

# A sobering message about free will

March 21, 2011

Addiction is a disorder of the will, yet treatment for alcoholism and other addictions often comes with decidedly mixed messages about willpower and abstinence. On the one hand, newly sober addicts and alcoholics often hear the news that two of every three of them will ultimately relapse. There is a frightening sense of inevitability in this not-so-hopeful message. On the other hand, this folk wisdom can also be heard echoing through the rooms of recovery: “Relapse is not a requirement.”

Not a requirement, yet two of three *will* fail. This seeming contradiction can be confusing to those struggling to shake their compulsions in early sobriety. It reflects a larger debate about the nature of addictions: Are they a medical disease, rooted in the genes and inevitably expressed in the brain’s aberrant biochemistry? Or are they a failure of self-control that can be corrected by acting more responsibly?

Philosophers have been pondering the nature of free will for centuries, and that debate will probably not be resolved in the rehab clinic. But mounting evidence is making one thing clear: The *belief* in free will—or the disbelief—is itself a powerful cognitive force, shaping everything from aggression to honesty to feelings of personal responsibility. The newest findings from this line of research are now suggesting that attitudes toward free will (or genetic determinism) may actually influence the intention to act voluntarily (or lack of it), right down in the brain’s motor neurons.

Psychological scientist Davide Rigoni of the University of Padova, Italy, wanted to see if weakening people’s belief in free will might have an effect on volition and intent, as reflected in the brain’s electrical activity. To explore this question, he recruited a group of volunteers and had some of them read a passage from Nobel laureate Francis Crick’s book *The Astonishing Hypothesis*, which argues that free will is a delusion—and furthermore that there is scientific consensus behind this view. This exercise has been shown in previous research to attenuate belief in free will, and indeed it did so in these volunteers to varying degrees. The other volunteers also read from the text, but nothing about free will.

Then Rigoni hooked them all up to an EEG, and recorded electrical signals in their brains as they were executing voluntary movements. Specifically, he measured an electrical spike that indicates “readiness” to act—a preconscious spike that comes up to 2 full seconds before actual movement. This signal precedes only actions that have the subjective feeling of being willed for a particular moment.

The results were clear and provocative. As described in a forthcoming issue of the journal *Psychological Science*, the brain’s readiness signal was reduced in those with a weakened belief in free will. What’s more, the signal varied with the force of these beliefs, being weakest in those who were most skeptical about free will. The effect was clear a full second before the volunteers made a conscious decision to move, suggesting that abstract beliefs are shaping intent at a basic, preconscious level.

This is the first evidence that high-level beliefs can influence basic motor processes, and the findings

could help explain why such beliefs lead to antisocial and irresponsible acts. Putting less effort into our actions could lead to a diminished sense of responsibility for those actions, and this depleted sense of responsibility could in turn lead to careless behavior—cheating in life, lack of discipline, even relapse.

Wray Herbert's book, [\*On Second Thought: Outsmarting Your Mind's Hard-Wired Habits\*](#), explores these psychological issues in detail. Excerpts from his two blogs—"We're Only Human" and "Full Frontal Psychology"—appear regularly in *Scientific American Mind* and *The Huffington Post*.