

UNIVERSITY OF PITTSBURGH
DEPARTMENT OF PSYCHOLOGY

Nicotine Use and Dependence: A Translational Perspective

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Martin Colloquium Center
4127 Sennott Square

Nicotine, like other drugs of abuse, is reinforcing; both animals and humans will learn to perform a behavior when nicotine is delivered contingent on that behavior. While this effect of nicotine is important and has been a focus of my research for many years, it is clear that people smoke for reasons that extend beyond nicotine reinforcement. Recently, we have focused on three additional factors influencing smoking. The first factor is the set of cues associated with smoking. With each puff, the smoker feels the cigarette in his fingers, lifts his fingers to his mouth, smells the aroma of the tobacco, tastes the flavor of the cigarette, and feels the sensation of inhaling smoke. These stimuli are perfectly predictive of nicotine administration and, consequently, function as conditioned reinforcers that strongly influence smoking behavior. Second, nicotine can non-associatively enhance the reinforcing value of other stimuli in the environment. In essence, other reinforcers in the environment seem “better” on nicotine. This enhancement effect is observed both for unconditioned reinforcers and for stimuli that acquire their value through conditioning. It may help explain why smoking tends to co-occur with other reinforced behaviors (e.g., drinking coffee, social interactions) as well as why smokers experience anhedonia when they make a cessation attempt. The third factor is nicotine dependence. Like other drugs of abuse, repeated use of tobacco changes the smoker in ways that are thought to lead to a relative loss of control over smoking behavior. However, not all individuals are equally prone to become nicotine dependent. This heterogeneity in risk for nicotine dependence is poorly understood but seems to involve risk factors that operate outside pathways related to the frequency and/or intensity of nicotine use. In this colloquium, I will present preclinical, clinical and epidemiological data related to these three areas of research and discuss the insight we believe they provide into answering the question “why do people smoke?”

Reception to follow in Room 4125 Sennott Square