

# Science / Medicine

By MARGIE PATLAK

In the late 19th Century, Sigmund Freud revolutionized psychiatry by promoting the notion that our conscious thoughts and actions were driven by unconscious motives. A hundred years later, researchers in psychology and neurobiology are churning up some experimental evidence for Freud's theoretical unconscious. These scientists are finding that although the unconscious mind has a great deal of influence in our everyday lives, as Freud proposed, the unconscious is much more vast and versatile than originally thought.

"In classical Freudian theory, the unconscious mind is primitive, aggressive, sexually charged, emotional and basically undesirable," says psychologist John Kihlstrom, an expert in the unconscious mind who works at the University of Arizona in Tucson. "But we're finding a kinder, gentler and more rational unconscious that can do all those things we normally ascribe to the conscious mind."

Common experience and controlled studies reveal that the unconscious mind is a critical behind-the-scenes director of the thinking needed to do a task automatically. When a person first learns to type, for example, he has to concentrate and consciously link his fingers to the keys needed to type words. When he becomes proficient at the task, however, typing becomes automatic—shifted over to the unconscious so the conscious mind can attend to more challenging tasks. But once this typing knowledge takes up residence in the unconscious, it's difficult for a person to tap into it. "Just try to get an old sail to teach you how to tie a sailor's knot," Kihlstrom points out.

A study by Elizabeth Spelke at Cornell University has shown that subjects could be trained to read unfamiliar prose material and take dictation at the same time. Although tests showed the subjects were able to comprehend about 80% of the poetry they read, they couldn't recall the words they transcribed from the dictation. The dictation task was apparently being done by the unconscious mind so that the conscious mind could concentrate on reading the prose.

It is unlikely that Freud would have ever supposed the unconscious mind could have such practical usefulness.

The irrational and seething unconscious that Freud imagined also never would have been used for the complex problem-solving that seems to occur outside of consciousness.

Probably all of us have experienced such problem-solving that occurs beyond our awareness while working on a solution to a math problem, for example, or a crossword puzzle. After minutes of concentrated effort the solution eludes us only to "pop into mind" hours later when we have given up hope.

This "eureka" phenomenon is being studied by Kenneth Bowers of the University of Waterloo in Ontario, Canada. In a study published

in the journal *Canadian Psychology* in 1987, he gave volunteers a group of three words and asked them to find the concept the words all have in common. "Playing," "credit" and "report" have "card" as the uniting concept, for example. He then showed the subjects a series of such word triads. Some of the triads in the series were solvable—i.e., they shared a uniting concept—and some were not.

When Bowers asked his subjects to indicate which triads were solvable, he found that they could do this task with a greater-than-chance degree of accuracy, even though they did not know what the uniting

## Findings Suggest A 'Kinder, Gentler More Rational...'

# UNCONSCIOUS MIND



concepts were for the solvable triads. The volunteers reported having a vague "feeling of knowing" which triads were solvable. Such feelings apparently stemmed from the problem-solving that was going on in their unconscious minds.

Experiments such as Spelke's and Bowers' are important, Kihlstrom says, because they show that a great deal of complex thinking can go on outside conscious awareness and guide our judgments and actions. For example, information compiled and processed in the unconscious mind can color our first impressions of a person.

In a study conducted by John Bargh at New York University, hostile words such as "unkind" or "thoughtless" were flashed on a screen in front of subjects too quickly for them to consciously perceive them. The words apparently registered in the subjects' unconscious, however, for when they were then shown a picture of a person's face, they rated the person more negatively than those subjects not given the subliminal exposure to hostile words.

"When we trust our intuition," Kihlstrom says, "we're probably trusting our unconscious mind." Intuitive decisions are based, he suggests, on an abundance of information compiled in the unconscious.

This information can provide some amnesiacs with memory and in some cases give blind people a sense of sight, studies show.

An abundance of research has been done on people who sustain injury to certain sections of their brain and have what is known as amnesiac syndrome. These amnesiacs are unable to consciously remember any

new events or information that transpire since their injury. But Herbert Corvitz and his colleagues at Duke University found that the short-term memory abilities of people with amnesiac syndrome are preserved in their unconscious minds. The researcher performed experiments in which they asked amnesiacs to spot a hidden figure in a picture. A short time later they would show the person the same picture and ask them to repeat the task.

Although the subjects claimed that they hadn't previously seen the picture the second time around, they identified the hidden figure more quickly. The exercise apparently did not register in their conscious memories but did penetrate their unconscious memories and affect their performance on the task.

All these findings reveal that the unconscious mind stretches far beyond Freud's limited scope of "repression, sex, aggression and mommy and daddy," Kihlstrom says.

Perhaps the most dramatic evidence for the unconscious mind comes from studies of people who have damage to the part of their brains that receives optic nerve signals from the eyes and translates it into visual information. These patients are totally blind and they confirm that fact when asked. But if an object is flashed on a TV screen in front of them and they are then asked to point to where that object appeared, they can do so with a high degree of accuracy. They can't identify the object, however. This phenomenon is known as "blindsight."

"A blindsighted person wouldn't be able to pinpoint where the object was," Kihlstrom says, "unless at some level seeing was taking place—not conscious seeing but unconscious seeing." He suggests that there may be two visual systems—one tied to consciousness that permits a person to identify objects, and another tied to unconsciousness that allows a person to sense that an object is present and where that object is. Blindsight might be akin to the "sixth sense" a person can have that someone is present with him in a darkened room, even though he can't see, hear or smell him.

Hypnosis studies have also turned up some intriguing findings that support the notion that the brain is fragmented into a conscious and unconscious, which can operate independently of each other. Psychologist Ernest Hilgard of Stanford University showed that when people are subjected to pain during a trance, they often have what is known as a "hidden observer" that metaphorically records the amount of pain experienced, but does not let the pain come to consciousness.

The hidden observer was discovered in the 1970s when hypnotized subjects were asked to envision the "part" of themselves that felt the pain. They were then asked to write down how much pain that part was experiencing on a number scale. Simultaneously they were instructed to tell the hypnotist what they felt. Many subjects wrote that they experienced a high

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—Ernest Hilgard, psychologist at Stanford University

degree of pain at some level, while telling the hypnotist they felt nothing. "The hidden observer shows us that the information is there and is somehow processed and stored in the brain, but is not available to consciousness," Hilgard explains. "These studies show that the unconscious is something we need to take seriously," Kihlstrom says. "People don't always know why they're doing what they're doing because they are influenced by motives, feelings, ideas, perceptions and memories of which they're not aware."

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