

Appendix 20.**Substance Use Research Emphasis Area at IUPUI.**

Substance Use Disorders are of high public health concern: they are common, are associated with high mortality rates and societal costs, and are often difficult to treat. Substance use is often comorbid with health problems and severe mental illness, making this research area nicely integrated into the Clinical Psychology program. This research area focuses on training and research concerning factors contributing to the risk for a wide range of substance use and risk-taking behaviors, including alcohol and drug use, risky sexual practices, smoking and e-cigarette use, and other forms of risk-taking. We also study how to best intervene to reduce or mitigate such problematic behaviors. Our research spans from neuroimaging, neurocognitive measurements, neuroendocrine measurements, laboratory-based oral and intravenous alcohol studies, school-based interventions, and large scale longitudinal survey methods. Students in this research area benefit from collaboration with the Indiana Alcohol Research Center, Indiana School of Medicine Adolescent Division, the Addiction Neuroscience Program, the Indiana University Addictions Grand Challenge Program, and a T32 training grant housed in the Department of Psychology focused on training on research in alcohol use.

The Substance Use Research area at IUPUI is completed in conjunction with the requirements of our APA-accredited clinical psychology program. The Department of Psychology is housed in the School of Science, and our training is based on the Clinical Science Model (i.e., emphasis on training students to conduct scientific research). We are a member of the Council of Clinical Health Psychology Training Programs (CCHPTP) (www.cchptp.org). Faculty members within the Department of Psychology and in other units across campus provide mentoring, instruction, and supervision. We provide core course work in our department, and additional related coursework is available through the Departments of Public Health, Sociology, and Anthropology and the Schools of Medicine, Nursing, Social Work, and Law. The Department of Psychology provides financial support for Ph.D. students throughout their graduate education. We make the commitment to support students in good standing for five years.

Substance Use Research Setting at IUPUI. IUPUI is the designated health and life sciences campus for the state of Indiana, and it houses the state's graduate training in the health professions, such as the Schools of Medicine (the nation's largest medical school), Nursing, Dentistry, Public Health, and Social Work. Numerous healthcare facilities are located on campus and provide copious research and training opportunities for our students. On-campus healthcare facilities include:

Indiana Clinical and Translational Sciences Institute (CTSI; www.indianactsi.org): The Indiana CTSI is a statewide collaboration of Indiana University, Purdue University, and the University of Notre Dame, as well as public and private partnerships, which facilitates the translation of scientific discoveries in the laboratory into clinical trials and new patient treatments in Indiana and beyond. Established in 2008, the Indiana CTSI was created with a \$25 million Clinical and Translational Science Award from the National Center for Research Resources of the National Institutes of Health, supplemented by nearly \$60 million from the state, the three member universities, and public and private partnerships. The Indiana CTSI is a member of a national network of 55 CTSA-funded organizations across the United States.

Indiana University Hospital (<http://iuhealth.org>): IU Hospital is a major teaching hospital and recognized leader in technology. It offers treatments, therapies, and procedures that are found only in the most advanced academic medical centers. Several of IU Hospital's clinical programs are consistently ranked among the best in the nation by *U.S. News & World Report*.

Indiana University Melvin and Bren Simon Cancer Center (<http://www.cancer.iu.edu>): The IU Simon Cancer Center is a patient care, research, and educational organization within the Indiana University School of Medicine. Established in 1992 as the IU Cancer Center, it has been an NCI-

designated Cancer Center since 1999 and is the only center with such distinction in Indiana that provides patient care.

Indiana University School of Medicine, Section of Adolescent Medicine (SOAM) (<http://pediatrics.iu.edu/sections-and-faculty/adolescent-medicine/about-us/>): The SOAM faculty has internationally recognized expertise in adolescent health behavior research, including a focus on problem behaviors such as violence, sexually transmitted infections, and drug use. As one of the largest and most active academically-oriented adolescent medicine sections of its kind in the country, the SOAM also provides clinical services to roughly 20,000 adolescents in outpatient and inpatient care within Marion County, Indiana. Additionally, the SOAM has provided care at the Marion County Detention Center since 2008.

Riley Hospital for Children at Indiana University (<https://www.rileychildrens.org>): Riley Hospital provides comprehensive, state-of-the-art clinical services for children and is routinely ranked as one of the nation's top children's hospitals by *U.S. News & World Report*. Riley Hospital trains clinicians who provide healthcare to children and conducts cutting-edge research to improve the diagnosis and treatment of serious disorders in children.

Eskenazi Health and Eskenazi Hospital (<http://www.eskenazihealth.edu>): Eskenazi Health is one of America's five largest safety net health systems, providing care to nearly 1 million outpatient visitors each year. It is also one of the leading providers of health care in Central Indiana, with physicians of the Indiana University School of Medicine providing a comprehensive range of primary and specialty care services within their 315-bed hospital and inpatient facilities and 11 community health centers located throughout Indianapolis. Approximately 90% of Eskenazi Health patients are underinsured or uninsured, and 50% are African American. Eskenazi Hospital, located on campus, has a Level I Trauma Center and nationally recognized services, including Midtown Community Mental Health Center, IU National Center of Excellence in Women's Health, and the Richard M. Fairbanks Burn Center.

Regenstrief Institute, Inc. (<http://www.regenstrief.org>): The Regenstrief Institute is an Indiana non-profit corporation formed in December 2001 to conduct and facilitate health care research, health care education, and clinical care. The Institute is affiliated with the Indiana University School of Medicine and Eskenazi Health. The Institute employs approximately 150 full-time staff and 35 investigators, who are faculty members of Indiana University. The Institute supports numerous investigators in health services, aging, and medical informatics research. The research milieu within the Institute offers access to other faculty scientists with a wealth of interdisciplinary health services research expertise, including gerontology, medical sociology, social science, epidemiology, biostatistics, health economics, computer science, medical informatics, medical outcomes, and implementation research.

Richard L. Roudebush VA Medical Center (<http://www.indianapolis.va.gov>): Roudebush VAMC has been serving Veterans since 1932. At present, it offers primary and specialty healthcare services to almost 200,000 military veterans from a 45-county area in Indiana and Illinois. The medical center promotes medical affiliate training, education, and research and is aggressively using emerging technology in the tele-home care and tele-disease management arenas.

Substance Use Curriculum. Students in the Substance use research area complete the requirements for IUPUI's general clinical psychology program. In addition, they are required to complete two core courses in substance use, elective courses, and two substance use practica.

Core Courses

PSY-I 590 Drugs of Abuse

This course will cover the basic principles of the study of drugs of abuse, as well as focusing on particular drugs and drug classes. For each drug or drug class, we will

discuss issues ranging from basic pharmacology to the social impact of the abuse of the particular substance.

PSY XXX Seminar in the Treatment of Substance and Alcohol Use Disorders

The purpose of this course is to cover empirically-supported psychological treatments for substance and alcohol use disorders.

Elective Courses*

IUPUI Psychology Department courses:

PSY-I 545 Psychopharmacology

A survey of the effects of drugs on behavior, cognitive functioning, and emotions. Emphasis is placed on the practical advantages of understanding how psychotropic drugs work, and on how the brain functions in health and disease. Students are exposed to the most current theories and research in the field.

PSY-I 535 Clinical Neuroscience

The emphasis of this course is the neurobiological foundations of mental health and mental illness. A primary goal is to examine how psychology, neuroscience, pharmacology, and medicine come together to manage mental illness. The nature of how biological alterations lead to aberrant behaviors that define psychopathology is examined, as well as the ethics involved in the field.

PSY 61500 Introduction to Behavioral Neuroscience

A survey of the integrated neurosciences emphasizing physiological psychology. Neural processes of sensory and motor function, arousal and sleep, motivation, learning and memory, language function, and personality disorders are presented with selected coverage of neuroanatomy, neurophysiology, neuropharmacology, and neuroendocrinology. Both normal and pathological functions are covered.

PSY-I 560 Behavioral Genetics

*Students in the Substance Use research area often take courses outside of the Department of Psychology, such as those offered by the Schools of Medicine, Nursing, and Public Health. Other courses may complete the elective course requirement as approved by your mentor.

Substance Use Practica Sites. Students receive supervision by licensed clinical psychologists at our practica sites. Below is a list of our current sites relevant to substance use. Of note, new placements are developed regularly.

Primary Care

Raphael Health Center – Indianapolis
 Roudebush VAMC – Primary Care Clinic
 St. Vincent Hospital – Primary Care Clinic
 Eskenazi Health – Primary Care Clinics in the surrounding community

Specialty Clinics

Charis Center for Eating Disorders
 Community Hospital South Bariatric Center
 Community Hospital North Women’s Health
 Indiana Polyclinic – Multidisciplinary Pain Center
 Indiana University Medical Center – Department of Neurology
 Indiana University Medical Center – Neuropsychology Clinic
 Indiana University Outpatient Psychiatry – Sleep Medicine
 Indiana University Department of Adolescent Medicine – Juvenile Justice Evaluations
 Riley Children’s Hospital Dual Diagnosis Clinic
 Roudebush VA Medical Center – Pain Clinic

Training in State-of-the-Art Research Methods and Statistical Approaches. Students receive training and supervised experience in state-of-the-art research methods and statistical approaches in substance use research.

Examples of research methods:

- Ecological momentary assessment (EMA)
- Eye tracking
- fMRI
- Heart rate variability biofeedback
- Internet interventions
- School-based interventions
- Intravenous alcohol administration
- Emotion inductions
- Electroencephalogram
- Timeline Followback assessments
- Structured Clinical interview assessments
- Qualitative interviews
- Olfactometer
- Oral alcohol administration

Examples of advanced statistical approaches:

- Bayesian data analysis
- Meta-analysis
- R (statistical programming language and software environment)
- Structural equation modeling
- Neuroimaging structural, functional, connectivity, and whole-brain connectomic analyses
- Qualitative data analysis

Substance Use Research Fellowships. Our students have received funding for (a) individual predoctoral fellowships (F31) from NIH (grants.nih.gov/grants/guide/pa-files/PA-16-309.html) and (b) alcohol-related institutional training fellowship from a T32 grant housed in the Department of Psychology (PI: Czachowski, www.medicine.iupui.edu/IARC/training/t32).

Core Substance Use Research Faculty.

Melissa A. Cyders, Associate Professor and Director, Clinical Psychology Program, Ph.D., 2009, University of Kentucky. Interests: impulsivity, fMRI, alcohol use, emotions, risk-taking.

Tamika Zapolski, Associate Professor, Ph.D., 2013, University of Kentucky. Interests: substance use among youth and African Americans, sociocultural risk, stress, emotion-based risk and protective processes, community and school-based interventions.

Wei Wu, Associate Professor, Ph.D., 2008, Arizona State University. Interests: advanced statistical methods such as longitudinal data analysis, structural equation modeling, and missing data analysis.

Other Contributors .

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