

Mysteries of the Mind

Is your unconscious making your everyday decisions?

By Marianne Szegedy-Maszak (2/28/05, US News)

The snap judgment. The song that constantly runs through your head whenever you close your office door. The desire to drink Coke rather than Pepsi or to drive a Mustang rather than a Prius. The expression on your spouse's face that inexplicably makes you feel either amorous or enraged. Or how about the now incomprehensible reasons you married your spouse in the first place?

Welcome to evidence of your robust unconscious at work.

While these events are all superficially unrelated, each reveals an aspect of a rich inner life that is not a part of conscious, much less rational, thought. Today, long after **Sigmund Freud** introduced the world to the fact that much of what we do is determined by mysterious memories and emotional forces, the depths of the mind and the brain are being explored anew. "Most of what we do every minute of every day is unconscious," says University of Wisconsin neuroscientist Paul Whelan. "Life would be chaos if everything were on the forefront of our consciousness."

Fueled by powerful neuroimaging technology, questions about how we make snap decisions, why we feel uncomfortable without any obvious causes, what motivates us, and what satisfies us are being answered not through lying on a couch and exploring individual childhood miseries but by looking at neurons firing in particular parts of our brains. Hardly a week passes without the release of the results of a new study on these kinds of processes. And popular culture is so fascinated by neuroscience that *Blink*, journalist Malcolm Gladwell's exploration of "thinking without thinking," has remained on the bestseller lists for four weeks.

Burgeoning understanding of our unconscious has deeply personal and also fascinating medical implications. The realization that our actions may not be the pristine results of our high-level reasoning can shake our faith in the strength of such cherished values as free will, a capacity to choose, and a sense of responsibility over those choices. We will never be able to control the rhythm of our heartbeats or the choreography of our limbic system. And yet, Gladwell writes that "our snap judgments and first impressions can be educated and controlled . . . [and] the task of making sense of ourselves and our behavior requires that we acknowledge there can be as much value in the blink of an eye as in months of rational analysis."

Crash victim. But unconscious processing is not just the stuff of compelling personal insight. For those with emotional disorders like anxiety, bipolar disorder, and schizophrenia, and others who suffer from traumatic brain injuries either from a stroke or an accident, peeling away the behavioral layers of their dysfunction has revealed fascinating activity out of conscious awareness that may eventually provide clues to more effective treatments. Recent research on minimally conscious patients, for example, shows language centers on fire when they hear personal stories recounted by a family member. Consider the case of Sarah Scantlin, who was hit by a drunk driver and lay mute in Hutchinson, Kansas, for 20 years. After the Sept. 22, 1984 crash, the doctor told her parents that it was a miracle she was alive but that she would never talk again. Last month she began to speak--a simple "OK" at first, then more words, even short sentences.

How does this happen? What was going on all that time? How do we get some access to this thing called the unconscious?

According to cognitive neuroscientists, we are conscious of only about 5 percent of our cognitive activity, *so most of our decisions, actions, emotions, and behavior depends on the 95 percent of brain activity that goes beyond our conscious awareness.* From the beating of our hearts to pushing the grocery cart and not smashing into the kitty litter, we rely on something that is called the adaptive unconscious, which is all the ways that our brains understand the world that the mind and the body must negotiate. The adaptive unconscious makes it possible for us to, say, turn a corner in our car without having to go through elaborate calculations to determine the precise angle of the turn, the velocity of the automobile, the steering radius of the car

Waves of cola. In a neuroscientific take on the time-honored blind taste test, Coke and Pepsi once again squared off. In *Blink*, Gladwell describes how the Coca-Cola Co. made a costly mistake in using data from blind taste tests between Coke and Pepsi--in which Pepsi was emphatically preferred by most cola drinkers--to change the recipe and create the marketing debacle that was New Coke. Still, even with a less preferred taste, Coke remains No. 1 in the soft-drink world. More recent research that was published after Gladwell's book was finished may explain why.

Researchers at Baylor College of Medicine offered 67 committed Coke and Pepsi drinkers a choice, and in blind testing, they preferred Pepsi. When they were shown the company logos before they drank, however, 3 out of 4 preferred Coke. The researchers scanned the brains of the participants during the test and discovered that the Coke label created wild activity in the part of the brain associated with memories and self-image, while Pepsi, though tasting better to most, did little to these feel-good centers in the brain. Dr. Reed Montague explained: "There's a huge effect of the Coke label on brain activity related to the control of actions, the dredging up of memories and self-image." The point, says Montague, is that "there is a response in the brain which leads to a behavioral effect." And curiously, it has nothing to do with conscious preference.

The scenario occurs in hospital rooms throughout the world, thousands of times every day. A brain-damaged father or mother or child lies in bed, not completely unconscious, not in a coma, but demonstrating only flickering consciousness, small behaviors that show there is some evidence of the person who once was there, some evidence that this person perhaps knows friends and family members are near by. Medically, these patients are categorized as existing in a minimally conscious state of awareness; it is estimated that there are 100,000 to 300,000 Americans in such a state right now. Sometimes these patients are able to actually utter the name of an object or to follow a very simple command. But for friends and family, they are no longer themselves.

In a stunning study published this month in the journal *Neurology*, researchers used functional magnetic resonance imaging to study the brains of two minimally conscious patients and compared them with the brains of seven healthy men and woman. The scans revealed that the minimally conscious patients had less than half of the brain activity of the others. But then all the subjects were played a tape made by a family member or friend, recounting happy memories and shared experiences. One minimally conscious man listened to his sister reminiscing about her wedding and about the toast that he made. The result was astonishing: All those who were scanned, including the minimally conscious patients, shared similar brain activity, some with activation in the visual cortex. "This shows that there is a life of the mind beyond what is apparent," says Dr. Joseph Fins. It is that great tension between the two, the intermingling of the known and the unknown, the conscious and the unconscious, the 5 percent and the 95 percent, that the pioneers exploring this vast and intricate universe of our minds will continue to probe.