Nicotine-enhanced responding for chocolate rewards in humans

A N Palmisano[1], E Hudd[1], C McQuade[1], H De Wit[2], R S Astur[1]

[1]Department of Psychology, University of Connecticut,
406 Babbidge Road, Unit 1020, Storrs, CT, USA

[2]Department of Psychiatry and Behavioral Neuroscience, University of Chicago,
5841 S Maryland Ave, MC3077, Chicago, IL, USA

alexandra.palmisano@uconn.edu, eleanor.hudd@uconn.edu, courtney.mcquade@uconn.edu, hdew@uchicago.edu, robert.astur@uconn.edu

ABSTRACT

Despite an abundance of evidence illustrating the harmful effects of nicotine use, only a small percentage of users successfully quit (Messer et al., 2008). Moreover, current treatments for nicotine cessation produce only a slight increase in the likelihood of successfully quitting, which emphasizes the need for more effective strategies that facilitate smoking cessation (Hopkins et al., 2001). Several studies suggest that difficulty in controlling nicotine use behaviors results from nicotine's ability to enhance the motivating function of cues associated with obtaining rewards. In order to better understand the reward mechanisms that underlie the risk for becoming dependent, the aim of the current study was to examine nicotine's effects on conditioning, extinction, and reinstatement in humans. Using a novel virtual reality translation of the hallmark conditioned place preference paradigm to investigate the aforementioned objectives, our main findings suggest that nicotine (1) increases the sensitivity of reward properties by enhancing the strength of food-reward conditioning, (2) delays the rate of extinction of conditioned preferences, and (3) increases the reinstatement of previous conditioning.