

Who are we?

The Research Society on Marijuana (RSMj) is a network of scientists with the shared goal of promoting understanding through empirical research of the determinants, correlates, consequences, contexts, and assessment of marijuana use as well as the treatment of problematic marijuana use, including cannabis use disorder.

RSMj Guiding Principles

- 1. We are first and foremost a research society. Thus, we are guided by research in the marijuana field, not by any personal or political agenda.**
- 2. We are a nonprofit organization. We will not be influenced by the profit motive. There are other organizations that may be sympathetic to our mission, but to maintain objectivity, we will not accept sponsorship from any for-profit or political advocacy group.**
- 3. We are a society concerned with improving human adversity. Therefore, we focus most of our attention on furthering research that has immediate benefit to reduce human suffering or improve human well-being.**

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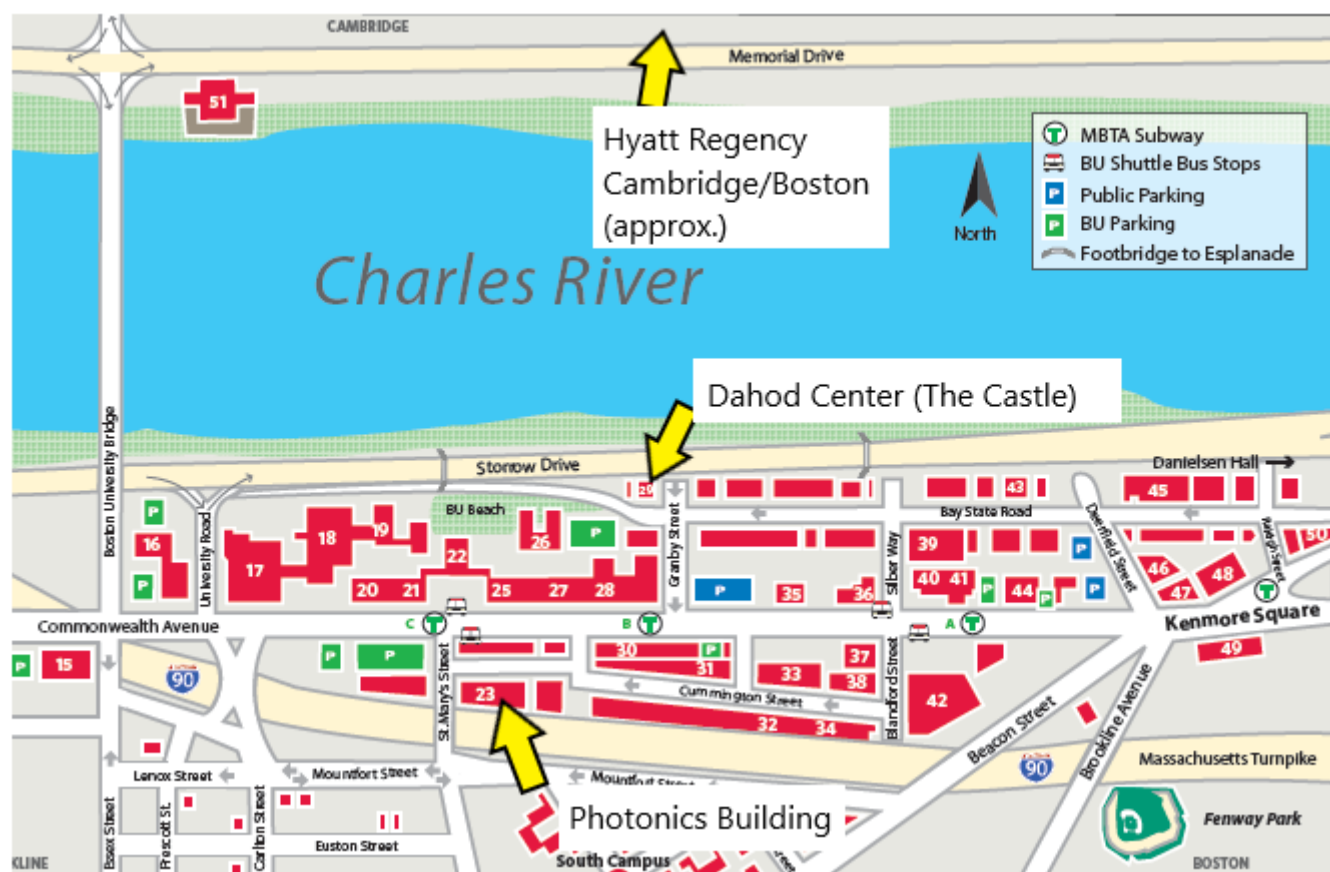
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RSMj Schedule

Click on a specific event to go to that page in the program

FRIDAY JULY 22, 2022			
Location	Photonics 206	Photonics 211	Photonics 906
8:45-9:00 AM	Opening Remarks		
9:00-10:00 AM	Keynote: Dr. Lopez		
10:15-11:30 AM	Not just for fun: A closer look at motives, perceptions, and outcomes associated with medicinal cannabis use (Wardell)	Cannabis-Related Outcomes among College Students: Lessons from the Addictions Research Team (Joseph)	
11:30 AM-1:00 PM	BREAK FOR LUNCH		
1:00-2:30 PM	From Reefer Madness to Regulation: Forming Evidence-Based Cannabis Policy at the Intersection of Regulation and Research (Collins)	Contributions to Frequent Cannabis Use and Related Problems in Adolescents and Young Adults: Implications for Intervention (Phillips)	
2:45-4:00 PM	Cannabis Use and Youth Wellness: What Legalization Gotta Do With It? (Kaminer)	Demographic, Contextual, and Behavioral Correlates of Cannabis Protective Behavioral Strategy Use Among Young Adults (Fitzke)	
4:00-5:30 PM			Poster Session I
SATURDAY JULY 23, 2022			
Location	Photonics 206	Photonics 211	Photonics 906
9:00-10:00 AM	Keynote: Dr. Miranda		
10:15-11:30 AM	Observational Laboratory Methods for Studying Co-Administration of Alcohol and Legal Market Cannabis Products (Karoly)	Leveraging Digital Technology to Study Cannabis Use, Benefits, and Risks (Struble)	
11:30 AM-1:00 PM	BREAK FOR LUNCH		
1:00-2:30 PM	Novel Technologies in Cannabis Assessment (Metrik)	Different methods in measuring cannabis use and outcomes in diverse adult populations (Wang)	
2:45-4:00 PM	Reasons for Cannabidiol (CBD) Use and Prohibited Marketing Claims: Implications for Public Health and Regulation (Soule)	Behavioral and Physical Health among Adolescents and Young Adults who use Cannabis: Findings from Community, Treatment, and Veteran Populations (Parnes)	
4:00-5:30 PM			Poster Session II
SUNDAY JULY 24, 2022			
Location	Photonics 206	Photonics 211	Photonics 906
9:00-10:15 AM	Panel discussion: The medicinal cannabis observational data dilemma: Clinician versus patient reported outcome measures		
10:30-11:45 AM	Highlighting the Research in <i>Cannabis</i> (Pedersen)		
11:45 AM-12:00 PM	Concluding Remarks		

Getting Around the BU Campus/Area



Link to full BU campus map: <https://maps.bu.edu/?id=647#!ce/28018?ct/>

The conference venue (Photonics Building, 8 St Mary's St, Boston, MA 02215) and the Friday evening social event (Dahod Center, 225 Bay State Rd, Boston, MA 02215) are both located on BU's Charles River Campus. For your planning purposes, the T (Boston's subway system) Green Line-B branch has multiple stops along the BU campus. The closest stop to the conference venue is Boston University Central

To assist with getting around, you may consider downloading the *Terrier Transit App* (available in the Apple Store or Google Play): <https://www.bu.edu/thebus/terrier-transit/>. *Terrier Transit* guides you from point A to B in the easiest and most efficient way. Get T and bus times, maps, and real-time arrival times with ease so you can plan your trip with confidence. Get step-by-step directions of optimal route bus, train, metro, bike, scooter or a combination of them.

8:00am – 4:30pm

Check-In/Registration

Photonics Building Second Floor Foyer

8:45am – 9:00am

Conference Opening/Introduction

Photonics 206

Bradley Conner (Colorado State University)

9:00am – 10:00am

Keynote Address

Photonics 206

Marsha Lopez, Ph.D. (NIH/National Institute on Drug Abuse)



Dr. Lopez is currently Chief of the Epidemiology Research Branch. Prior to becoming Branch Chief, her program areas included major epidemiological studies and secondary data analysis, studies of the co-occurrence of drug and other psychiatric disorders, diagnostic issues pertaining to drug and other psychiatric conditions. Dr. Lopez is the Program Official for the Monitoring the Future Study, as well as an active supporter of Research Training among new investigators. After receiving her B.A. in Psychology from Georgetown University, Dr. Lopez was an Intramural Research Training Associate (IRTA) Fellow at NIDA for two

years in Behavioral Pharmacology in the Preclinical Pharmacology Laboratory. She subsequently attended the Johns Hopkins University School of Hygiene and Public Health, Department of Mental Hygiene, where she received her MHS with a concentration in Public Mental Health, and then Ph.D. with a focus on drug and alcohol dependence epidemiology. Her training was funded by an Individual National Research Service Award (NRSA) from NIDA, supporting research on drug related mortality.

10:15am – 11:30am

Symposium
Photonics 206

Not just for fun: A closer look at motives, perceptions, and outcomes associated with medicinal cannabis use

Chair: Jeffrey Wardell (York University; University of Toronto; Centre for Addiction and Mental Health, Toronto, Canada)

Medicinal cannabis use (MCU) is legal in most U.S. states and all of Canada, and MCU policies are continuing to evolve against the backdrop of widespread legalization of recreational cannabis use (RCU). Recent data suggest that 27% of North Americans report lifetime MCU to manage a variety of physical and mental health symptoms (Leung et al., 2022). Given the high prevalence of self-reported MCU, more research on the unique experiences of individuals who engage in MCU is required to inform ongoing cannabis policy developments. Although prior studies have found unique correlates and outcomes associated with MCU, many studies are limited to cross-sectional comparisons between broadly defined MCU and RCU groups. Thus, there is a need for a more in-depth analysis of the complexity and diversity of MCU both between individuals and within individuals over time. The four papers in this symposium draw on a range of designs (surveys, ecological momentary assessment, qualitative interviews, longitudinal cohort) and populations (young adults, people with HIV, people with rheumatic autoimmune conditions, and a cohort of diverse patients) to provide new insights into the experiences of individuals who report MCU. The papers take a closer look at the nuanced motivations for MCU, perceptions of the distinctions between MCU and RCU, perceived benefits and barriers of MCU, event-level antecedents and outcomes of MCU, and longitudinal patient-reported outcomes of MCU. Dr. Jane Metrik will lead the discussion and will comment on the clinical and policy implications of this work.

PRESENTERS:

Medicinal versus non-medicinal classifications of cannabis use motives among young adult regular cannabis and alcohol users

Rachel Gunn, Nancy P. Barnett, Kristina M. Jackson (Brown University), Sharon Lipperman-Kreda (Prevention Research Centre), Robert Miranda, Jr. (Brown University), Timothy J. Trull (University of Missouri), Jane Metrik (Brown University; Providence Veterans Affairs Medical Center)

Disentangling medicinal and recreational cannabis use among people living with HIV: Feasibility and preliminary findings of an ecological momentary assessment protocol

Jeffrey D. Wardell (York University; University of Toronto; Centre for Addiction and Mental Health; CIHR Canadian HIV Trials Network), Nicole Fox (York University), Cecilia Costiniuk (McGill University; Research Institute of the McGill University Health Centre; CIHR Canadian HIV Trials Network), Mohammad-Ali Jenabian (Université du Québec à Montréal; CIHR Canadian HIV Trials Network), Shari Margolese (CIHR Canadian HIV Trials Network), Enrico Mandarino (CIHR Canadian HIV Trials Network; MJardin/WILL Cannabis Group), Paul Shuper (Centre for Addiction and Mental Health; University of Toronto), Christian S. Hendershot (University of North Carolina – Chapel Hill), John Cunningham (Kings College London; Centre for Addiction and Mental

Health; University of Toronto), Gordon Arbess (St. Michael's Hospital; University of Toronto), Joel Singer (University of British Columbia; CIHR Canadian HIV Trials Network), Sergio Rueda (Centre for Addiction and Mental Health; University of Toronto; CIHR Canadian HIV Trials Network)

**Perception of cannabis as a potential adjunct treatment for rheumatic autoimmune conditions:
A qualitative analysis**

Elizabeth R. Aston, Benjamin L. Berey, Monia Chopra, Anthony M. Reginato (Brown University), Jane Metrik (Brown University; Providence Veterans Affairs Medical Center)

Impact of medicinal cannabis use on anxiety and depression: momentary and long-term clinical effects

C. Austin Zamarripa, Justin C. Strickland, Rhiannon E. Mayhugh, Renuka Surujnarain (Johns Hopkins University), Erin L. Martin (Medical University of South Carolina), Heather Jackson, Nicolas J. Schlienz (Realm of Caring Foundation), Marcel O. Bonn-Miller (University of Pennsylvania), Ryan G. Vandrey (Johns Hopkins University)

Discussant: *Jane Metrik (Brown University; Providence Veterans Affairs Medical Center)*

10:15am – 11:45am

Symposium

Photonics 211

Cannabis-Related Outcomes among College Students: Lessons from the Addictions Research Team

Chair: Verlin W. Joseph (University of New Mexico)

Cannabis is currently the most prevalent substance used among college students in the United States. Roughly, 44% of college students reported past year cannabis use, with 7.9% reporting daily cannabis use during 2020. Generally, substance use among college students is associated with several deleterious outcomes including lower academic performance, higher probabilities of unemployment post-graduation, and an increased risk of sexual assault. To better understand outcomes associated with cannabis use among college students the Addictions Research Team (ART) conducted Project ART in 2020-2021. Participants were 5494 students recruited from Psychology Department participant pools at 11 universities in 8 states (AK, CA, CO, ID, NM, TX, VA, WA) across the U.S who completed an online survey for partial course credit. To maximize construct coverage while minimizing participant burden, we used a planned missingness design, randomizing participants to complete subsets of assessments. Our sample reflected the average age of college students ($M = 20.19$, 94.3% sample 18-25 years old), was about two-thirds female (68.1%), and was racioethnically diverse (46.1% non-Hispanic White, 27.1% Hispanic, 14.5% Asian, 11.7% Black, 9.4% Other Race, 2.4% American Indian/Alaska Native). Using Project ART data, our presenters use exploratory machine learning approaches to identify salient predictors of cannabis-related outcomes (Joseph), examine the within- and between-subject effects of using protective behavioral strategies on experiencing negative consequences attributed to cannabis vs. alcohol (Chavez), explore economic variables related to cannabis dependence symptoms (Houck), and characterize perceptions regarding the perceived positive and negative health effects of cannabis (Magnan).

PRESENTERS:

Exploratory Analysis of Salient Predictors of Cannabis-Related Outcomes: Recursive Partitioning and Random Forests

Verlin W. Joseph, Frank J. Schwebel, Dylan K. Richards, Matthew R. Pearson (University of New Mexico), Addictions Research Team

Reducing Harm with Alcohol and Cannabis Protective Behavioral Strategies: A Daily Diary Study of Alcohol Users, Marijuana Users, and Dual Users

Jude G. Chavez, Matthew R. Pearson (University of New Mexico), Addictions Research Team

Cannabis Spending and Willingness to Accept Compensation Are Associated with Cannabis Dependence

Jon M. Houck (Mind Research Network), Brady P. Horn (University of New Mexico), Addictions Research Team

Health Beliefs about Cannabis Use among College Students

Renee E. Magnan, Benjamin O. Ladd, Eric Malain (*Washington State University*), Addictions Research Team

Discussant: Matthew R. Pearson (*University of New Mexico*)

11:30am – 1:00pm

LUNCH ON YOUR OWN



PIRE

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NOTABLE CLIENTS

- National Institute on Drug Abuse
- National Institute on Alcohol Abuse and Alcoholism
- National Institute of Mental Health
- National Institute on Minority Health and Health Disparities
- Department of Education
- Department of Justice
- Department of Transportation
- Department of Veterans Affairs

1:00pm – 2:30pm

Symposium
Photonics 206

From Reefer Madness to Regulation: Forming Evidence-Based Cannabis Policy at the Intersection of Regulation and Research

Chair: Shawn Collins (Cannabis Control Commission, Commonwealth of Massachusetts)

Cannabis is illegal at the federal level, hindering research, and leaving state-enacted legalization efforts to proceed in the face of many scientific unknowns. Regulators are left to write and implement policy in the absence of verified research and data and, as emergencies like the EVALI crisis have shown, these research gaps can contribute to major regulatory challenges. As the science on cannabis progresses, it becomes even more important that we understand how research informs law and regulation, ensuring policy evolves with the science. Cannabis policies nation-wide are in flux. While recent states to legalize have the benefit of learning from those that came before, regulating cannabis as a legal substance poses novel challenges and states have taken an array of regulatory and policy approaches. Combining regulatory knowledge and data with research expertise can fill gaps around best-practices for regulating an industry as safely and equitably as possible. This timely panel brings regulators and state and academic researchers together to discuss regulator/researcher partnerships and present research resulting from these collaborations in Massachusetts. Each panelist brings specialized knowledge in an area of policy or research in Massachusetts. The goal of this panel is to provide space for researchers from academia to discuss the role of research in the successful regulation of cannabis and how these roles, traditionally siloed, can work together to create effective cannabis policies in the future.

PRESENTERS:

Research and Regulation— A Novel Way Forward for State Agencies and Evidence-Based Policies

Shawn Collins, Julie Johnson (Commonwealth of Massachusetts, Cannabis Control Commission)

State and Individual Metrics to Understand Changing Cannabis Patterns in a Maturing Legal Market

Julie Johnson, Alex Colby, Olivia Laramie, Hailey Pensky (Commonwealth of Massachusetts, Cannabis Control Commission)

Cannabis Legalization and Novel Data Sources for Regulation and Research

Marianne Sarkis, Alex Colby, Paul Clark, Julie Johnson (Commonwealth of Massachusetts, Cannabis Control Commission)

Developing a quantitative approach to identify areas disproportionately impacted by cannabis and drug prohibition: Massachusetts data and policy implications

Jennifer M. Whitehill (University of Massachusetts Amherst), Renee M. Johnson (Johns Hopkins Bloomberg School of Public Health), Julie K. Johnson (Commonwealth of Massachusetts, Cannabis Control Commission), April Pattavina (University of Massachusetts Lowell), Faith English (University of Massachusetts Amherst), Samantha M. Doonan (NYU Grossman School of Medicine, Vilcek Institute of Graduate Biomedical Sciences), Ava C. Concepcion, Cedric Sinclair (Commonwealth of Massachusetts, Cannabis Control Commission), Mark Melnik (University of Massachusetts, Donahue Institute)

Discussant: *Julie Johnson (Cannabis Control Commission, Commonwealth of Massachusetts)*

1:00pm – 2:30pm

Symposium
Photonics 211

**Contributions to Frequent Cannabis Use and Related Problems in
Adolescents and Young Adults: Implications for Intervention**

Chair: Kristina T. Phillips (Kaiser Permanente Hawai'i)

Adolescents and young adults who use cannabis early, frequently, and chronically experience negative outcomes associated with their use, creating vulnerability for the development of cannabis use disorder (CUD). The current set of talks will address key risk factors that influence frequent cannabis use and negative outcomes, while also addressing the impact of findings for intervention with different populations. K. Phillips et al. will discuss findings from an ecological momentary assessment (EMA) study with college students that demonstrate complex relationships between craving, craving variability, and subsequent cannabis use, with select moderating effects by cannabis concentrates and male sex. In an EMA study with adolescents, data presented by Treloar Padovano et al. provides evidence of age-related differences in sensitivity to CUD-related alterations in stress and reward systems. Prince et al. will discuss use of classification tree analysis to identify a threshold for high frequency cannabis use and analyses that examine salient risk and protective factors of high frequency use among a large epidemiological sample of youth living on or near American Indian reservations. M. Phillips et al. will present on the complex and varied connection between cannabis use and academic motivation, self-efficacy, and performance among college students in a state with legal recreational cannabis. Pedersen et al. will discuss event-level data focused on co-use of alcohol and cannabis during pre-gaming events in college students, finding unique patterns of use in relation to negative consequences. Lastly, given his extensive experience, discussant Stein will provide a synthesis of findings and intervention implications.

PRESENTERS:

Craving, craving variability, and cannabis use in real-time: Assessing moderating effects of concentrate use and sex

Kristina T. Phillips (Kaiser Permanente Hawai'i), Trent L. Lalonde (Colorado Department of Human Services), Michael M. Phillips (University of Hawai'i), Michael D. Stein (Boston University)

Age-related differences in sensitivity to alterations in stress and reward systems: The “dark side” of cannabis use disorder severity in daily life

Hayley Treloar Padovano (Brown University), Robert Miranda Jr., Jamie Parnes (Brown University, E.P. Bradley Hospital)

Identifying salient predictors of high frequency cannabis use

Mark A. Prince, Randy C. Swaim, Linda R. Stanley (Colorado State University)

Is cannabis use associated with academic factors? Exploring momentary and longitudinal associations in college students

Michael M. Phillips (University of Hawai'i), Kristina T. Phillips (Kaiser Permanente Hawai'i), Trent L. Lalonde (Colorado Department of Human Services), Michael D. Stein (Boston University)

Co-use of cannabis and alcohol during pregaming among college students

Eric R. Pedersen (*University of Southern California*), Mark A. Prince (*Colorado State University*), Reagan E. Fitzke, Toni Atieh (*University of Southern California*)

Discussant: Michael D. Stein (*Boston University*)

2:45pm – 4:00pm

Symposium

Photonics 206

Cannabis Use and Youth Wellness: What Legalization Gotta Do With It?

Chair: Yifrah Kaminer (*University of Connecticut*)

This symposium is dedicated to updated reviews (through 2021) of the impact of Cannabis legalization on the health and wellbeing of North American youth (adolescents and young adults up to 26 years of age). Three presentations will address: A) The 9 years Colorado experience; B) the 3 years Canadian experience and C) A rapid systematic review of use and cannabis use disorder (CUD) among youth in the U.S.A. Implications for public health prevention, enforcement and “damage control” policies for youth who have been negatively affected by the liberalization cascade of the legal status of cannabis use for “adults only” will be discussed with the audience.

PRESENTERS:

The impact of cannabis legalization for recreational purposes on youth: The Colorado experience

Jesse Hinckley, Devika Bhatia, Jarrod Ellingson, Karla Molinero, Christian Hopfer (*University of Colorado School of Medicine*)

The impact of cannabis Legalization for Recreational Purposes on Youth: The Canadian Experience

Dafna Sara Rubin-Kahana, Jean-Francis Crepault, Justin Matheson, Bernard Le-Foll (*University of Toronto*)

Does Legalization of Recreational Cannabis Influence Levels of Use and Cannabis Use Disorder among Youth in the United States? A Rapid Systematic Review

Megan A. O'Grady, Marissa G. Iverson, Adekemi O. Suleiman, Taeho Greg Rhee (*University of Connecticut School of Medicine*)

Discussant: Yifrah Kaminer (*University of Connecticut*)

2:45pm – 4:00pm

Symposium
Photonics 211

**Demographic, Contextual, and Behavioral Correlates of Cannabis
Protective Behavioral Strategy Use Among Young Adults**

Chair: Reagan E. Fitzke (Keck School of Medicine, University of Southern California)

Cannabis use is of particular concern among young adult populations as its prevalence continues to rise. Young adults who use cannabis may experience negative consequences from use, including relationship problems or impaired driving. One common intervention tool to help young adults reduce cannabis-related harm is through the use of protective behavioral strategies (PBS) that encourage less harmful methods of use in an effort to limit the frequency and quantity in which young people use and help to prevent negative consequences. PBS have consistently associated with experiencing fewer consequences among young adults in previous literature. However, much remains to be elucidated about how various factors that may present in young adults can influence the interaction between PBS and consequences in the context of cannabis use. This series of talks explores correlates of PBS for cannabis use among young adults and ultimately how PBS use relates to the mitigation of cannabis-related consequences within different contexts and subgroups.

PRESENTERS:

Revisiting trait resilience in the context of harm reduction: An exploration of cannabis-related protective behavioral strategies and consequences

Reagan E. Fitzke (Keck School of Medicine, University of Southern California), Mark A. Prince (Colorado State University), Denise D. Tran, Eric R. Pedersen (Keck School of Medicine, University of Southern California)

Matching Protective Behavioral Strategies to Cannabis-Related Consequences and Cannabis use Contexts

Olivia Bolts, Mark A. Prince (Colorado State University), Reagan E. Fitzke, Eric R. Pedersen (Keck School of Medicine, University of Southern California)

Examining cannabis use, consequences, and protective behavioral strategies among students with gender minority identities

Morgan A. Douglass, Mark A. Prince (Colorado State University), Reagan E. Fitzke (Keck School of Medicine, University of Southern California), Bradley T. Conner (Colorado State University), Eric R. Pedersen (Keck School of Medicine, University of Southern California)

An Examination of Protective Behavioral Strategies as a Moderator of the Relations Between Sleep-related Factors and Cannabis Use Outcomes

Kirstyn N. Smith-LeCavalier (University of Washington), Mark A. Prince (Colorado State University), Jason R. Kilmer, Brittney A. Hultgren, Mary E. Larimer (University of Washington)

Discussant: *Matthew R. Pearson (University of New Mexico)*

Friday, JULY 22, 2022

**Back to RSMj
schedule**

4:00pm – 5:30pm

Poster Session I (see pages 26-28 for details)

Photonics 906

5:30pm – 7:30pm

Social Event: Dahood Family Alumni Center (The Castle)

225 Bay State Road, Boston MA, 02215

Saturday, JULY 23, 2022

8:00am – 5:00pm

Check-In/Registration

Photonics Building Second Floor Foyer

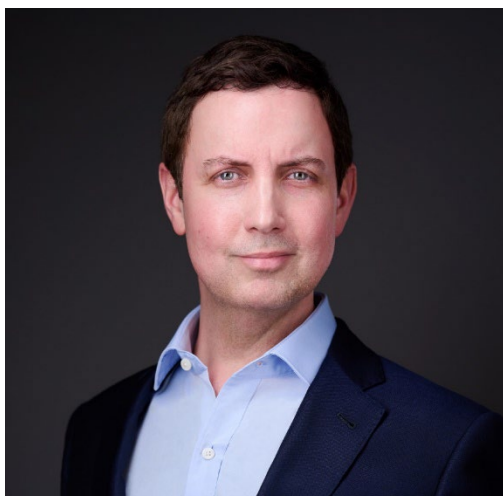
9:00am – 10:00am

Keynote Address

Photonics 206

Advances in Adolescent Cannabis Use Disorder: Bridging Science and Practice

Robert Miranda Jr., Ph.D. (Brown University)



Dr. Miranda is a Professor of Psychiatry & Human Behavior. He has committed his career as a clinician scientist to advancing our understanding of how addiction develops and progresses during adolescence, with the ultimate goal of advancing clinical practice. He directs a federally funded research program on the treatment of adolescents with substance use and co-occurring mental health disorders, with a special focus on testing new pharmacological interventions and

using novel strategies to monitor how adolescents behave in their natural environment. He has served as Principal Investigator, Co-Investigator, or Mentor on over 30 federally funded research projects, and has developed several novel assessment and intervention approaches for adolescents with substance use and co-occurring mental health disorders. In addition, Dr. Miranda has served on numerous study sections at the National Institutes of Health.

10:15am – 11:30am

Symposium
Photonics 206

Observational Laboratory Methods for Studying Co-Administration of Alcohol and Legal Market Cannabis Products

Chair: Hollis C. Karoly (Colorado State University)

Federal restrictions on cannabis research have created unique challenges for studying the range of legal-market cannabis products that are popular in states with legalized cannabis, such as Colorado. Specifically, highly potent concentrate and flower cannabis, as well as products containing cannabidiol (CBD), have not been widely studied. In addition, given the frequency with which alcohol and cannabis are co-used (Yurasek, Aston, and Metrik 2017), it is critical that we gain an understanding of the acute and long-term effects of combining alcohol with various cannabis products, particularly highly potent products. The limited data on alcohol and THC co-administration are conflicting. Some studies suggest synergistic or additive effects (Chait and Perry 1994; Lukas and Orozco 2001), on psychomotor/cognitive impairment (Ronen et al. 2010) and blood alcohol and blood-THC (Downey et al. 2013; Hartman et al. 2016), while others report no such effects (Ballard and de Wit 2011; Fares et al. 2021; Toennes et al. 2011). Prior work is limited because the cannabis used was typically smoked cannabis containing low THC concentrations (i.e., <5%), while flower cannabis in Colorado contains 25% THC and concentrates contain up to 90% (Vergara et al. 2017). We aim to overcome these limitations through developing protocols for studying co-administration of alcohol and legal-market cannabis, including the use of a mobile laboratory, mobile EEG, forming partnerships with cannabis dispensaries and leveraging longitudinal daily diary methods. We will describe procedures and preliminary data from our work on co-administration of alcohol and CBD, alcohol and concentrates, and alcohol and cannabis flower.

PRESENTERS:

Testing the Effects of Cannabidiol Pre-Treatment on Blood Alcohol Level and Alcohol Intoxication

Meggan L. Drennan, Mark A. Prince, Gregory Dooley, Hollis C. Karoly (Colorado State University)

Exploring the Effects of Flower Cannabis on Alcohol Consumption and the Microbiota- Gut-Brain Axis: A Laboratory and Daily Diary Study

Hollis C. Karoly, Vanessa T. Stallsmith (Colorado State University)

Exploring the Effects of Co-Administration of Cannabis Concentrates with a Standard Alcohol Dose: A Focus on Cannabinoid Content and Order Effects

Cianna Piercey, Bradley T. Conner, Mark A. Prince, Noah N. Emery, Hollis C. Karoly (Colorado State University)

Forming Working Relationships with Cannabis Dispensaries: Benefits, Challenges, and Considerations for Future Research

Emma E. Smith, Bradley T. Conner, Hollis C. Karoly (Colorado State University)

Discussant: *Bradley T. Conner (Colorado State University)*

10:00am – 11:45am

Symposium

Photonics 211

Leveraging Digital Technology to Study Cannabis Use, Benefits, and Risks

Chair: Cara A. Struble (Geisel School of Medicine at Dartmouth College)

Rapid shifts in cannabis legalization have resulted in a burgeoning cannabis industry that has increased the availability of novel, diverse, and high potency cannabis products. The scientific community struggles to measure and understand the benefits and risks associated with the multitude of unique cannabis consumption patterns created by combinations of methods of administration, quantities, and potencies. Social media advertising and web survey platforms offer promising solutions for recruiting large samples of cannabis-using individuals to better understand relations between consumption patterns and outcomes. The presenters represent former and current research team members at the Center for Technology and Behavioral Health with expertise leveraging social media platforms to study an array of cannabis-related topics. We will first discuss cannabis use patterns and survey item functioning revealed through initial efforts to develop a personalized survey measuring cannabis consumption. This will be followed by presentation on a potential method for estimating milligrams of delta-9-tetrahydrocannabinol (THC) consumed based on self-reported cannabis practices. The second half of the symposium will shift to examination of the benefits and risks associated with diverse cannabis consumption patterns. Findings and psychometric properties that validate a measure of perceived benefits and harms from use of cannabis, administered online, will be presented. The final talk will examine associations between cannabis practices and cannabis-related outcomes among sexual and gender minority young adults. The discussion will highlight the promise and limitations of social media-based research methods to enhance our understanding of current cannabis practices and associated outcomes across diverse cannabis-using samples at the population-level.

PRESENTERS:

Using Social Media-Based Surveys to Test and Refine Self-Report Measures of Cannabis Product Quantity, Potency, and Frequency of Use

Jacob T. Borodovsky, Cara A. Struble, Mohammad I. Habib (Geisel School of Medicine at Dartmouth College), Deborah S. Hasin, Dvora Shmulewitz, Claire Walsh, Ofir Livne, Efrat Aharonovich (Columbia University), Alan J. Budney (Geisel School of Medicine at Dartmouth College)

Quantifying THC Consumed Based on Self-Reported Frequency and Quantity of Cannabis Use

Mohammad I. Habib, Jacob T. Borodovsky, Cara A. Struble (Geisel School of Medicine at Dartmouth College), Deborah S. Hasin, Dvora Shmulewitz, Claire Walsh, Ofir Livne, Efrat Aharonovich (Columbia University Irving Medical Center), Alan J. Budney (Geisel School of Medicine at Dartmouth College)

Initial Validation of a Bi-directional Perceived Cannabis Benefits and Harms Measure

Michael J. Sofis, Lydia M. Mudd (Cannabis Public Policy Consulting), Dominick V. Zurlow (New Mexico Department of Health Medical Cannabis Program), Jacob T. Borodovsky, Alan J. Budney (Geisel School of Medicine at Dartmouth College)

Understanding Differences in Cannabis Practices and Cannabis-Related Outcomes Among Sexual and Gender Diverse Young Adults

Cara A. Struble, Jacob T. Borodovsky, Mohammad I. Habib (*Geisel School of Medicine at Dartmouth College*), Deborah S. Hasin, Dvora Shmulewitz, Claire Walsh, Ofir Livne, Efrat Aharonovich (*Columbia University Irving Medical Center*), Alan J. Budney (*Geisel School of Medicine at Dartmouth College*)

Discussant: Alan J. Budney (*Geisel School of Medicine at Dartmouth College*)

11:30am – 1:00pm

LUNCH ON YOUR OWN

1:00pm – 2:30pm

Symposium
Photonics 206

Novel Technologies in Cannabis Assessment
Chair: Jane Metrik (Brown University)

As cannabis products are becoming more available and diverse in formulations and methods of administration, researchers face unique challenges in accurate measurement of cannabis use patterns and related behaviors. Technological advances can be leveraged to improve the precision and accuracy of cannabis assessment and to expand the capacity to evaluate hard-to-reach populations. New technologies can be utilized across both laboratory and field-based studies capitalizing on their unique respective strengths in terms of controlled experimental and observational methods in the natural environment. The goal of this symposium is to introduce highly innovative methods and technologies developed by cannabis researchers to improve the ability to study the effects of cannabis. Presentations will introduce cutting-edge assessment technologies including a biobehavioral mobile laboratory designed to study the acute effects of legal market cannabis products, laboratory methods for studying cannabis smoking topography, and novel instruments to measure cannabis expectancies. The symposium features innovative methods aimed at real-time objective measurement of cannabis-related behaviors by integrating ecological momentary assessment (EMA) with a smart device to study cannabis vaping and EMA integrated with passively collected spatio-temporal GPS data to study driving under the influence of cannabis in the natural environment. Characterizing patterns of cannabis use in relation to health outcomes and high-risk behaviors such as impaired driving are among NIDA's top areas of programmatic interest. Implications for just-in-time interventions and policy regulations using technologies featured in this symposium are discussed.

PRESENTERS:

Geographically Explicit Momentary Assessment to Detect Driving Under the Influence of Cannabis

Jane Metrik, Rachel L. Gunn, Elizabeth R. Aston, Kayleigh McCarty (Brown University), Timothy Trull, Denis M. McCarthy (University of Missouri, Columbia)

Mobile Technologies Support Biobehavioral Cannabis Research in the Wild

Gregory Giordano, Tim Curran, William Carpenter (University of Colorado Boulder), Brian L. Tracy (Colorado State University), Angela D. Bryan, L. Cinnamon Bidwell (University of Colorado Boulder)

Examining the Relationship Between Cannabis Smoking Topography and Cannabis Use Behavior

Holly K. Boyle, Benjamin L. Berey, Elizabeth R. Aston (Brown University)

The Development and Validation of Two Novel Measures to Assess Cannabis Expectancies and Simultaneous Alcohol and Cannabis Expectancies

Jack T. Waddell, William R. Corbin, Madeline H. Meier (Arizona State University), Jane Metrik (Brown University)

Characterizing Contextual Factors Associated with Medical Cannabis Oil Vaporization

Jacqueline E. Smith (Rutgers, the State University of New Jersey), Elizabeth R. Aston (Brown University), Samantha G. Farris (Rutgers, the State University of New Jersey)

Discussant: Jane Metrik (Brown University)

1:00pm – 2:30pm

Symposium

Photonics 211

Different methods in measuring cannabis use and outcomes in diverse adult populations

Chair: Yan Wang (University of Florida)

Accurate measurement of cannabis use is critical to understand patterns of use and its health implications. However, quantification of cannabis use has been a longstanding challenge due to the diverse chemical components and administration routes of cannabis products. Also, more research is needed to advance our understanding of the impact of cannabis on health outcomes such as apathy, chronic pain, mental health, and quality of life in diverse populations. In this symposium, we present research findings from two cohort studies that we recently conducted. The talks will cover topics related to quantifying cannabis flower use (Robert Cook: “Quantifying cannabis flower use among persons with HIV in Florida using timeline follow back and a urine biomarker”), examining early onset of cannabis use disorder on apathy (Mark Britton: “Adolescent-onset cannabis use disorder is associated with greater self-reported apathy among adults living with HIV in Florida”), understanding changes in marijuana use during COVID-19 pandemic using quantitative and qualitative data (Christina Parisi: “Changes in marijuana use frequency among people with HIV during the COVID-19 pandemic: A multi-methods exploration”), and investigating long-term health outcomes among middle-aged and older adults with chronic pain newly initiating medical cannabis (Yan Wang: “Medical cannabis as a potential treatment for chronic pain: Findings from a 12-month pilot study”). We will discuss the strengths and limitations of different methods to measure cannabis use. We will also discuss the strengths and limitations of different study designs to assess cannabis’ impact on health outcomes.

PRESENTERS:

Quantifying cannabis flower use among persons with HIV (PWH) in Florida using timeline follow back (TLFB) and a urine biomarker

Robert L. Cook, Yan Wang, Yangcheng Li, Ruba Sajdeya, Mark Britton, Yiyang Liu (University of Florida), Verlin Joseph (University of New Mexico), Charurut Somboonwit (University of South Florida), Gladys Ibanex (Florida International University), Michael Truver, Bruce Goldberger (University of Florida)

Adolescent-Onset Cannabis Use Disorder Is Associated With Greater Self-Reported Apathy Among Adults Living with HIV in Florida

Mark K. Britton, Eric Porges, Ronald Cohen, Yan Wang (University of Florida), Gladys Ibanez (Florida International University), Charurut Somboonwit (University of South Florida), Robert Cook (University of Florida)

Changes in Marijuana Use Frequency Among People with HIV During the COVID-19 Pandemic: A Multi-Methods Exploration

Christina Parisi, Yan Wang, Deepthi S. Varma, Krishna Vaddiparti (University of Florida), Gladys E. Ibañez, Liset Cruz Carrillo (Florida International University), Robert L Cook (University of Florida)

Medical cannabis as a potential treatment for chronic pain: Findings from a 12-month pilot study

Yan Wang, Kimberly Sibille, Zhigang Li, Robert Cook (University of Florida)

Discussant: *Robert L. Cook (University of Florida)*

2:45pm – 4:00pm

Symposium
Photonics 206

**Reasons for Cannabidiol (CBD) Use and Prohibited Marketing
Claims: Implications for Public Health and Regulation**

Chair: Eric K. Soule (East Carolina University)

Cannabidiol (CBD), a cannabinoid compound, is widely available in the United States (U.S.). CBD products derived from hemp, or cannabis plants with less than 0.3% delta-9 tetrahydrocannabinol (THC), are exempt from the Controlled Substance Act, but CBD products cannot be marketed for therapeutic purposes or to treat a medical condition without approval from the U.S. Food and Drug Administration (FDA). However, emerging research suggests that CBD products are marketed as a panacea and many users report therapeutic and medicinal effects as reasons for use. Given the rapid increase in CBD use in the U.S., there is a need to understand how CBD retailers' marketing strategies influence user behaviors and the potential health impacts that may result from CBD use. In this symposium, we will present data from four studies that address this issue. First, we will describe reasons for CBD use reported by 844 adult CBD users across the U.S. We will then summarize prohibited health claims used by CBD retailers and manufacturers as described in warning letters issued by the FDA. Next, we will present data related to marketing strategies collected from websites of CBD retailers in North Carolina. Finally, we will present results of a study demonstrating how CBD marketing claims can influence consumer attention and product appeal. Regulatory implications and potential impacts on public health will be discussed.

PRESENTERS:

Self-reported reasons for cannabidiol (CBD) use among a national Qualtrics® panel of adult users of cannabinoid products in the United States

Kathleen L. Egan (East Carolina University), Melissa J. Cox (University of North Carolina at Chapel Hill), Eric K. Soule (East Carolina University)

Health claims about cannabidiol (CBD) products: a retrospective analysis of FDA warning letters

Kimberly G. Wagoner (Wake Forest School of Medicine), Allison J. Lazard (University of North Carolina at Chapel Hill), E. Alfonso Romero-Sandoval, Beth A. Reboussin (Wake Forest School of Medicine)

North Carolina Cannabidiol (CBD) program: analysis of marketing claims, type of products, and violations of FDA regulations

Lindsay Amann (Wake Forest School of Medicine), Allison J. Lazard (University of North Carolina at Chapel Hill), Beth A. Reboussin, Kimberly G. Wagoner, E. Alfonso Romero-Sandoval (Wake Forest School of Medicine)

Health claims in cannabidiol (CBD) advertising are believable and encourage use: two consumer exposure studies in a mock store

Allison J. Lazard, Sydney Nicolla, Marissa Hall (University of North Carolina at Chapel Hill), Beth A. Reboussin, E. Alfonso Romero-Sandoval, Kimberly G. Wagoner (Wake Forest School of Medicine)

Discussant: *Kerry Cork (Public Health Law Center)*

2:45pm – 4:00pm

Symposium

Photonics 211

Behavioral and Physical Health among Adolescents and Young Adults who use Cannabis: Findings from Community, Treatment, and Veteran Populations

Chair: Jamie E. Parnes (Brown University, E. P. Bradley Hospital)

While there has been a recent increase in research focused on the relations between cannabis use and behavioral (e.g., sleep, non-suicidal self-injury) and physical health (e.g., pain, somatic symptoms), there are still many important research gaps that need to be addressed. There are limited studies on how having health symptoms may motivate and influence cannabis use. Similarly, it is unclear how cannabis use to cope with health symptoms may affect future cannabis use and health outcomes. When exploring these relations, there are higher-risk age groups to consider. Cannabis use typically begins during adolescence (i.e., under age 18) and peaks during young adulthood (i.e., age 18-25). Since early initiation and frequent use are associated with greater negative outcomes (e.g., dependence), examining these age groups is of particular importance. Additionally, cannabis use disparities among several subpopulations (e.g., sexual/gender minorities) similarly warrant specific focus. The present symposium contributes to the extant literature by examining associations between health symptoms and cannabis use among adolescents and young adults, including a focus on several vulnerable demographic groups. Patrice Arkfeld will present on non-suicidal self-injury and cannabis use among sexual and gender minorities. Jamie Parnes will describe daily changes in associations between consecutive days abstinent, sleep duration and problems, and likelihood of use during adolescent cannabis treatment. Kirstyn Smith-LeCavalier will evaluate the psychometric properties of cannabis physical coping motives and relations to use outcomes among young adults. Kayleigh McCarty will present on prospective associations between physical health (i.e., pain, functioning) and cannabis use among young adult veterans.

PRESENTERS:

Does Gender Identity, Sexual Orientation, and the Intersection of these Identities Moderate the Relation between Cannabis Use and Non-suicidal Self-injury among Adolescents?

Patrice A. Arkfeld, Bradley T. Conner (Colorado State University)

Cannabis Use and Sleep: Variations Across an Adolescent Treatment Clinical Trial

Jamie E. Parnes, Samuel N. Meisel (Brown University, E. P. Bradley Hospital), Benjamin L. Berey, Hayley Treloar Padovano, Robert Miranda Jr. (Brown University)

An Examination of Physical Coping as a Motive for Cannabis Use among Young Adults

Kirstyn N. Smith-LeCavalier, Christine M. Lee, Anne M. Fairlie, Mary E. Larimer (University of Washington)

Prospective Associations between Cannabis Use and Health Functioning

Kayleigh N. McCarty, Elisabeth R. Aston, Rachel L. Gunn, Kristina Jackson (*Brown University*), Brian Borsari (*University of California - San Francisco, San Francisco VA Health Care System*), Jane Metrik (*Brown University, Providence VA Medical Center*)

Discussant: Robert Miranda Jr. (*Brown University*)

4:00pm – 5:30pm

Poster Session II (see pages 29-31 for details)
Photonics 906



SAVING LIVES THROUGH RESEARCH AND EDUCATION

For more than 70 years, the AAA Foundation for Traffic Safety has been true to its mission to prevent traffic deaths and injuries by conducting research into their causes and by educating the public about strategies to prevent crashes and reduce injuries when they do occur.

Since 1947, the Foundation, a 501(c)(3) nonprofit organization, has created many important studies and educational tools involving multiple major traffic safety issues and, as a result, has long been recognized as a leader in the field.

Drawing on both in-house resources and the work of leading experts around the world, the Foundation's work generates concrete recommendations for preventing crashes, injuries and deaths on our roads.

In addition, research findings from the Foundation have helped to strengthen laws, build public awareness of safety concerns and trends, inform automakers on safety design issues, and advise transportation agencies on vital roadway improvements.

9:00am – 10:15am

Panel Discussion
Photonics 206

**The medicinal cannabis observational data dilemma: Clinician
versus patient reported outcome measures**

*Moderator: Rosalie Liccardo Pacula (Sol Price School of Public Policy and
Leonard D. Schaeffer Center for Health Policy and Economics at the
University of Southern California)*

Background: Observational data on medicinal cannabis usage is an important source of real-world information. Clinician reported outcome measures, through medical records and claims data, and patient reported outcomes measures are increasingly being integrated into observational research to capture unique viewpoints related to medicinal cannabis usage, and yet standards for measurement of quantities and doses using either approach remain undeveloped. Panel members will discuss methods being developed within their agencies to better address measurement issues and provide insights on what they are learning. Aim: Panel members will provide unique perspectives from a variety of different sources to help inform both clinically and patient reported outcome measures to understand medical (versus recreational) medical use and how these data can be leveraged. A panel of U.S., and Australian researchers will explore the divergence, and sometimes alignment between alternative forms of clinically based and patient reported data from recent observational studies.

PANELISTS:

Gwen Lapham (Kaiser Permanente Washington Health Research Institute, School of Public Health at the University of Washington). She has been leading a large research team investigating the extent to which patients within the large Kaiser Healthcare system self-report medical use (through patient surveys) and the extent to which such use is included in the health system's electronic health records (based on medical record extraction).

Myfanwy Graham (Australian Centre for Cannabinoid Clinical and Research Excellence, University of Southern California). She will discuss the results of a recently published survey of Australian medical practitioners and an ongoing retrospective database audit of a state-wide, Australian state government funded medicinal cannabis advisory service.

Alexandra Kritikos is a U.S. postdoctoral student who for her dissertation examined medical purchases of cannabis from a single company operating multiple dispensaries in New York State. She will be discussing findings about medical purchases and implied dosing from repeat purchases made by patients at these dispensaries between 2016 and 2019.

Nathan Cantor, MSc. is an MD student at the Michael G. DeGroote School of Medicine at McMaster University.

10:30am – 11:45pm

Symposium
Photonics 206

Highlighting the Research in Cannabis

Chair: Eric R. Pedersen (*University of Southern California*)

The purpose of this symposium is to highlight recent research published in *Cannabis*, RSMj's flagship journal. *Cannabis* is an open access peer-reviewed journal dedicated to the scientific study of marijuana/cannabis from a multidisciplinary perspective. Consistent with the mission of the Research Society on Marijuana (RSMj), the journal publishes empirical research of the determinants, correlates, consequences, contexts, and assessment of marijuana use as well as the treatment of problematic marijuana use, including cannabis use disorder. In addition to individual research talks presenting a range of new empirical findings on cannabis and its effects, this symposium will include a brief overview of the journal from the current editor of *Cannabis*, Dr. Pedersen.

PRESENTERS:

Smoked Cannabis Effects in Cannabis Users at Clinical High-Risk for Psychosis: A Further Investigation of Cognition and Reward

Sean Madden (*Institute of Behavioral Science, Feinstein Institutes for Medical Research*)

Policing Pot: State-level Cannabis Arrests Increase Perceived Risks and Costs but not Use

Maha Mian (*University at Albany, State University of New York*)

Racial Equity in Cannabis Policy: Diversity in the Massachusetts Adult-Use Industry at 18-months

Samantha Doonan (*Massachusetts Cannabis Control Commission; New York University School of Medicine*)

Are Drinking Cognitions Associated with Marijuana and Concurrent Alcohol and Marijuana Use among Adolescents and Young Adults?

Nioud (Neo) M. Gebru (*University of Florida*)

Discrepant Parent-adolescent Reports of Parental Monitoring and Their Relations to Cannabis Use Among Justice-involved Youth

Lauren Micalizzi (*Brown University*)

11:45am – 12:00pm

Concluding Remarks
Photonics 206

Bradley Conner (*Colorado State University*)

1. **The power of placebo: Does cannabidiol (CBD) expectancy alone impact acute stress and anxiety? (Student travel award)**
Toni C. Spinella, Sherry H. Stewart, Julia Naugler, Igor Yakovenko, Sean P. Barrett (*Dalhousie University*)
2. **Effects of cannabidiol with and without other cannabinoids and terpenes on short-term and long-term stress-related behaviors**
Mariam Melkumyan, Nicole Lookfong, Wesley Raup-Konsavage, Kent Vrana, Yuval Silberman (*Penn State College of Medicine*)
3. **“I just smoke marijuana, which is not a drug, and cigarettes, which is a drug”: Health Perceptions of Cannabis Use Among African American Tobacco Smokers**
Cherell Cottrell-Daniels, Bethany Shorey Fennell (*Moffitt Cancer Center*)
4. **Cannabis Nomenclature: Perceptions and Preferences Among Women of Reproductive Age**
Kara Skelton, Erin Donahue (*Towson University*)
5. **The impact of cannabis edible packaging elements on appeal, harm perceptions and knowledge: an experimental study among a national convenience sample of adults in the United States**
Beth A. Reboussin, Kimberly G. Wagoner, Erin L. Sutfin, Jennifer Cornacchione Ross, Cynthia K. Suerken, Edgar Alfonso Romero-Sandoval (*Wake Forest School of Medicine*), Allison J. Lazard (*University of North Carolina at Chapel Hill*)
6. **Are cannabis use motives and consequences stronger by gender? (Student travel award)**
Katie R. Moskal, Jenni B. Teeters (*Western Kentucky University*)
7. **Motives and Consequences Associated with Solitary Alcohol and Cannabis Use among Co-Users during the COVID-19 Pandemic (Student travel award)**
Ayla Sadeghi, Kyra Farrelly, Jeffrey D. Wardell (*York University*)
8. **Medicinal versus recreational cannabis use among youth: A systematic review**
Nicolle Fox, Olivia Canella, Jeffrey D. Wardell (*York University*)
9. **Differences in alcohol and cannabis motives among simultaneous, concurrent, alcohol-only, and cannabis-only users**
Katherine A. Berry, Alison Looby (*University of Wyoming*), Stimulant Norms and Prevalence (SNAP) Study Team
10. **Marijuana Beliefs**
Andrew P. Weinstein, Clayton Neighbors (*University of Houston*)
11. **The Influence of Anxiety and Avoidant Coping Style on Probable CUD**
Madison Stout, Juan Barrera-Barker, Alexis Blessing, Patricia D. Russell, Sandra B. Morissette (*University of Texas at San Antonio*)

- 12. Changes in Mental Health as a Predictor of Marijuana Coping Motives and Consequences: Examining the Impact of COVID-19 on College Students**
 Rebecca J. Dunaief, Adrian J. Bravo, Eleftherios M. Hetelekides, Victoria O. Chentsova (*William & Mary*), Cody Raeder, James M. Henson (*Old Dominion University*)
- 13. From Adverse Childhood Experiences to Problematic Marijuana Use: Examining the Role of Distress Tolerance and Coping Motives on Negative Marijuana Use Consequences**
 Victoria O. Chentsova, Adrian J. Bravo, Emily O. Norton (*William & Mary*), Cross Cultural Addiction Studies Team
- 14. The Role of Impulsivity on Cannabis and Alcohol Use Frequency and Problems Among Frequent Cannabis Users**
 Rishika V. Shah, Sarah A. Okey, William R. Corbin (*Arizona State University*)
- 15. Does Anxiety Mediate the Relationship Between Cannabis Use and Psychotic-Like Experiences in Emerging Adults? Investigating a Conditional Process Model in a Multi-Site University Sample**
 Haley C. R Bernusky, Phil G. Tibbo, Fakir M. Yunus (*Dalhousie University*), Patricia J. Conrod (*Universite de Montreal*), Matthew T. Keough (*York University*), Kara D. Thompson (*St. Francis Xavier University*), Marvin D. Krank (*University of British Columbia - Okanagan*), Sherry H. Stewart (*Dalhousie University*)
- 16. Feasibility and utility of a structured guide for cannabis tolerance breaks in young adults**
 Thomas Fontana, Jonathan A. Schulz (*University of Vermont*), Alan J. Budney (*Dartmouth College*), Andrea C. Villanti (*University of Vermont, Rutgers University*)
- 17. Associations of Momentary Mindfulness with Affect and Cannabis Desire in a Trial of Cannabis Use Interventions with and without Momentary Assessment**
 Lydia A. Shrier, Sion K. Harris (*Boston Children's Hospital, Harvard Medical School*)
- 18. Are parents who use cannabis receptive to safe storage interventions and point-of-sale education?**
 Beatriz H. Carlini, Sharon B. Garrett, Lexi Nims (*University of Washington*)
- 19. Responsible Vendor Training as a Macro-Level Prevention Tool– A Case Study of the Massachusetts Cannabis Industry**
 Olivia Laramie, Alexander Colby, Hailey Pensky (*Cannabis Control Commission, Commonwealth of Massachusetts*), Samantha M. Doonan (*NYU Grossman School of Medicine, Vilcek Institute of Graduate Biomedical Sciences*), Julie Johnson (*Cannabis Control Commission, Commonwealth of Massachusetts*)
- 20. Identifying Cannabis Use Patterns via Latent Profile Analysis**
 Bethany Gray, Mark Prince (*Colorado State University*), Reagan Fitzke, Eric Pedersen (*Keck School of Medicine of the University of Southern California*)
- 21. Time Trajectories of Medical Cannabis Purchases by Patients with Medical Cannabis Prescriptions**
 Alexandra F. Kritikos (*University of Southern California*), Dominic Hodgkin (*Brandeis University*), Rosalie Liccardo Pacula (*University of Southern California*)

22. Gender by Ethnicity Differences in Trajectory of Cannabis Use Among Cannabis-Using Young Adults during Pre- and Post-Recreational Cannabis Legalization (RCL) in Los Angeles

Wong, CF (*Children's Hospital Los Angeles/USC Keck School of Medicine*), Odejimi, O. (*Children's Hospital Los Angeles - CHLA*), Conn, BM (*Children's Hospital Los Angeles/USC Keck School of Medicine*), Davis, J (*USC*), Ataiants, J, Fedorova, EV (*Drexel University*), Suen, M, Lee, SJ, Osornio, A (*CHLA*), Lankenau, SE (*Drexel University*)

23. Medical Cannabis Use Among Adults Who Report Non-Medical Use of Prescription Opioids for Pain Relief

Catalina Lopez-Quintero, Alyssa M. Falise, James D. Cury, Vinita Sharma, Ellen L. Terry, Yan Wang, Robert Cook (*University of Florida*)

24. Changes in Marijuana Use Frequency Among People with HIV During the COVID-19 Pandemic: A Multi-Methods Exploration

Christina Parisi, Yan Wang, Deepthi S. Varma, Krishna Vaddiparti (*University of Florida*), Gladys E. Ibañez, Liset Cruz Carrillo (*Florida International University*), Robert L Cook (*University of Florida*)

25. Medical Marijuana & Me (M3): Designing Measures of Medical Marijuana Dose in an Observational Study

Hannah Fechtel, Ruba Sajdeya, Yan Wang, Gabriel Spandau, Amie Goodin, Almut Winterstein, Robert Cook (*University of Florida*)

26. Acute Cannabis-related Alterations in an fMRI Time Estimation Task

Krishna T. Patel, Michael C. Stevens, Suyash Adhikari, Greg Book, Muhammad Mubeen (*Olin Neuropsychiatry Research Center, Institute of Living at Hartford Hospital*), Godfrey S. Pearson (*Olin Neuropsychiatry Research Center, Institute of Living at Hartford Hospital, Depts. of Psychiatry & Neurobiology, Yale University School of Medicine*)

**Back to RSMj
schedule**

- 1. Effect of Acute Stress Induction on Cannabis Demand**
Yi-Chun Chang, Benjamin O. Ladd (*Washington State University Vancouver*)
- 2. Ecological Momentary Assessment of Cannabis Use Contexts**
Rebecca K. Denson, Robin J. Mermelstein (*University of Illinois at Chicago*)
- 3. Variations in likelihood to use protective behavioral strategies for marijuana across physical and social contexts of use**
Kathleen L Egan (*East Carolina University*), Melissa J Cox (*University of North Carolina at Chapel Hill*)
- 4. Cannabis craving in response to alcohol cues in the laboratory and in daily life**
Andrea M. Wycoff, Hayley Treloar Padovano, Robert Miranda, Jr. (*Brown University*)
- 5. Concurrent Alcohol and Cannabis Use Influences EEG Processing of Alcohol Cues**
Eleftherios Hetelekides, Cheryl Dickter, Adrian J. Bravo (*William & Mary*)
- 6. Brain-behavior relationships of simulated naturalistic automobile driving under the influence of acute cannabis intoxication: A double-blind, placebo-controlled study**
Shashwath A. Meda, Mike C. Stevens (*Hartford Hospital/Yale University*), Erwin Boer (*Entropy Control Inc.*), Catherine Boyle, Greg Book (*Hartford Hospital*), Nicolas Ward (*Montana State University*), Godfrey D. Pearlson (*Hartford Hospital/Yale University*)
- 7. Day-level associations of craving and anxiety with self-reported attention and concentration problems in young adults who use cannabis: A key role for anxiety**
Tammy Chung, Brett Millar, Marie Sizemore, Yanping Jiang, Ashley Grosso, Zeeshan Ahmed (*Rutgers University*)
- 8. Cannabis Use Disorder Uniquely Predicts Educational Impairment in College Students Over and Above other Mental Health Disorders**
Alexis Blessing, Patricia D. Russell, Willie Hale, Sandra B. Morissette (*The University of Texas at San Antonio*)
- 9. Investigating predictors of problematic cannabis use in polysubstance users**
Aaron Shephard, Şimal Dölek, Sherry H. Stewart, Sean P. Barrett (*Dalhousie University*)
- 10. Associations Between Number of Standard Doses of Tetrahydrocannabinol, Cannabis Use Motives and Cannabis-Related Negative Consequences**
Alexander J. Tyskiewicz, Bradley T. Conner, Mark A. Prince, Nathaniel R. Riggs (*Colorado State University*)
- 11. Development and Validation of the Cannabis-Dependent Appetite Measure**
Brooklyn M. Deming (*Knox College*)
- 12. Cannabis smoking and storage within the home: A cross-sectional survey of families with children**
Kara Skelton (*Towson University*), Sara Benjamin-Neelon (*Johns Hopkins Bloomberg School of Public Health*)

- 13. Association between Cannabis use and Suicidal Ideation as moderated by Gender identity**
Kassidy A. Robertson, Patrice A. Arkfeld, Mark A. Prince, Bradley T. Conner (*Colorado State University*)
- 14. Examining the Effects of Cannabis Use on Sleep Using Daily Diary Data**
Neel Muzumdar, Jennifer F. Buckman (*Rutgers University*), Alexander Sokolovsky (*Brown University*), Anthony P. Pawlak, Andrea M. Spaeth (*Rutgers University*), Kristina M. Jackson (*Brown University*), Helene R. White (*Rutgers University*)
- 15. Adolescent-Onset Cannabis Use Disorder Is Associated With Greater Self-Reported Apathy Among Adults Living with HIV in Florida**
Mark K. Britton, Eric Porges, Ronald Cohen, Yan Wang (*University of Florida*), Gladys Ibanez (*Florida International University*), Charurut Somboonwit (*University of South Florida*), Robert Cook (*University of Florida*)
- 16. Do Cannabis PDMPs Change Physician Prescribing Behavior?**
Shelby Steuart (*University of Georgia*)
- 17. Using Retailer Data and Subjective Resident Experience to Assess Legal Cannabis Access in Massachusetts**
Alexander M. Colby, Hailey Pensky, Marianne Sarkis, Julie K. Johnson (*Massachusetts Cannabis Control Commission*)
- 18. Absence of age verification for delivery of online purchases of CBD and Delta-8: implications for youth access to CBD and Delta-8 Products**
Kathleen L Egan, Sophia Villani, Eric K Soule (*East Carolina University*)
- 19. The Good, The Bad, and The Uncertain: A Systematic Review of the Impacts of Recreational Cannabis Legalization**
Kyra N. Farrelly (*York University & Peter Boris Centre for Addictions Research*), Jasmine Turna (*Peter Boris Centre for Addictions Research & Michael G. DeGroote Centre for Medicinal Cannabis Research*), Emma Marsden, Molly Scarfe, Peter Najdzionek (*Peter Boris Centre for Addictions Research*), Jeffrey D. Wardell (*York University, Center for Addiction and Mental Health, & University of Toronto*), James MacKillop (*Peter Boris Centre for Addictions Research, Michael G. DeGroote Centre for Medicinal Cannabis Research, & Homewood Research Institute*)
- 20. "You still have that fear": Policy constraints on informed decision making about legalized cannabis use during pregnancy and lactation**
Faith English (*University of Massachusetts, Amherst*), Devon Greyson (*The University of British Columbia*)
- 21. Impact of recreational cannabis legalization on cannabis use patterns in the NY metropolitan area: A longitudinal survey**
Rina Goldstein, Sean Madden, Allegra Nevins (*Northwell Feinstein Institutes for Medical Research*), Monica Tomlinson (*Northwell Addiction Recovery Services*), Diana Martins-Welch (*Northwell Health Center for Advanced Medicine; Zucker School of Medicine at Hofstra/Northwell*), Nehal P. Vadhan (*Northwell Feinstein Institutes for Medical Research; Zucker School of Medicine at Hofstra/Northwell*)

- 22. Responses to Recreational Cannabis Legalization among Non-Users, Cannabis Users without a License and Cannabis Users with a License**
Delaney S. Dunn (*Oklahoma State University and TSET Health Promotion Research Center*), Sarah J. Ehlike, Michael A. Smith (*TSET Health Promotion Research Center*), Darla Kendzor, Amy M. Cohn (*TSET Health Promotion Research Center and University of Oklahoma Health Sciences Center*)
- 23. State marijuana and alcohol policies and co-use among adolescents**
Grisel García-Ramírez, M.J. Paschall, Joel Grube (*Prevention Research Center*)
- 24. Pharmacy Students' knowledge, Attitudes, and Awareness toward Marijuana use**
Khaled M. Hasan, Olufisayo Oluwafemi, Wilde Ketchatang (*University of Maryland Eastern Shore*)
- 25. Medicinal cannabis prescribing guidance documents: An evidence-based, best-practice framework based on the Australian experience**
Myfanwy Graham, E. Renaud, J.H. Martin (*Australian Centre for Cannabinoid Clinical and Research Excellence, Australia, Centre for Drug Repurposing and Medicines Research, Clinical Pharmacology, Hunter Medical Research Institute, University of Newcastle, Australia*)
- 26. New Kinds of [Hash]tags: An Interdisciplinary Examination of Semi-Synthetic Cannabinoid Products**
Carlton Bone, Charles Klein, Robert Strongin, Kaelas Munger (*Portland State University*)
- 27. Prevalence and Predictors of Simultaneous Cannabis and Alcohol Use Among Medical Cannabis Patients— Is one metric enough?**
Alexandra F. Kritikos, Rosalie Liccardo Pacula (*University of Southern California*), Dominic Hodgkin (*Brandeis University*), Julie K. Johnson (*Massachusetts Cannabis Control Commission*)

[Back to RSMj
schedule](#)

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Cannabis

Publication of the Research Society on Marijuana