

Ignoring cues for alcohol and fast food is hard—but is it out of our control?

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A UNSW psychology experiment has shown why it can be so hard to direct our attention away from cues that might lead to behavior we'd like to avoid, like drinking alcohol and eating unhealthy food.

Have you ever tried to stay away from fast food, but found hard-to-ignore signals that represent its availability—like neon lights and ads—are everywhere?

If you're stressed, tired or otherwise straining your brain power, you may find it harder to ignore cues in the environment that signal something rewarding.

That's what a UNSW Sydney experiment by a group of psychologists—published today in high-impact journal *Psychological Science*—has shown.

"We knew already that participants find it hard to ignore cues that signal a large reward," says study lead Dr. Poppy Watson at UNSW.

But this experiment showed—for the first time—that ignoring these cues became harder as soon as participants had to perform a task while also holding other information in their memory.

"We have a set of control resources that are guiding us and helping us suppress these unwanted signals of reward. But when those resources are taxed, these become more and more difficult to ignore."

Up until now, researchers didn't know whether people's general inability to ignore reward cues is just something we have no control over or whether we do use our executive control processes to constantly work against distractions. But now it's become clear that the latter is the case—although unfortunately this resource is limited.

Executive control is a term for all [cognitive processes](#) that allow us to pay attention, organize our life, focus, and regulate our emotions.

"Now that we have evidence that executive control processes are playing

an important role in suppressing attention towards unwanted signals of reward, we can begin to look at the possibility of strengthening executive control as a possible treatment avenue for situations like addiction," says Dr. Watson.

In the experiment, participants looked at a screen that contained various shapes including a colorful circle. They were told they could earn money if they successfully located and looked at the diamond shape, but that if they looked at the colored circle—the distractor—they would not receive the money.

They were also told that the presence of a blue circle meant they'd gain a higher amount of money (if they completed the diamond task) than the presence of an orange circle. The scientists then used eye tracking to measure where on the screen participants were looking.

"To manipulate the ability of participants to control their attention resources, we asked them to do this task under conditions of both high memory load and low memory load," Dr. Watson says.

In the high-memory load version of the experiment, participants were asked to memorize a sequence of numbers in addition to locating the diamond, meaning they had fewer attention resources available to focus on the diamond task.

"Study participants found it really difficult to stop themselves from looking at cues that represented the level of reward—the colored circles—even though they were paid to try and ignore them," Dr. Watson says.

"Crucially, the circles became harder to ignore when people were asked to also memorize numbers: under high memory load, participants looked at the colored circle associated with the high reward around 50% of the

time, even though this was entirely counterproductive."

Limited resources

The findings demonstrate that people need full access to cognitive control processes to try and suppress unwanted signals of reward in the environment.

"This is especially relevant for circumstances where people are trying to ignore cues and improve their behavior, e.g. consuming less alcohol or fast food," says Dr. Watson.

"There's this strong known link between where your attention is and what you eventually do, so if you find it hard to focus your attention away from reward cues, it's even harder to act accordingly.

Stress

That also explains why people might find it harder to focus on dieting or beating an addiction if they are under a lot of stress.

"Constant worrying or stress is the equivalent to the high-memory load scenario of our experiment, impacting on people's ability to use their executive control resources in a way that's helping them manage unwanted cues in the environment."

Dr. Watson advises people to try and be strategic about exposure to cues.

"If you are under a lot of cognitive pressure (stress, or tiredness) you should really try and avoid situations where you'll be tempted by signals. You need to be in the right frame of mind to be in a situation where you can stop yourself from getting distracted and going down a path where

you don't want to go," she says.

Treatment

The researchers now want to look at how executive control can be strengthened—and if that presents an opportunity for situations like drug rehab.

"Our research suggests that if you strengthen executive control you should have better outcomes. Some studies have already demonstrated that training executive control can reduce the likelihood that you will eat chocolate or drink alcohol.

"And in the clinic, training attentional focus away from pictures of alcohol towards soft drinks has been shown to reduce relapse in alcoholic patients," Dr. Watson says.

"However, the exact mechanisms of how this works are still unclear and we need more research to figure out how exactly we can use executive control to our advantage."

The study was run by a team of researchers at the School of Psychology at UNSW (Dr. Poppy Watson, A/Prof Mike Le Pelley, Dr. Steve Most, Daniel Pearson and Michelle Chow) in collaboration with researchers in the Netherlands (Prof. Reinout Weirs, University of Amsterdam and Prof. Jan Theeuwes, Vrije University, Amsterdam).

Provided by University of New South Wales

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