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Self-Control in the Brain & in Real Life

In the trenches of real-world self-control: Neural correlates of breaking the link between craving and smoking



Principle

Self-Control measured in our brains predicts self-control in everyday situations like resisting the urge to smoke.

Quote

“This study investigated the neural underpinnings of the brief, recurring episodes of everyday self-control that are integral to successful goal pursuit.”

So What - Application

The need for self-control happens sporadically throughout the day in response to urges, cravings, and temptations that present themselves.

If our brain's self-control network actually predicts real-life self-control, it would be interesting to have our own fMRI taken to measure the strength of our brain's self-control activity. Since we don't all have access to a brain scan, that's clearly not possible.

My takeaway is that given neuroplasticity research showing that brains can change, and some people are better at self-control than others, I would wonder if there's a way to train self-control without continually exposing yourself to temptation.

The Research Story

Three researchers from University of Oregon, University of Michigan, and UCLA examined the link between in-lab brain imaging of self-control brain regions and real-life moments of self-control.

They studied 27 heavy, long-term smokers who were really ready to quit. First they did brain scans while participants did a go/no-go task. Participants had to push or pull a joystick when the letter L, N, T, or V appeared, and not push/pull the lever when the letter X appeared. Researchers calculated how much the self-control part of their brain lit up when they saw a “no-go” X and stopped themselves from moving the joystick compared to when they did. Then they did an exhaled CO test and filled out a survey.

Then for 3 weeks, they texted them 8 times randomly throughout the day, every couple of hours. They were asked how many cigarettes they'd smoked since the last text, how much they were craving a cigarette right now, and how positive or negative their mood was at the moment. They got \$80 for doing the brain scan and an extra dollar for each text they replied to for a potential total of \$248. At the end of the study they did another exhaled CO test.

Overall participants smoked an average of 20 cigarettes per day at the beginning and 5 at the end. They found that when cravings were high at one time, the next time they texted they were more likely to have smoked. Overall their average number of cigarettes per day was related to their average craving levels. Overall everyone's smoking declined over the 3 weeks and within each day, people tended to smoke more in the afternoon and evenings.

Next, then compared participants with low, average, and high brain activation in the self-control activity. People who had more self-control activation in the lab, smoked less in the time between reporting a craving and the next text. So it does seem that self-control brain regions identified in fMRIs with self-control tasks do relate to day to day moments of self-control needed to not give into cravings.

There are other processes involved in trying to stop smoking, but this study is a good first step in self-control processes and connecting brain imaging studies of self-control with real-world application studies.

Berkman, E. T., Falk, E. B., & Lieberman, M. D. (2011). In the Trenches of Real-World Self-Control: Neural Correlates of Breaking the Link Between Craving and Smoking. *Psychological Science*, 22(4), 498–506. <https://doi.org/10.1177/0956797611400918>

