

2025-2026 Seminar Series



ENVIRONMENTAL INFLUENCES ON CIGARETTE SMOKING: TRANSLATIONAL NEUROSCIENCE AND DIGITAL ENVIROTYPING



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Gallogly Hall, Room 126



ABSTRACT

Estimates suggest that over 7 million people around the world die from smoking-related illnesses each year. Over 70% of smokers in the United States express a desire to quit smoking, but even with intensive behavioral counseling and the best available pharmacotherapies, only 1 in 3 will succeed in doing so. Historically, research on cigarette smoking and other addictions have heavily emphasized the role of pharmacological factors (i.e., acute drug effects, drug withdrawal) in continued use treatment failure. However, learned responses to the environmental cues and contexts associated with smoking can also be a key driver of relapse. In this presentation, we will first discuss results from an ongoing line of research exploring the neurobiological mechanisms through which antagonism of the beta-adrenergic system could suppress the relationship between environmental cues and smoking behavior. Following a brief overview of the pre-clinical support for this notion, we will report results from a small (N = 42) pilot trial examining the impact of propranolol vs placebo on neural responses to smoking cues using functional magnetic resonance imaging. We will also discuss the design of an ongoing project that emerged from this pilot aimed at a deeper and more rigorous examination of this issue. Second, we will discuss an ongoing line of work that harnesses recent advances in computer vision and machine learning to enable more in-depth and scalable analysis of smokers' daily environments with an eye towards development of novel technology-based interventions. Results from two preliminary studies demonstrate the feasibility of training image classifiers to accurately distinguish between smoking and non-smoking images using still naturalistic photos alone (AUC = 0.840), and in combination with other data can predict whether smoking is permitted in the environment (AUC = 0.932) and personal smoking risk (AUC = 0.827). We will also describe the design for a recent funded larger trial that will gather a larger sample of images to examine whether assessment of environments prior to quitting is able to successfully predict relapse. Implications for both lines of work will be discussed, along with potential future directions and opportunities for collaboration.

BIO

Dr. Oliver is an Associate Professor in the Department of Family and Preventive Medicine at the University of Oklahoma Health Campus and the Co-Director of Training at the TSET Health Promotion Research Center. He also holds an adjunct affiliation with the Department of Psychiatry and Behavioral Sciences at Oklahoma State University Center for Health Sciences and is a faculty affiliate of the OSU Biomedical Imaging Center. He received his PhD in Clinical Psychology from the University of South Florida in 2015 following completion of his clinical internship at Yale University School of Medicine. He completed a Post-Doctoral Fellowship in Addiction Neuroscience at Duke University, where he subsequently spent four years as an Assistant Professor. He has been continuously funded by the National Institutes of Health since 2017 and presently serves as Principal Investigator on R01 grants from the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism. His work draws on concepts and methods from basic, clinical and epidemiological research to improve our understanding of why people engage in substance use and develop novel interventions to help people treat addiction.