or independent) of conscious perception. Subliminal perception is unconscious perception, in the sense that the subject is not consciously aware of the stimulus.

A number of experimental paradigms alter perceptual awareness by manipulating the subject's deployment of attention. In *dichotic listening*, the subject shadows a passage presented to one ear, while ignoring a passage presented to the other. In *parafoveal perception*, subjects who focus on one portion of the visual field fail to notice stimuli presented elsewhere. In both cases, we can observe both repetition and semantic priming from the unattended stimuli, representing additional dissociations between explicit and implicit perception.

There are other experimental paradigms which also produce what might be called *inattention blindness* – a failure to consciously perceive an otherwise visible object or event because the subject's attention or expectations are focused elsewhere (Chabris and Simons, 2010). In addition, a number of paradigms may be said to involve *attentional blindness*, because subjects fail to consciously perceive objects or events that are presented right in the focus of their attention. In the *attentional blink*, they do not notice a stimulus that appears immediately after one for which they have been searching. In *repetition blindness*, they fail to notice that a sentence they are reading contains a repeated word. In *change blindness*, subjects do not notice massive changes in their visual field – in one famous instance, a man in a gorilla suit walking through group playing a ballgame. It is not altogether surprising that people will not consciously perceive, or remember, something that they did not pay attention to. In the present context, the more interesting question is whether these unattended events will give rise to priming effects and other evidence of implicit perception. Although the literature is sparse, the general answer is that even semantic priming is possible in these conditions of attentional and inattention blindness.

In addition to perception and memory, learning can also occur unconsciously (Reber, 1993). Amnesic patients, for example, can acquire new motor skills, as shown by improvements on such tasks as mirror-image drawing, even though they do not remember the practice trials. Similarly, they can acquire new factual knowledge, even though they have no conscious recollection of where they learned it – a phenomenon known as *source amnesia*. In the latter case, at least, the subjects are consciously aware of the knowledge but not of the learning experience through which they acquired it.

The reverse also occurs. Neurologically intact subjects can acquire new skills, such as the rules that define a category or govern a process, and use this knowledge to make accurate judgments about new stimuli, even though they appear to be unaware of the rules which they are using to make the judgments. In this case, known as *implicit learning*, the subjects are not consciously aware of some piece of knowledge which they are obviously using, in order to make the judgment or solve the problem.

The explicit-implicit distinction may also apply to reasoning, judgment, decision-making, and problem-solving –

perhaps the cardinal examples of conscious thought. Intuitions about the solution to a problem, in the absence of conscious awareness of the solution itself, may be an example of *implicit thought*. Incubation effects in problem-solving may reflect increases in activation associated with an idea that has not yet reached the level of conscious awareness. Insight, then, occurs once an implicit thought crosses the threshold required for conscious awareness.

Implicit Emotion, Motivation, and Attitudes

The explicit-implicit distinction may be applied to emotion and motivation as well as cognition. In the first place, changes in conscious feelings or desires may be reflections of implicit perception or memory – as in Thomas Brown's translation of the famous epigraph from Martial: "I do not love thee Dr. Fell / Why I cannot tell / I only know / I do not love thee, Dr. Fell".

In the Martial/Brown example, the feeling is conscious, but the reasons for it are not. But emotional feeling states may also be unconscious, yet still affect experience, thought, and action. Many theorists distinguish among three components of an emotional response: subjective (or cognitive), referring to the person's conscious feeling state; behavioral, referring to overt motor activities associated with the emotion (such as approach or avoidance behavior, or facial expressions of emotion); and physiological, referring to associated covert somatic changes (such as heart rate or blood pressure). Researchers have observed that these three components are not always positively intercorrelated, a situation known as *desynchrony*. A particular form of desynchrony, in which the subjective component of emotion is absent while the behavioral and/or physiological components persist, is tantamount to a dissociation between explicit and implicit emotion.

In a similar manner, motives may also be unconscious. Usually, motivational states are assessed by means of questionnaires and other self-reports, techniques which assume that subjects know what is driving, directing, and selecting their behavior. An alternative measurement is a variant on the Thematic Apperception Test, in which subjects are asked to tell a story about an ambiguous picture. The resulting stories are coded for evidence of motives such as achievement, affiliation, and power. A large body of research reveals very low correlations between motives assessed by means of the TAT and the same motives assessed by self-report measures. This constitutes *prima facie* evidence of a dissociation between explicit and implicit motivation. However, other interpretations are possible. For example, it may be that the TAT and self-reports are actually measuring different aspects of motivation – or that the TAT isn't a measure of motivation at all.

A similar interpretive problem crops up with the Implicit Attitudes Test (IAT), which purports to measure unconscious social attitudes (towards ethnic minorities or other outgroups, for example). The IAT records reaction times while subjects make judgments of category membership (e.g., Swedish or Finnish names) and affective valence (e.g., good-bad, pleasant-unpleasant, like-dislike). The pattern of reaction times is then used to infer the person's attitude toward members of the target categories. A large number of studies has found that the correlations between IAT scores and self-reported attitudes are

relatively low. Again, this constitutes prima facie evidence of a dissociation between explicit and implicit attitudes, and the developers of the IAT have specifically promoted it as a test of unconscious attitudes, stereotypes, and prejudices (Banaji and Greenwald, 2013).

Again, however, this conclusion has been disputed. In the first place, the correlations in question are not all that low: they are similar to those obtained between questionnaire measures and behavioral manifestations of personality traits. It is not at all clear that the IAT measures people's actual attitudes, as opposed to their knowledge about cultural stereotypes and prejudices that they themselves may not share. And even granting that the IAT measures attitudes, it does not discriminate between different degrees of positive attitudes (e.g., 'I like both Swedes and Finns, but I like Swedes more') and actual differences in affective valence (e.g., 'I like Swedes but dislike Finns'). And even if the measurement is accurate, the attitudes revealed by the IAT may be views that the person does not wish to divulge on a self-report scale, as opposed to attitudes of which the person is unaware.

Limits on Unconscious Mental Life

Not so long ago, scientific psychology abjured any discussion of consciousness, much less the unconscious. However, the field has now so thoroughly embraced the idea of unconscious – so much so that some theorists tout the superiority of unconscious over conscious thought, and express doubts that consciousness plays much of a role, if any, in behavior. Others have suggested that modern laboratory research justifies Freud's description of the psychological unconscious. This also goes too far. There is nothing about priming effects in implicit perception and memory that justifies the classic Freudian theory that unconscious sexual and aggressive impulses regulated by unconscious defense mechanisms like repression, projection, and reaction-formation result in neurotic symptoms which are unconscious symbolic manifestations of unconscious conflict. Even the research on unconscious emotion and motivation says nothing about the primal affects and drives that lie at the heart of classical psychoanalysis. That is, simply, a bridge too far.

Nor does any of this research justify claims about the possibility of surreptitious behavioral control by 'subliminal' stimulation. The fact is that, for the most part, unconscious processing is analytically limited. Most demonstrations of implicit memory involve repetition priming, mediated by perception-based mental representations of stimuli that have not been analyzed for meaning. For example, surgical patients can show post-operative priming for words that were read to them during general anesthesia, but there is no evidence of semantic priming under these conditions. The most dramatic demonstrations of 'subliminal' perception do involve semantic priming, but even that is analytically limited. The priming effects do not last more than a few seconds, and appear to be limited to the semantic analysis of single words – not even two-word phrases, much less whole sentences. A subliminal message like '*Eat less chocolate*' is unlikely to be processed for meaning, and even less likely to overcome the listener's conscious motivation.

At the same time, the limits on unconscious processing may depend on how the percept (memory, etc.) is rendered unconscious. The brain damage that results in the amnesic syndrome, blindsight, neglect, and prosopagnosia probably impairs encoding processes. Implicit memory in neurologically intact subjects is generally associated with single presentations of stimulus materials, impoverished encoding conditions, or extremely long retention intervals. Similarly, many implicit perception effects are produced by degrading the stimulus (as in subliminal or masked presentations) or distracting the subject from it (as in dichotic listening, parafoveal presentation, or inattention blindness). However, similar explicit-implicit dissociations have been obtained in hypnosis, under more optimal conditions of encoding and retrieval. In posthypnotic amnesia, for example, subjects may study a wordlist over several trials to a strict criterion of learning before receiving a suggestion to forget it. In posthypnotic suggestion, the subject's behavior is experienced as automatic and involuntary, even though it consumes attentional capacity. And in hypnotic blindness and deafness, the stimulus is highly salient and presented in the focus of the subject's attention. Under these conditions, we observe more robust, longer-lasting semantic priming effects.

The Unconscious in Psychopathology

Hypnosis is of theoretical interest in yet another way. Since the time of Jean-Martin Charcot and Pierre Janet (and, for that matter, Freud himself), in the late 19th century, hypnosis has been considered to be a laboratory model of hysteria. Certainly, research on hypnosis shows that subjectively compelling alterations in conscious perception and memory, and in the conscious control of behavior, can be induced by means of verbal suggestion, in the absence of brain insult, injury, or disease. This was the principal lesson that Freud learned from his time studying in Charcot's clinic.

Ernest Hilgard's 'neodissociation' theory of divided consciousness characterizes the mind as a set of modules that monitor and control mental functions in different domains (Hilgard, 1977). In the normal case, these modules communicate with each other and with a central executive structure, which serves as the destination for all conscious inputs and the origin of all conscious outputs, and which provides the cognitive basis for the phenomenal experiences of awareness and intentionality. However, the theory also asserts that certain conditions, one of which is hypnosis, can alter the integration of the various cognitive modules. If the lines of communication between two subordinate modules are cut, they may perform input-output functions in the absence of any coordination between them. If the communication between a subordinate module and the executive control structure is cut, the domain-specific module will perform its function in the absence of phenomenal awareness and intentionality. Descriptively, at least, this is a dissociative state.

The neodissociation theory of divided consciousness, initially proposed in the context of hypnosis, stimulated a revival of interest in various forms of dissociation observed clinically in syndromes that used to be gathered under the rubric of 'hysteria.' Although sometimes dismissed as malingering or

factitious, research on the psychological unconscious, and especially on hypnotic alterations of consciousness such as posthypnotic amnesia and hypnotic blindness, deafness, and paralysis, may yield new insights into the cognitive mechanisms of hysteria.

'Hysteria' is no longer an accepted diagnostic category (more's the pity), but the classic syndromes of hysteria are still represented in the *Diagnostic and Statistical Manual* as the dissociative and conversion disorders (Lynn and Rhue, 1994). However, DSM's organization is not right from a psychological point of view. The essence of the conversion disorders is not that they are 'somatoform' in nature (as DSM-IV had it), or even that they are 'functional neurological symptom disorders' (in DSM-5). The conversion disorders are essentially dissociative in nature because they are disorders of conscious perception and action, just as the dissociative disorders are disorders of conscious memory and identity. The implication is that the conversion disorders should be reclassified with the dissociative disorders, representing three different aspects of dissociation. Dissociative disorders affecting memory and identity include depersonalization and derealization, dissociative amnesia, dissociative fugue, and dissociative identity disorder (also known as multiple personality disorder). Those affecting sensation and perception would include such 'conversion' disorders as functional blindness, deafness, anesthesia, or analgesia. And those affecting voluntary motor function would include functional paralysis or weakness, aphonia, and *globus hystericus*. Despite differences in superficial

appearance, all of these disorders involve disruptions to conscious awareness or control, and the influence of unconscious mental processes.

See also: Dissociative Disorders. Hypnosis. Posttraumatic Stress Disorder

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