Cigarette smoking is the major cause of the avoidable morbidity and mortality in the U.S. and worldwide. Currently FDA approved pharmacotherapies for smoking cessation are modestly effective and are associated with potential side effects.

As part of the quest for improved therapies for smoking cessation, Luba Yammine, PhD, APRN, FNP-C is conducting a double-blinded randomized clinical trial that will evaluate the effects of a glucagon-like peptide-1 (GLP-1) receptor agonist (RA), extended-release exenatide (Bydureon®), on smoking outcomes in treatment seeking smokers. GLP-1 RAs are currently used for the treatment of type 2 diabetes mellitus and obesity; however, preclinical studies have shown that GLP-1 RAs reduce intake of nicotine and other addictive substances. Yammine’s study is the first human study to evaluate the effects of a GLP-1 RA on smoking outcomes. The target sample size for the study is 90 persons.

The participants are pre-diabetic and/or overweight smokers ages 18-75 years who are willing to make a quit attempt during the course of the study. The study has two parallel arms – active medication and placebo. Regardless of the group assignment, all participants receive nicotine replacement therapy (nicotine patches) and individual behavioral counseling. The participants come to clinic once a week for 6 weeks to receive the study medication/placebo, nicotine patches, and behavioral counseling and to complete various assessments.

Participants who are able to quit smoking during the 6-week treatment phase of the study, are contacted at 1- and 4-weeks post-treatment to ascertain continued abstinence from smoking. Those who report being abstinent, are invited to the clinic for the biochemical verification of abstinence.

The primary outcomes include 1) self-reported and biochemically verified 7-day point prevalence abstinence following 6 weeks of treatment; 2) post-quit craving and withdrawal symptoms; and 3) cue-induced craving for cigarettes following virtual reality exposure.

The results of this study will provide preliminary data for a larger investigation. The study is funded by the CCTS Scholar Award and by the PARTNERS Research Award.
CNRA: About us

MISSION:
To develop evidence-based treatment for substance use disorders (SUDs) using decisions informed by behavioral neurosciences.

AIMS:
In pursuit of this mission the CNRA aims to:
- Map out the neurological, behavioral, and clinical mechanisms that contribute to drug addiction
- Target key mechanistic processes in the development of SUD treatment
- Evaluate treatment efficacy using innovative clinical trial designs and statistical methods

Core Faculty:
Charles Green, Ph.D.
Angela Heads, Ph.D.
Scott Lane, Ph.D.
Joy Schmitz, Ph.D.
Robert Suchting, Ph.D.
Anka Vujanovic, Ph.D.
Margaret Wardle, Ph.D.
Michael Weaver, M.D.
Jin Yoon, Ph.D.

Interested in research?
Contact us!
(713) 486-2823
Rolanda Johnson
CNRA Program Manager

Using Virtual Reality to Address Social Anxiety among Adults with Asperger's Syndrome

- Jin Yoon, Ph.D.

Individuals with Autism Spectrum Disorders (ASD) have a variety of challenges, particularly when trying to fit in with the general population. A common characteristic of this population is difficulty in interacting during social situations.

For example, a young adult with ASD may have difficulty recognizing and interpreting the emotional response of others and themselves. This can lead to poor social interactions, subsequent anxiety and fear when dealing with social situations, leading to social isolation, and eventually depression.

Dr. Jin Yoon is collaborating on a project led by Dr. Katherine Loveland and funded by Landmark Charities. The goal of the project is to develop a platform to assess social anxiety among young adults with ASD and develop interventions that will help individuals recognize when they are experiencing anxiety during social situations and also help them identify the emotional reaction of others.

As part of the project, Dr. Yoon is helping develop a virtual-reality (VR) scenario that will be used to assess social anxiety when individuals are exposed to a VR party filled with other young adults. Dr. Yoon has previously explored the use of VR environments to assess drug craving in addictions research. The current project represents the flexibility of the VR platform to assess other important research questions.

Screen shot of the virtual reality scenario depicting a social gathering
**Clinical Corner: A Substance Abuse Counselor’s Take on Acceptance and Commitment Therapy**

**Acceptance and Commitment Therapy**, also known as “ACT” is a mindfulness based behavioral therapy that utilizes metaphor, paradox, mindfulness skills, experiential exercises and values-guided behavioral interventions.

In this article, CNRA counselors Carly Malcolm-Hoang LPC-S and Kathryn Tipton LPC answer questions about their experiences using ACT for the treatment of substance use disorders (SUD) in the CNRA’s ongoing study *Developing Adaptive Interventions for Cocaine Cessation and Relapse Prevention*.

**How does ACT differ from other traditional therapies for SUD?**

ACT focuses on the bigger picture of a client’s life with the goal of helping the client live a rich and meaningful life, rather than just a *sober* life. Traditional therapies can sometimes have a limited scope and see substance use as the main problem and sobriety from substance use as the main solution.

Due to this, ACT feels much more encompassing and explores other client issues that may lead to substance use as a way to avoid psychological pain. From a therapist standpoint, ACT feels much more flexible and comprehensive, and focuses on what’s most important as identified by the client and not the therapist.

ACT doesn’t try to change clients’ internal experiences (thoughts, feelings, sensations/cravings). Traditional therapies often work to change client’s “problematic thinking,” change a way a client feels, and reduce the likelihood of experiencing cravings. ACT teaches clients how to approach (vs. avoid) and open up to their experience and to be present in any moment, good or bad. These skills generalize to their overall life, not just to their substance use. Whether they are experiencing a strong craving or having an argument with their significant other, the skills they learn in ACT will help.

**What do you like about ACT?**

ACT is an experiential therapy, not a didactic therapy. The use of metaphors, playful/silly exercises, and exercises that require the client to get up and move around or interact physically in the space (i.e., carrying a load of books to represent the heaviness of their pain; playing tug of war against the therapist with a rope to represent their struggle against their thoughts/emotions). Clients tend to be more engaged and understand the concepts on a deeper experiential level.

**What challenges do you experience using ACT in a research setting?**

It is very difficult to manualize ACT (administering ACT in a step-by-step systematic way) because ACT by nature is flexible and works best when responding to the client’s unique needs within the session rather than adhering to the therapist’s agenda.

Additionally, there are many different ways to approach the same situation/issue using any of the six core processes (present moment awareness, cognitive defusion, acceptance, self as context, values, and committed action). Two therapists may approach a similar situation in a completely different way and both approaches can be just as effective. Steve Hayes, one of the founders of ACT, said, “the best way to pop a cork is to push from all sides.”

For more information about ACT visit: [https://contextualscience.org](https://contextualscience.org)
Big Data vs. Addiction at the CNRA

• Robert Suchting, Ph.D.

At the CNRA, great effort is taken to carefully archive data from each individual that provides us with information. Some of that information may consist of a few questionnaires administered on a participant’s first day, or some simple demographics, or it could be intensively collected across weeks of participation in an experiment.

As more and more data accumulates across experiments, it is warehoused in our databases. Optimizing the use of this archived data has always been a major research goal; secondary analyses have routinely been performed on data collected within experiments to explore additional outcomes or to investigate relationships between variables that primary analyses did not consider. Exploring data after the primary analyses have been completed is essential. We strive to get the most out of the data through careful exploration.

We must not fall in the trap of data dredging (aka p-hacking), whereby an exhaustive search for relationships between many variables is performed, often with no correction for multiple comparisons, and only the “significant” p-values are reported as relevant findings. Such practices contribute to the current crisis of non-replicated findings in the behavioral sciences.

A better way to explore data begins with acknowledging the original research goals and being up-front about any limitations in the data. It is critical for scientific integrity to (1) be explicit when we are exploring data (rather than confirming hypotheses), and (2) acknowledge that findings may represent modest incremental additions to the literature, particularly in the context of preliminary studies.

Given this scientific perspective, we can adopt a data science approach to efficiently explore our data sets. Data science consists of the application of statistics and machine learning (“big data”) algorithms to automate pattern discovery, maximize knowledge gained from databases, and optimize prediction of outcomes.

This approach uses a few methodological techniques to avoid data dredging. One such technique is data splitting, in which a percentage of the data is used to train the machine learning algorithms to work correctly, while the rest is held out separately for use in testing the performance of those algorithms. This way we can assess the degree to which the algorithm performs on data that it has never seen before, and thereby generalize and make accurate predictions about new datasets (for example to predict treatment outcomes in a substance abuse treatment clinical trial).

Additionally, we may use a technique called regularization. This technique penalizes models for complexity by shrinking the contributions of variables that are less important to understanding outcomes. Data splitting and regularization can minimize the effects of chance in finding relationships between variables in the data, and improve our statistical accuracy.

Finally, it is important to understand the goals of data exploration before pursuit. There are many machine learning algorithms that can be applied to achieve our primary goals of maximizing knowledge discovery and optimizing prediction of outcomes in addiction. Different algorithms may be better suited to different types of datasets. The data science team at the CNRA is continually striving to find optimal techniques for each unique dataset produced by CNRA researchers.

The efficiency and integrity of the data exploration process can be maximized by acknowledging the exploratory perspective of the research, understanding how to best exploit data science methodological techniques like data splitting and regularization, and through thoughtful application of appropriate algorithms for each given research question. In doing so, we help to improve addiction science research both at the CNRA and at the national level.
New Faces at the CNRA

Kristin Montalvo, M.A., is a research assistant with Dr. Jin Yoon. She earned her master's degree in Counseling Psychology from the University of Houston—Victoria and plans to pursue a doctoral degree in Counseling Psychology.

Guadalupe Gabriel San Miguel, B.S., is a research assistant at the CNRA. He earned his bachelor of science degree in psychology from the University of Houston. His interests include CBT effectiveness for PTSD and OCD.

Sydney Stamotavich, B.S., received her bachelor of science degree in psychology and neuroscience from Indiana University Bloomington in May 2017. She is currently a lab manager in Dr. Wardle’s Emotions in Addictions Lab. She is interested in pursuing a doctoral degree in clinical psychology with a focus in substance use disorder prevention and intervention. She has a particular interest in individual differences (neurological, biological, and behavioral) in treatment outcomes.

Upcoming Events

UTHealth Stomp Out Stroke Festival
Saturday April 28th 2018 9am-3:30pm
Discovery Green: 1500 McKinney St, Houston, TX 77010
- Free, open to the public, family-friendly event
- Stroke and brain health education
- Free health screenings
- Entertainment, performances, & music

Visit the CNRA at the Brain on Drugs booth in the Kid’s Zone.

Register at www.strokefestival.org

CNRA in the Media

Dr. Michael Weaver continues to disseminate information on addiction to the Houston community with frequent media interviews.

June 2017 Interview on FOX Channel 26 TV news program in Houston, TX as local expert on naloxone for opioid overdose.

In-studio interview on FOX Channel 26 TV Morning News program in Houston, TX as local expert on methamphetamine addiction related to new CNRA study.

Interviewed and quoted in “Your Body on Opioids” article in Good Housekeeping national magazine for August 2017 issue.

Sept 2017 Interviewed on KTRH radio 740 AM for segment about a new medication, arbaclofen, being developed to treat alcohol use disorder.

Oct 2017 In-studio interview on KUHF Radio station in Houston, TX on the National Public Radio (NPR) local program Houston Matters as a local expert on addiction related to President Trump’s announcement of the opioid crisis as a public health emergency.
Dr. Angela Heads received a $2.5 million federal grant for the UTHealth HIV Education, Awareness, Referral and Treatment for Substance Use Disorders (UT-HEARTS) Program. The program aims to provide HIV testing with counseling, case management, therapy for substance use disorders, relapse prevention and medication-assisted treatment for underserved populations in Houston. Enrollment will begin in January 2018. The funding was granted through the Substance Abuse and Mental Health Services Administration (SAHMSA).

Dr. Angela Heads received a grant from the Robert Wood Johnson Foundation for her proposal Adolescent Risk and Protective Factors for Substance Use in Emerging Adulthood.

Dr. Joy Schmitz and Dr. Consuelo Walss-Bass, associate professor and Director of the UTHealth Brain Collection for Research in Psychiatric Disorders, received $2.6 million to study gene-environment interactions in cocaine addiction. The five-year study, Collaborative Case-Control Initiative in Cocaine Addiction, will look at two stressors in particular – trauma exposure and HIV infection – in combination with the genetic profile of people who are addicted to cocaine. The funding was granted through the NIH’s National Institute on Drug Abuse and Fogarty International Center.

Dr. Scott Lane in conjunction with the CNRA organized the 1st Annual Alcohol & Addiction Research Mini-Symposium on November 3rd, 2017.

Dr. Mike Weaver, Scott Lane, and Joy Schmitz co-directed a course Opioids: Neurobiological and Clinical Perspectives offered at the UTHealth Neuroscience Research Center and UTHealth Graduate School of Biomedical Sciences. This 16 week course focused on understanding the neurobiology of the endogenous opioid system and its role in the experience of pain as well as the development of addiction to opioids, including prescription painkillers and heroin.

Check out the CNRA trials posted on ClinicalTrials.gov!

NCT02896712 Developing Adaptive Interventions for Cocaine Cessation and Relapse Prevention
NCT02785406 Role of the Orexin Receptor System in Stress, Sleep and Cocaine Use
NCT02773212 Targeting Anhedonia in Cocaine Use Disorder
NCT03078075 Accelerated Development of Additive Pharmacotherapy Treatment (ADAPT-2) for Methamphetamine Use Disorder
Recent Faculty Publications & Presentations


- Versace F, Stevens EM, Robinson JD, Cui Y, Deweese MM, Engelmann JM, **Green CE**, Karam-Hage M,
Recent Faculty Publications & Presentations

Lam CY, Minnix JA, Wetter DW, Cinciripini PM. Brain responses to cigarette-related and emotional images in smokers during smoking cessation: No effect of varenicline or bupropion on the late positive potential. Nicotine & Tobacco Research, Dec 6, 2017, DOI:10.1093/ntr/ntx264


Your Support Is Needed

Contributions to CNRA help advance important research to develop science-based treatments for those who suffer from substance use disorders.

Donations can be made to:

Office of Development
Attn: CNRA
P.O. Box 1321
Houston, TX 77251-1321

Funds provided by the Faillace Endowed Professorship, established in 2011 by Cynthia and Ray Wright in honor of Louis A. Faillace, M.D., supports excellence in psychiatric research and patient care, and envelops the mission of the CRNA – to develop evidence-based addiction treatment.
Inside the CNRA

The CNRA currently has three ongoing studies of treatment for stimulant use disorders.

- Developing adaptive interventions for cocaine cessation and relapse prevention
- Targeting anhedonia in Cocaine Use Disorder
- Accelerated Development of Additive Pharmacotherapy Treatment (ADAPT-2) for Methamphetamine Use Disorder

CNRA Program Features:

- No Cost Treatment
- 100% confidential
- Medical & Behavioral Treatments
- Experienced and Professional Staff
- A Safe and Clean Atmosphere
- Free Parking and Metro Tickets
- Financial Compensation for Research Participation
- Funded by the National Institute on Drug Abuse (NIDA)

Appointments:
713-500-DRUG (3784)

Clinic Hours:
Monday – Friday 7:30-4:00

Behavioral and Biomedical Sciences Building
1941 East Road
Houston Texas 77054

https://med.uth.edu/psychiatry/research/centers/addiction/