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Stress responses of people with smoking or gambling addiction

What this research is about

People with substance abuse may experience similar processes as people with behavioural addiction (e.g., gambling). Evidence suggests that people with substance or behavioural addiction may react to stress in a similar manner. Nicotine abuse, for example, can lower cortisol levels (the stress hormone). People with gambling problems may show similar processes, but only one study has explored this relationship in male gamblers to date. People with a substance or behavioural addiction experience cravings or urges. Past studies have used the cue reactivity paradigm to understand how people react to certain cues. People who react more strongly to cues related to their addiction tend to have greater cravings. This study aimed to examine the similarities and differences in how people with a smoking or gambling addiction respond to stress. Specifically, it aimed to investigate people's psychological and hormonal reactions to cues that target their addiction (smoking or gambling) before and after an experience of high stress.

What the researchers did

Participants were 30 scratch-off gamblers with a gambling problem, 30 heavy smokers, and 30 controls (i.e. people without smoking or gambling problem). Gamblers had to have a score of 4 or above on the South Oaks Gambling Screen (SOGS). Smokers had to smoke a minimum of 10 cigarettes daily and not gamble in the past year. Participants provided their demographics (e.g., gender, race/ethnicity, income, education, marital status, and current medications). Their body mass index (BMI) was calculated based on their height and weight.

What you need to know

This study examined how individuals with smoking or gambling addiction react to cues and to stress. Participants were either heavy smokers, gamblers, or controls (i.e., people without a smoking or gambling addiction). The results revealed that active gambling or smoking cues yielded greater cravings than neutral cues in gamblers and smokers. Gamblers and smokers had a blunted cortisol response after experiencing a stressor. In smokers, the stressor led to increased craving to smoke in response to the smoking cue. In contrast, the stressor reduced the urge to gamble among gamblers.

Upon arrival at the lab, gamblers completed the SOGS a second time. They provided information on how much money they spent gambling per week and how often they gambled. Smokers completed the Fagerstrom Test for Nicotine Dependence (FTND) to assess when, where, and how much they smoked. All participants completed a Carbon Monoxide (CO) breath test to verify their smoking status. A measure of subjective stress was used to assess current stress-related feelings. Participants also completed the Depression Anxiety Stress Scales (DASS) to assess depression, anxiety, and stress in the last two weeks. A Visual Analogue Scale (VAS) was used to measure participants' baseline craving to gamble or smoke.

Participants were then exposed to a neutral cue followed by an active cue (smoking or gambling). A neutral cue was either a box of pencils and an eraser or a pen and paper. A smoking cue was a closed pack of preferred cigarettes and a lighter or a single

cigarette and an ashtray. A gambling cue was a scratch-off ticket and a penny or scratch-off tickets in a dispenser box and a quarter. The researchers showed the gambling cues to people with gambling problems and smoking cues to the smokers. Half of the controls saw the gambling cues and the other half saw the smoking cues. Approximately 40 minutes after the cue exposure, participants indicated on the VAS how much their urge to gamble or smoke had changed from baseline (increased, decreased, or remained the same). They provided a stress rating and a saliva sample to measure their cortisol level.

To induce stress, the researchers used the Trier Social Stress Test (TSST). It included being a part of a mock job interview and completion of a mental math task. Following the TSST, another saliva sample and stress rating were collected. Finally, participants were exposed to a second neutral and active cue. They also provided a final saliva sample and stress rating.

What the researchers found

At baseline, gamblers and smokers reported more symptoms of depression, anxiety, and stress than participants in the control group. Cortisol increased in response to the TSST, although controls had a sharper increase in cortisol compared to gamblers and smokers. Thus, gamblers and smokers had a blunted cortisol response to the stressor. All three groups reported greater stress after the TSST, with controls reporting less stress.

Active cues (gambling or smoking cues) yielded the most cravings. Controls showed fewer urges than gamblers and smokers. Smokers reported increased craving to smoke in response to the active cue, particularly after the stress test. In contrast, gamblers reported increased craving to gamble to the active cue, but they reported reduced craving after the stress test. Thus, stress and a blunted cortisol response increased craving in smokers. But stress reduced the urge to gamble in gamblers.

How you can use this research

This research could be used by service providers in addiction intervention. Programs could provide more information about how people's urges/cravings associate with stress. Future research could examine these associations in individuals who participate in different gambling modes (e.g., poker, slot machines).

About the researchers

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