

New findings shed light on why smokers struggle to quit

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Just seeing someone smoke can trigger smokers to abandon their nascent efforts to kick the habit, according to new research conducted at Duke University Medical Center.

Brain scans taken during normal smoking activity and 24 hours after quitting show there is a marked increase in a particular kind of brain activity when quitters see photographs of people smoking.

The study, which appears online in *Psychopharmacology*, sheds important light on why it's so hard for people to quit smoking, and why they relapse so quickly, explains Joseph McClernon, an associate professor in the department of psychiatry and behavioral sciences at Duke University Medical Center.

"Only five percent of unaided quit attempts result in successful abstinence," says McClernon. "Most smokers who try to quit return to smoking again. We are trying to understand how that process works in the brain, and this research brings us one step closer."

The Duke researchers used a brain-imaging tool called functional MRI to visualize changes in brain activity that occurs when smokers quit. The smokers were scanned once before quitting and again 24 hours after they quit. Each time they were scanned while being shown photographs of people smoking.

"Quitting smoking dramatically increased brain activity in response to

seeing the smoking cues," says McClernon, "which seems to indicate that quitting smoking is actually sensitizing the brain to these smoking cues."

Even more surprising, he adds, is the area of the brain that was activated by the cues. "We saw activation in the dorsal striatum, an area involved in learning habits or things we do by rote, like riding a bike or brushing our teeth. Our research shows us that when smokers encounter these cues after quitting, it activates the area of the brain responsible for automatic responses. That means quitting smoking may not be a matter of conscious control. So, if we're really going to help people quit, this emphasizes the need to do more than tell people to resist temptation. We also have to help them break that habitual response."

New treatment options at Duke are aiming to do just that. One area of research is focusing on the use of a nicotine patch prior to quitting smoking.

In previously published research, Jed Rose, Director of the Duke Center for Nicotine and Smoking Cessation Research and co-author of this paper as well, showed that wearing the patch and smoking a cigarette with no nicotine proved successful at breaking the learned behavior. "The smoking behavior is not reinforced because the act of smoking is not leading them to get the nicotine," Rose said. "Doing this before people actually quit helps them break the habit so they start smoking less. We're seeing people quit longer this way."

Source: Duke University Medical Center

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