



CNRA Connections

Center for Neurobehavioral Research on Addiction

Department of Psychiatry

New Study Targets Smoking Cessation for Pre-diabetic or Overweight Smokers



• Luba Yammine, Ph.D., APRN, FNP-C

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 smok-

ing 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-1RAs reduce intake of nicotine and other addictive substances. Yammine’s study is the first human study to evaluate the effects of a GLP-1RA 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.

For more information or to enroll in the study, please contact Dr. Luba Yammine at **(832) 776-3151**.

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Newsletter layout and design by Kathryn Tipton

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.

How do clients seem to respond to ACT?

Clients tend to be more engaged in ACT than with traditional counseling. Clients often notice that this therapy is different from previous experiences. They might be a little confused or surprised to find the therapist approaching things differently. Sometimes clients have the expectation they will come to therapy and be given a specific plan for how to quit. Do X,

Y and Z and you will be clean. Clients may be a little surprised when they are not given any specific instructions and instead told to rely on their own experience as a guide.

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>

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.

The data science team at the CNRA is continually striving to find optimal techniques for each unique dataset produced by CNRA researchers.

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.



www.facebook.com/UTHealthCNRA

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's Brain on Drugs Booth

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.

Recent Awards, Recognition, Honors

- ◇ **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.



Dr. Angela Heads



Dr. Joy Schmitz



Dr. Consuelo Wall-Bass



Dr. Scott Lane



Dr. Michael Weaver

Check out the CNRA trials posted on [ClinicalTrials.gov](https://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 Addictive Pharmacotherapy Treatment (ADAPT-2) for Methamphetamine Use Disorder

Research Update

Recent Faculty Publications & Presentations

- Bartlett BA, Smith LJ, Tran JK, **Vujanovic AA**. (2017, November). PTSD symptom severity and alcohol use among firefighters: The moderating role of impulsivity. In A. Raines (Chair), Understanding the impact of trauma: A look beyond PTSD. Symposium presented at the 33rd annual meeting of the International Society for Traumatic Stress Studies, Chicago, IL.
- Dutcher CD, **Vujanovic AA**, Paulus DJ, Bartlett BA. Childhood maltreatment severity and alcohol use in adult psychiatric inpatients: The mediating role of emotion regulation difficulties. *General Hospital Psychiatry*, 48, 42-50, 2017.
- Gowin JL, Sloan ME, Ramchandani VA, Paulus MP, **Lane SD**. Differences in decision-making as a function of drug of choice. *Pharmacol Biochem Behav*, 164, 118-124, 2018.
- **Heads AM**, Dickson JW, Asby AT. Correlates of HIV risk-taking behaviors among African American college students: HIV knowledge and ethnic identity. *J Health Care for the Poor and Underserved*, 28, 155-170, 2017.
- **Heads AM**, Glover AM, Castillo LG, Blozis S, Kim SY. Dimensions of ethnic identity as protective factors for substance use and sexual risk behaviors in African American college students. *J Am Coll Health*, 00-00. doi: 10.1080/07448481, 2017.
- **Heads AM**, Dickson J, Asby A, **Schmitz JM**. Risk and protective factors for sexual risk behaviors in college students: Marijuana use, binge drinking, HIV risk knowledge and coping style. Presented at the College on Problems of Drug Dependence Annual Meeting, Montreal, Quebec, Canada, June 2017.
- Karam-Hage M, Kypriotakis G., Robinson JD, **Green CE**, Mann G, Rabius V, Wippold R, Blalock JA, Mouhayar E, Tayar J, Chaftari P, Cinciripini PM. Improvement of smoking abstinence rates with increased varenicline dosage: A propensity score-matched analysis. *J Clin Psychopharm*, 38, 34-41, 2018.
- **Lane SD**, da Costa SC, Teixeira AL, Reynolds CF 3rd, Diniz BS. The impact of substance use disorders on clinical outcomes in older-adult psychiatric inpatients. *Int J Geriatr Psychiatry*, 33(2), e323-e329, 2018.
- Ma L, Steinberg JL, Cunningham KA, Bjork JM, **Lane SD**, **Schmitz JM**, Burroughs T, Narayana PA, Kosten TR, Bechara A, Moeller FG. Altered anterior cingulate cortex to hippocampus effective connectivity in response to drug cues in men with cocaine use disorder. *Psychiatry Res*, 271, 59-66, 2018.
- Martin C, **Vujanovic AA**, Paulus DJ, Bartlett B, Gallagher MW, Tran JK. Alcohol use and suicidality in firefighters: Associations with depressive symptoms and posttraumatic stress. *Comprehensive Psychiatry*, 74, 44-52, 2017.
- Paulus DJ, **Vujanovic AA**, Schuhmann BB, Smith LJ, Tran JK. Examining main and interactive effects of depression and posttraumatic stress in relation to alcohol dependence among firefighters. *Psychiatry Research*, 251, 69-75, 2017.
- Rathnayaka NS, Moeller FG, **Schmitz JM**, **Green CE**. Drop-the-loser: A practical design for a clinical trial of citalopram for cocaine dependence. *Clinical Research and Trials*, 3, 1-7, 2017.
- **Schmitz JM**, **Green CE**, Hasan KM, Vincent J, **Suchting R**, **Weaver MF**, Moeller FG, Narayana PA, Cunningham KA, Dineley KT, **Lane SD**. PPAR-gamma agonist pioglitazone modifies craving intensity and brain white matter integrity in patients with primary cocaine use disorder: a double-blind randomized controlled pilot trial. *Addiction*, 112, 1861-1868, 2017.
- **Schmitz JM**, Stotts AL, **Vujanovic AA**, **Weaver MF**, **Yoon JH**, Vincent J, **Green CE**. A sequential multiple assignment randomized trial for cocaine cessation and relapse prevention: Tailoring treatment to the individual. *Contemp Clin Trials*, 65, 109-115, 2017.
- Velasquez MM, von Sternberg KL, Floyd RL, Parrish D, Kowalchuk A, Stephens NS, Ostermeyer B, **Green CE**, Seale JP, Mullen PD. Preventing alcohol and tobacco exposed pregnancies: CHOICES plus in primary care. *Am J Prev Med*, 53, 85-95, 2017.
- Versace F, Stevens EM, Robinson JD, Cui Y, Dewese MM, Engelmann JM, **Green CE**, Karam-Hage M,

Research Update Continued

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
- Versace R, Engelmann JM, Deweese MM, Robinson JD, **Green CE**, Lam CY, Minnix JA, Karam-Hage MA, Wetter DW, Schembre SM, Cinciripini PM. Beyond cue reactivity: Non-drug-related motivationally relevant stimuli are necessary to understand reactivity to drug-related cues. *Nicotine & Tobacco Research*, 19, 663–669, 2017.
 - **Vujanovic AA**, Smith LJ, **Green CE**, **Lane SD**, **Schmitz JM**. Development of a novel, integrated cognitive-behavioral therapy for co-occurring posttraumatic stress and substance use disorders: A pilot randomized clinical trial. *Contemp Clin Trials*, 65:123-129, 2017.
 - **Vujanovic AA**, Smith LJ, Bakhshaie J, **Wardle MC**. (2017, November). Distress tolerance and cue reactivity in adults with co-occurring posttraumatic stress and substance use disorders. In E. C. Berenz & A. A. Vujanovic (Chairs), *Experimental methodologies to evaluate the role of emotion regulation in PTSD and substance use disorder comorbidity*. Symposium presented at the 33rd annual meeting of the International Society for Traumatic Stress Studies, Chicago, IL.
 - Yammine L, Kosten TR, Cinciripini PM, **Green CE**, Meininger JC, Minnix, JA, Newton TF. Exenatide once weekly for smoking cessation: study protocol for a randomized clinical trial. *Medicine*, 97, e9567, 2018.
 - **Yoon JH**, De La Garza R, Newton TF, **Suchting R**, **Weaver MT**, Brown GS, Omar Y, Haliwa I. A comparison of Mazur's k and area under the curve for describing steep discounters. *The Psychological Record*, 67, 355-363, 2017.

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.

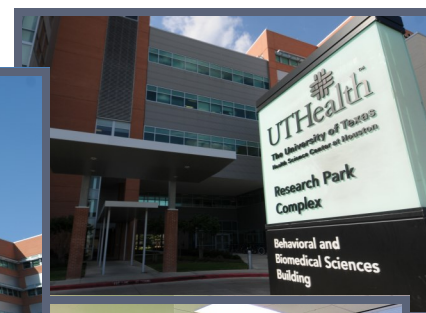
Inside the CNRA

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 Addictive 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/>