

COLLABORATIVE
PERSPECTIVES on
ADDICTION

Poster Abstracts

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Hotel Solamar

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**Substance Use and Addictive
Behaviors across the Lifespan**



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Poster Abstracts

Poster Session 1: THURSDAY April 2nd 11:30am – 12:45pm

- 1. EVALUATION OF AN INNOVATIVE IN-HOME TREATMENT PROGRAM FOR WOMEN WITH SUBSTANCE USE DISORDERS.** Amy McDonnell, Courtney MacNeill. Substance use disorders are increasing among women, and effective treatment programs for women are scarce. Women face common barriers to treatment that further hamper accession of effectual treatment. Objective. The current study is aimed to address why women are not accessing treatment, and if the in-home addiction treatment model will mitigate barriers preventing women from accessing treatment for substance use disorder. Methods. The evaluation entailed analysis of data collected between 2013 and 2018 (n=154). The approach consisted of a 52-week in-home intervention delivered by a team of a licensed professional and two lived-experience recovery advisors utilizing a variety of interventions such as motivational interviewing, social support, and linkages with external providers. Measurement included review of EHR, UDS, and breathalyzer tests. Results. Of the 154 women, 92 (60%) successfully completed the in-home SUD treatment program. A total of 122 (79%) completed at least 12 weeks, and 146 (95%) completed at least four weeks. The average length of program adherence was 259 days. Of the women who completed the program, 80 (87%) had a negative UTOX on discharge. Conclusions. Traditional models average 41% completion rates while the in-home SUD treatment program had nearly 60% completion rate which strengthens promise in this approach.
- 2. KEEPING THE ALTERNATIVE PEER GROUP HEALTHY: A QUALITATIVE INQUIRY.** Angela J. Nash, Michael Wilkerson, Angela Di Paola, Crystal Collier. Background. The Alternative Peer Group (APG) integrates peer role models and sober social functions into professional counseling to support the recovery of youth with substance use disorders. APGs cultivate caring pro-recovery communities among peer role models and affected youth. Over time in the APG, the power of social influence teaches affected youth to have fun in sobriety while imparting the skills and norms that serve to shape recovery values and behaviors. Yet, social influence can be positive or negative. Thus, APG leaders must work to maintain a positive social climate in the group to avoid development of negative group dynamics or deviancy training. Methods. A group interview with experienced APG leaders (N=13) was held at a national APG meeting. Deductive analysis was used to illuminate the characteristics of APGs that foster versus hinder recovery and detail strategies for promoting pro-recovery social climates. Results. Healthy APGs are inclusive, fun and promote authenticity and accountability. Unhealthy groups allow exclusion, deception and are unattractive. Leaders must create, model and empower the group to uphold positive social norms. Conclusion. APG leaders model and empower youth to join them in maintaining a strong pro-recovery social climate. Leaders' comments inform recommendations for potential best practices.
- 3. THE INFLUENCE OF SAME-DAY OBLIGATIONS ON CANNABIS USE IN COLLEGE STUDENTS.** Balea J. Schumacher, Daniel R. Moolchand, Ali M. Yurasek. Background: Research indicates that college students are at increased risk to use cannabis compared to their non-attending peers. While behavioral economic theory posits that engagement in value-driven activities can reduce risky substance use, this has yet to be examined with cannabis using college students. Therefore, the purpose of this study was to examine the influence of varying same-day obligations on cannabis use in undergraduate students. Method: Participants were 263, college students from a large university, who reported past month cannabis use (M = 10.44 days; 62.8% female). Students completed a

measure asking how many hits of cannabis they would take the morning before eight different college focused obligations (e.g., class at 10:00am; internship at 9:00am). Results: Our findings indicated that compared to no responsibilities, having any same-day obligation resulted in lower reported cannabis use with internship at 9:00am resulting in the lowest reported number of hits and class at 12:00pm demonstrating the highest amount of reported hits. Conclusion: These findings suggest that cannabis use is sensitive to same-day obligations and increasing morning responsibilities may be one way to reduce risky use on college campuses.

- 4. PSYCHOMETRIC PROPERTIES OF THE ANXIETY SENSITIVITY INDEX-3 IN ADULTS WITH SUBSTANCE USE DISORDERS. Blake Hilton, Miryam Yusuf, Nadine R. Taghian, Catherine D. Trinh, Roger D. Weiss, Margaret L. Griffin, and R. Kathryn McHugh.** Background: Anxiety sensitivity, or the fear of anxiety-related sensations, has demonstrated relevance to a broad range of psychiatric conditions, including substance use disorders (SUDs). Anxiety sensitivity is typically measured using the Anxiety Sensitivity Index-3 (ASI-3). Despite its widespread use in studies of SUDs, little is known about the psychometric properties of the ASI-3 within this population. Methods: Patients on an inpatient detoxification unit seeking treatment for SUDs (N =1351) were administered a battery of self-report measures, including the ASI-3, from September 2013 to July 2018. Psychometric properties of the ASI-3 were examined. Results: A principal components analysis with a randomly chosen subsample supported a 3-factor structure corresponding to the ASI-3 subscales. Confirmatory factor analysis validated this 3-dimensional structure in a separate subsample. Internal consistency reliability was excellent for the overall scale and good for each of the three subscales. The ASI-3 also demonstrated good concurrent and discriminant validity. Conclusions: Despite its widespread use within the SUD field, the ASI-3 had not been previously validated in people with SUDs. This study provides initial support for the psychometric properties of the ASI-3 among individuals seeking treatment for SUDs. The ASI-3 appears to be a valid measure of anxiety sensitivity in this population.
- 5. PRESCRIPTION DRUG MISUSE AND SEXUAL IDENTITY: SIGNIFICANCE OF EDUCATION AND PSYCHOLOGICAL DISTRESS. Dalton Klare, Ty Schepis, Sean McCabe, Jason Ford.** This research examined the effects of sexual orientation, education, and their interaction on rates of prescription drug misuse and other substance use in U.S. young adults, 18-25 years of age. Data were drawn from the 2015-2017 National Survey on Drug Use and Health (N=38,298). Regressions evaluated the relationship between substance use prevalence and sexual orientation, education status (college student/graduate versus not in college), their interaction and past-year psychological distress. Sexual minority young adults had higher rates of prescription drug misuse, other substance use and SUD than heterosexual young adults. After accounting for education status, bisexual males rarely differed from heterosexual males; after including psychological distress, gay males rarely differed from heterosexual males. Sexual minority women had higher rates of prescription opioid misuse, marijuana use, and daily smoking than heterosexual females, after adjusting for educational status, psychological distress and sociodemographics. Higher education was generally associated with lower rates of substance use, except for prescription stimulant misuse and binge alcohol use. Further research on the sex differences found in the link between psychological distress and sexual minority opioid misuse, marijuana use, and nicotine use is warranted.
- 6. RECIPROCAL INFLUENCES AMONG AFFECTIVE LABILITY, NEGATIVE URGENCY, AND PROBLEM DRINKING IN COLLEGE STUDENTS. Emily Atkinson, Sarah J. Peterson, Gregory T. Smith.** Affect-based risk factors such as affective lability (the experience of rapidly changing emotions), negative urgency (the tendency to act rashly when distressed), and negative affect have been shown to predict problem drinking (Settles et al., 2010, Simons et al., 2010, 2014). We studied transactional

processes among these three factors and problem drinking in a sample of 358 undergraduates at 3 waves across the first year of college. In a well-fitting structural equation model (CFI = 0.99, RMSEA = 0.05) we found that negative urgency at Wave 1 predicted subsequent increases in affective lability at Wave 2 and vice versa. Additionally, affective lability at Wave 2 predicted subsequent increases in negative urgency and problem drinking at Wave 3. This is the first study to demonstrate the reciprocal predictive influence of negative urgency and affective lability. It is noteworthy that affect-based risk factors predict increases in each other over time, thus presumably heightening risk. It is particularly striking that affective lability at Wave 2 predicted problem drinking at Wave 3 above negative urgency, which has been shown as a strong predictor of problem drinking across a wide range of ages. This research was supported by the Lipman Foundation.

- 7. DISRUPTIVE GAMBLING BEHAVIORS AND OTHERS IMPULSIVE CONDUCTS IN PARKINSON'S DISEASE: A REVIEW. Gabriel C. Quintero Garzola.** Disruptive gambling behaviors and diverse other impulse control disorders (e.g., hypersexuality) have been linked to Parkinson's disease (PD) dopaminergic medication. This work aims to review clinical publications about gambling disorders (GD), gambling problems (GP) and other impulsive behaviors showed by PD patients. A search in the PubMed database was set (November 2013 - November 2018). The search terms included: "PD and compulsive behaviors", "PD and compulsivity", "PD and behavioral addiction" and "PD and addiction". Initially, 257 references were obtained. After the application of the inclusion criteria, and the elimination of duplicates, 39 articles were selected. Moreover, 22 publications were added to the Introduction section, making a total of 61 publications. Some conclusions are: (1) PD patients with GD have higher prevalence of anhedonia and impulsivity compared to PD with other compulsions, (2) The prevalence of GD is significantly higher in PD patients compared to the general population, (3) PD with probable REM behavior disorder (p-RBD) have more than 4 times risk of GD symptoms compared to PD patients without p-RBD, and (4) Some genetic mutations related to GD susceptibility in PD are: dopamine receptor type 3, serotonin transporter-linked polymorphic region, NMDA receptor subunit epsilon 2.
- 8. POSTTRAUMATIC STRESS SYMPTOMS AND HAZARDOUS DRINKING: THE MEDIATING ROLE OF DRINKING MOTIVES AND PROTECTIVE BEHAVIORAL STRATEGIES. Hallie R. Jordan, Michael B. Madson, Eric R. Dahlen, Bonnie C. Nicholson, Richard S. Mohn.** The present study evaluated the sequentially mediating role of drinking motives (i.e. social, enhancement, coping, conformity) and alcohol protective behavioral strategy (PBS) subtypes (i.e. serious harm reduction [SHR], stopping/limiting drinking [SLD], manner of drinking [MOD]) on the relationship between posttraumatic stress symptoms and hazardous drinking in college students. Participants were 492 (50.8% men) traditional age (i.e. 18 to 25 years old) college students reporting past 30 day alcohol consumption and the experience of at least one potentially traumatic event over their lifetime. Participants reported their gender and completed measures of posttraumatic stress symptoms, drinking motives, PBS use, and hazardous drinking through an online survey. Posttraumatic stress symptoms were positively associated with hazardous drinking and this relationship was partially mediated by coping (Beta = .10, 95% CI [.05, .16]) and enhancement (Beta = .04, 95% CI [.01, .07]) drinking motives independently, as well as sequentially by social drinking motives and PBS-SHR, enhancement drinking motives and PBS-SHR, and social drinking motives and PBS-SLD. These findings highlight the impact of types of drinking motive and PBS use on the relationship between posttraumatic stress symptoms and hazardous drinking. Thus, results have treatment implications for clinicians working with this specific population of college students.

- 9. THE CAMP STUDY: EXPLORING CANNABIS & ALCOHOL USE AMONG AN ACUTE CLINICAL SAMPLE OF YOUTH.** Jillian Halladay, Michael Amlung, James MacKillop, Catharine Munn, Kathy Georgiades. Cannabis and alcohol are the most commonly used substances, with prevalence highest among youth and those with mental health concerns. Emerging but limited evidence suggests youth with mental health concerns who concurrently use cannabis and/or alcohol may experience more severe and complex symptoms. This study will evaluate the feasibility of conducting an observational study on a youth inpatient mental health unit that examines associations between substance use and severity of their clinical presentation. 100 youth ≥ 12 years old admitted to McMaster Children's Hospital for mental health concerns will be recruited. The study includes in-hospital surveys, 6-month follow-up surveys, and chart reviews collectively capturing demographics, substance use, psychiatric symptoms, and service use. This poster will present baseline descriptive information regarding feasibility and sample characteristics alongside adjusted regression analyses predicting associations between cannabis and alcohol use and (1) psychiatric symptom severity, (2) clinical complexity, and (3) prior service use. To date, 50% of recruitment has been completed with an 80% response rate. In the past month before admission, 52% reported using cannabis (18% $> 1/\text{day}$) and 60% alcohol (36% heavy drinking). This study will provide preliminary insight into the feasibility of conducting an observational study alongside prevalence and correlates of substance use among an acute clinical sample of youth.
- 10. CALIFORNIA'S AGE 21 TOBACCO PURCHASE LAW AND ADOLESCENTS' TOBACCO USE: DIFFERENTIAL EFFECTS BY RACE.** Joel W. Grube, Sharon Lipperman-Kreda, Grisel Garcia-Ramirez, Mallie J. Paschall, Melissa Abadi. In June 2016 California raised the minimum tobacco purchase age to 21 years (T21). We examined whether T21 was associated with decreased cigarette smoking and smokeless tobacco use among adolescents and whether these associations differed for racial minorities. We analyzed data from 2,078,575 6th-12th graders who participated in the California Healthy Kids Survey between 2007 and 2018. Multilevel logistic regressions showed that T21 was associated with overall reductions in lifetime (OR=0.75, $p<0.001$) and past month (OR=0.74, $p<0.001$) cigarette smoking and lifetime (OR=0.73, $p<0.001$) and past month (OR=0.67, $p<0.001$) smokeless tobacco use. Moderation analyses, however, indicated that T21 was associated with relatively higher lifetime (OR=1.06, $p<0.05$) and past month (OR=1.27, $p<0.001$) cigarette smoking and lifetime (OR = 1.15, $p<0.01$) and past month (OR=1.22, $p<0.01$) smokeless use among African Americans. Similar effects were observed among Native Hawaiian/Pacific Islanders for past month (OR=1.21, $p<0.001$) and lifetime (OR=1.11, $p<0.05$) cigarette smoking and past month (OR=1.24, $p<0.001$) smokeless tobacco use. In contrast, AIAN adolescents appeared to be more responsive to T21 for lifetime smoking (OR=0.90, $p<0.001$) and lifetime (OR=0.92, $p<0.001$) and past month smokeless use (OR=0.91, $p<0.001$). Results indicate that California's T21 contributed to overall reductions in adolescents' tobacco use but may differentially impact minorities.
- 11. ADDICTION TO E-CIGARETTES.** John Hughes, Catherine Peasley-Miklus. We conducted a meta-analysis of studies in which participants rated their current addiction to e-cigarettes vs their past addiction to tobacco cigarettes. Across 16 studies, 45 of the 46 ratings of addiction were less with e-cigarettes, averaging 20% less. Our next two studies had daily e-cigarette users who were former-smokers ($n=60$) or never-smokers ($n=30$) use their own e-cigarette for one week and then stop using it in the next week. Even though monetary incentives were used only 50% of former smokers and 40% of never-smokers were able to abstain. In both studies, all the DSM-5 tobacco withdrawal symptoms increased during abstinence. Symptoms showed the prototypical inverted U time pattern of a withdrawal state. The magnitude of withdrawal was smallest in never-smokers, greater in former smokers and both were less than that in a prior study of abstinent daily tobacco cigarette

smokers. These results suggest former smokers transfer physical dependence on tobacco cigarettes to dependence on e-cigarettes, and never-smokers can develop physical dependence de novo with use of e-cigarettes. Whether the magnitude of withdrawal is clinically significant is unclear. Our results suggest potential and current e-cigarette users should be informed that abrupt cessation of e-cigarettes can cause withdrawal symptoms.

12. FAMILY HISTORY OF ILLICIT DRUG USE MODERATES THE RELATIONS BETWEEN PTSD AND

CANNABIS USE DISORDER. Abbigayle Willgruber, Alison Blevins, Jenni B. Teeters. "Background: Previous research has linked both Posttraumatic Stress Disorder (PTSD) symptoms and family history of substance use disorders to the development of Cannabis Use Disorder (CUD). However, no research has investigated whether family history of substance use moderates the relations between PTSD symptoms and CUD symptoms. The present study aims to examine whether family history of illicit substance use moderates the relations between PTSD and CUD symptoms among young adults. Method: Young adults (n = 830; 77.5% female; 78.2% Caucasian) recruited through the university's subject pool completed measures assessing PTSD symptoms, substance use disorder symptoms, and family history of substance use. Results: A moderation analysis was conducted to examine whether family history of illicit substance use moderates the relationship between PTSD symptoms and cannabis use disorder symptoms. Family history of illicit drug use significantly moderated the relations between PTSD symptoms and CUD symptoms ($b = .09$, $p = .01$). Discussion: The results of the present study suggest that having a parent who used illicit substances strengthens the connection between PTSD symptoms and CUD symptoms. Including information on the connection between PTSD, CUD, and family history of illicit drug use may be helpful in education and prevention services for young adults.

13. LONGITUDINAL HAIR CORTISOL PROFILES: FROM ACTIVE DRINKING TO EARLY RECOVERY. Julianne

Price, Sara Jo Nixon. Longitudinal collection of cortisol has proven difficult because previously established methods assess only momentary levels. Through a relatively new technique, sampling hair cortisol concentrations (HCC), longitudinal retrospective analyses are feasible. Enabled by a SoAP student research grant, this is the first study to examine these cortisol trajectories in alcohol use disorder (AUD). We examined HCC levels from three consecutive segments of hair in treatment seekers with AUD; the segment proximal to the scalp represents the most recent month (sustained abstinence from alcohol), the midsegment represents the previous month in which abstinence was attained, and the distal segment represents 2 months prior during active drinking. Analyses examined main and interactive effects of segment and sex, controlling for monthly alcohol consumption. Women had higher HCC than men ($p=.03$). A main effect of segment was present ($p=.007$) with higher HCC in the midsegment relative to the final segment ($b=2.97$, $p=.02$), but neither differing from the first. Consistent with previous cross-sectional reports, these data confirm nonlinear patterns of cortisol accumulation with an increase upon drinking cessation and a decrease during early abstinence. HCC trajectory analysis may serve as a valuable resource in identifying profiles associated with increased risk and post-treatment outcomes.

14. VALIDATION OF THE ADOLESCENT E-CIGARETTE CONSEQUENCES QUESTIONNAIRE. Julie Cristello,

Matthew T. Sutherland, Elisa M. Trucco. Electronic cigarette (e-cigarette) use among youth has dramatically increased. Recent estimates indicate that 16% of 8th graders, 31% of 10th graders, and 35% of 12th graders endorse past year use. Accordingly, identifying outcome expectancies that influence the initiation or continued use of e-cigarettes is timely. While a self-report measure exists for assessing adolescent outcome expectancies for cigarette use, there has not been one available for e-cigarettes. We adapted the Adolescent Smoking Consequences Questionnaire (ASCQ) to

characterize e-cigarette outcome expectancies and tested the validity of the factor structure. Among a sample of 182 (59.9% female, 87.4% White, 84.0% Latinx) adolescents from local high schools, the confirmatory factor analysis provided support for a seven-factor structure (negative affect reduction, taste/sensorimotor manipulation, social facilitation, weight control, negative physical feelings, boredom reduction, and negative social impression) after removing two items with low factor loadings. Factor loadings ranged from 0.40 to 0.87 and model fit was good (CFI = 0.89, TLI = 0.88, RMSEA = 0.06). Convergent and discriminant validity with external constructs were also examined. This study provides support for the adapted measure, the Adolescent E-Cigarette Consequences Questionnaire (AECQ). Future work should test the AECQ among more diverse samples with varying levels of e-cigarette use.

15. A MIXED METHOD ANALYSIS OF ATTITUDES ABOUT RESEARCH PARTICIPATION BY PERSONS

REPORTING SUBSTANCE USE. Justin C. Strickland, Katherine R. Marks, William W. Stoops. Persons reporting substance use are commonly excluded from clinical research despite being disproportionately impacted by numerous health conditions. Recent work found that community-recruited individuals reported low endorsement for research participation by persons reporting illicit substance use. The purpose of this study was to determine how these attitudes compare among researchers. Respondents (N=168) invited via multiple scientific society listservs completed a survey evaluating research participation perceptions for two hypothetical vignettes (i.e., blood draw and Phase I trial on memory). Quantitative and qualitative items indexed participation attitudes for varied vulnerable populations. Endorsement of participation by individuals reporting illicit substance use was significantly lower than healthy adults in both vignettes, $p < .001$, $d_z = 0.62/1.11$. Respondents with research in addiction science (64%) reported greater endorsement, particularly for the higher risk vignette, $p = .04$, $d = 0.33$. Major themes of qualitative data included described distributive justice benefits, problems related to health risks and consent capacity, and worries about data quality due to poor study compliance. These data emphasize how attitudes in the research community may function as barriers for participation by persons reporting substance use. Future research and educational efforts are needed to differentiate relevant versus perceived concerns to ensure these populations are adequately represented in the clinical research literature.

16. A MEASURE TO ASSESS PROTECTIVE BEHAVIORAL STRATEGIES FOR PREGAMING AMONG YOUNG

ADULTS. Justin Hummer, Jordan P. Davis, Rushil Zutshi, Graham Diguseppi, Angeles Sedano, Anthony Rodriguez, John D. Clapp, Eric R. Pedersen. Pregaming involves heavy drinking in brief periods of time and has consistently been linked to consequences within the pregameing event itself, on a night after pregameing, and in the long-term. Intervention efforts that specifically target this risky behavior are needed, but these efforts need to be informed by empirical work to better understand what behaviors young people engage in that can protect them from pregameing-related harms. We designed this study to create a measure of protective behavioral strategies that young people use before, during, and after pregameing to inform future intervention work. We tested an item pool with 363 young adult college students who engaged in pregameing in the past year and conducted exploratory factor analysis to develop a 19-item Protective Behavioral Strategies for Pregaming (PBSP) scale, which featured four subscales of safety and familiarity, setting drink limits, pacing strategies, and minimizing intoxication. Each subscale negatively and significantly correlated with measures of alcohol use and consequences, though subscales differed in their associations with specific pregameing outcomes and by sex. This initial exploratory examination of the PBSP scale's psychometric properties suggests that use of protective behavioral strategies used specifically during pregameing events may protect young people from heavy drinking and harms.

- 17. LATINX COLLEGE STUDENTS: ACCULTURATIVE STRESS AND ALCOHOL USE EXAMINED BY COMBINATORIAL OPTIMIZATION.** **Kayla Osman, Brian Armenta, Jordan Stevens, Ashley L. Watts, Kenneth J. Sher.** Acculturative stress, resulting from adapting to two or more cultures, is associated with alcohol-related problems among Latinx populations. To inform culturally relevant alcohol research, we developed a reliable and valid short form of the widely used 27-item Multidimensional Acculturative Stress Inventory (MASI) that was maximally associated with alcohol-related problems among Latinx undergraduates. To do so, we used data from 3 US universities (N=693). We used complete enumeration to derive a short form, which computes all possible solutions within item sets and identifies solutions optimized on reliability, correlation with the long form, and external validity (i.e., relations with AUDIT scores). MASI subscales reflecting English Competency Pressures, Pressures to Acculturate, and Pressures Against Acculturation were all positively associated with alcohol dependence (r 's were .27, .11, and .19). English Competency Pressures and Pressures Against Acculturation were also associated with alcohol-related problems (r 's were .14 and .12). No subscales were associated with alcohol consumption (r 's ranged from .02 to .09). Our abbreviated MASI can be used as a reliable, efficient acculturative stress measure that can inform culturally relevant alcohol research and improve screening for alcohol-related problems among minority populations. These findings also elucidate culturally-specific predictors of alcohol problems among Latinx populations.
- 18. CHANGES IN YOUTH PSYCHOPATHOLOGY AND PERSONALITY TRAJECTORIES IN RELATION TO RISKY DRINKING ONSET.** **Kevin Cummins, Alejandra Infante, Susan Tapert, Kara Bagot.** The strong association between alcohol use and psychopathology among adolescents has been well established. However, developmental contingencies on the temporal associations and sensitive periods are less understood. We aim to identify temporal and developmental variation in mental health vulnerabilities for, and consequences of, drinking among youth. Data from National Consortium on Alcohol and NeuroDevelopment in Adolescence were included in the study (N=769). Participants were repeatedly assessed for the timing of their first transition into high-risk drinking patterns over 5 years. Survival analysis was employed to evaluate the association of time-varying predictors with the first transition. Mixed-effects models were used to evaluate changes in psychological constructs immediately before and subsequent to the transition. Sensation-seeking, rule-breaking, extroversion, externalizing, and openness predicted an increased probability of transition, with sensation-seeking conferring up to 43% greater risk. Transitioners demonstrated increasing rule-breaking and externalizing scores before and following the transition. Externalizing behaviors confer the greatest risk during early adolescence. Also, externalizing behaviors escalate before and following the transition. These results indicate some risk factors are strongest for young adolescents and that their escalation precedes and follows transitioning. These conclusions support the clinical monitoring of changes in risk factors and substance use, especially during early adolescence.
- 19. THE ROLE OF PROTECTIVE BEHAVIORAL STRATEGIES IN THE RELATIONSHIP BETWEEN PERSONALITY AND NEGATIVE MARIJUANA OUTCOMES.** **Luke Herchenroeder, Adrian J. Bravo, Cross-Cultural Addictions Study Team.** Objective: The present study examined whether the Big Five personality traits (openness, conscientiousness, extraversion, agreeableness, and emotional stability) relate to marijuana outcomes (use frequency and negative consequences) via use of protective behavioral strategies (PBS) in a large sample of college student marijuana users. Method: Participants were 1175 college students who used marijuana in the last 30 days. The majority of students identified as being female (63.3%) and reported a mean age of 20.96 (Median=20; SD=3.95) years. Participants completed questionnaires assessing frequency of marijuana use,

negative consequences of marijuana use, PBS use, and personality traits. Results: PBS use mediated the associations between personality traits and marijuana consequences, such that higher conscientiousness, extraversion, and agreeableness were associated with more PBS use; which in turn was associated with lower frequency of marijuana use, which in turn was associated with less marijuana consequences. Conversely, higher emotional stability was associated with lower PBS use; which in turn was associated with higher frequency of marijuana use, which in turn was associated with more marijuana consequences. Conclusions: Our findings suggest that examining the usage of PBS is crucial to understanding the relationship between personality traits and marijuana use outcomes.

20. POTENTIAL IMPACT OF LEGALIZATION OF RECREATIONAL MARIJUANA AMONG CURRENT USERS:

QUALITATIVE INQUIRY. Madeline Benz, Elizabeth R. Aston, Alana Mercurio, Jane Metrik. Eleven states and the District of Columbia currently permit use of marijuana for recreational purposes. Given recent legislative initiatives in Rhode Island pertaining to marijuana legalization, a qualitative inquiry was conducted into anticipated changes in marijuana use. Five focus groups were conducted with recreational marijuana users (N = 31; 6-7 participants/group; Mean age = 26; 28% female; Mean days/week marijuana use = 5). Sessions followed a semi-structured agenda and lasted approximately 60 minutes. Participants were asked, "If recreational marijuana is legalized [in RI], how will your marijuana use behavior change?" Prominent themes were identified using thematic analysis. Participants indicated they anticipate (1) no change to their marijuana use following legalization due to anticipated increased retail price of product or (2) minimal changes to location and frequency of use, as well as mode of consumption due to increased availability. Many participants conveyed the notion that policy change is unnecessary as marijuana is already decriminalized and easily available in RI. Findings suggest continued demand for the illegal marijuana market (e.g., obtaining from a dealer) may promote use of unregulated products that lack quality or content assurance. Additional discussion points include national vs. state level implications of legalization and future directions for research.

21. CAN PURE MI BE MANUALIZED AND STILL EFFICACIOUS? A TEST OF FEASIBILITY AND INITIAL

EFFICACY. Margo Hurlocker, Theresa Moyers. The empirical evolution of motivational interviewing (MI) demonstrates the importance of the therapeutic process yet difficulty in manualizing such procedures. Whereas treatment manuals exist for adaptations of MI, no manual has been developed and tested for MI in its pure form (pure MI). This study developed and evaluated a pure MI intervention manual - MI for risky social drinking (MI-RSD) - designed to target risky social drinking behaviors in young adult drinkers with social anxiety. This pilot trial with 27 undergraduates evaluated changes in hazardous drinking and social anxiety from baseline to one-month follow-up. We developed a manual for the two-session MI-RSD intervention, trained four clinical doctoral students, and used observational raters and participant-completed measures to evaluate fidelity. Participants completed measures of alcohol use and mental health symptoms at baseline and follow-up. Therapists demonstrated MI fidelity via objective ratings and participant reports. Participants reported significant reductions in hazardous drinking patterns, hazardous drinking in convivial situations and evaluation fears, but not in social interaction anxiety. We offer preliminary evidence that pure MI can be manualized and efficacious. Pure MI was helpful in reducing hazardous drinking and cognitive symptoms of social anxiety in college students. Implications and limitations will be further discussed.

22. LONGITUDINAL MULTILEVEL MODELING OF ADOLESCENT ALCOHOL USE BY PARENTS' & PEERS' USE & INDIVIDUATION. Martin Gallegos, James Bray. Individuation reflects the transitions of

developing emotional distance and independence and maintaining family bonds and is an important domain (via intergenerational individuation and separation) in adolescent psychosocial development. Greater alcohol use by parents and peers is associated with greater adolescent alcohol use, yet less is understood about how these associations are moderated by adolescents' individuation in predicting their alcohol use over the high school years. This study involved data (N = 3957) from a larger longitudinal study in which adolescents completed questionnaires each semester for seven semesters, beginning in spring of their freshman year of high school until spring of their senior year. Longitudinal multilevel modeling with interaction effects demonstrates that greater adolescent alcohol use was predicted by greater alcohol use by peers, mothers, and fathers, by more separation from parents, and by less intergenerational individuation. Adolescents drank more when reporting more separation from parents and their mothers drank more. Adolescents also drank more when reporting less intergenerational individuation and more peer alcohol use. Males also drank more than females, especially when their fathers drank more. These results highlight the importance of how adolescents' individuation moderates the impact of their parents' and peers' alcohol use on their own use.

23. KHAT AND ALCOHOL USE DISORDERS PREDICT POORER ADHERENCE TO ANTI-TUBERCULOSIS MEDICATIONS. Matiwsos, Markos Tesfaye, Kristina Adorjan, Wolfgang Krahl, Elias Tesfaye, Yimenu Yitayih, Ralf Strobl, Eva Grill. Introduction: Substance use is frequently seen among patients with poor adherence, however, little is known about the effect of substance use on adherence to anti-TB medications in Ethiopia. Methods: A prospective cohort study was conducted among 268 patients with tuberculosis attending services at 26 health institutions in Southwest Ethiopia. Structured questionnaires were used to assess substance use disorders, adherence and other potential risk factors for non-adherence. Patients were followed for six months and data were collected on three occasions. A generalized linear mixed model was used to identify the effect of substance use disorder on adherence to anti-TB medications. The model fitting was checked using the Bayesian Information Criterion (BIC). Results: The overall prevalence of non-adherence among patients with substance use disorders was 16.4% (n=22), 41.7 % (n=48), and 45.7% (n=59) at baseline, two months and six months respectively. The odds of non-adherence to anti-TB medications among patients with khat use disorder was nearly four times that of patients who did not use khat (aOR 3.8, 95%CI=1.8-8.0). Also, patients who have alcohol use disorder were 3.2 times likely to have poor adherence compared to their counterparts (aOR=3.2, 95%CI=1.6-6.6). Conclusion: Khat and alcohol use disorders predict a greater likelihood of non-adherence to anti-TB medication.

24. DIFFICULTIES REGULATING POSITIVE EMOTIONS AND SUBSTANCE USE: THE INFLUENCE OF SOCIODEMOGRAPHIC FACTORS. Melissa Schick, Nicole H. Weiss, Ateka C. Contractor, Emmanuel D. Thomas, Nichea S. Spillane. Alcohol and drug misuse present significant public health concerns due to their high prevalence and deleterious outcomes. A growing body of research provides support for the role of difficulties regulating positive emotions in alcohol and drug misuse. However, research is needed to better understand for whom difficulties regulating positive emotions are most strongly associated with alcohol and drug misuse to inform assessment and treatment efforts. The goal of the present study was to examine potential sociodemographic moderators (i.e., age, gender, ethnicity, race, income, and education) in the relations between difficulties regulating positive emotions and substance misuse. Participants were 373 trauma-exposed adults (57.1% female, 75.8% White). Significant differences were identified across sociodemographic groups regarding difficulties regulating positive emotions (i.e., gender, ethnicity, race, and income) and alcohol use (i.e., gender). Moderation analyses revealed a significant interaction between difficulties regulating positive emotions and gender on drug misuse ($b = 0.08$, $p < .001$), such that the association was

significant for females ($b = 0.11$, $p < .001$) but not males ($b = .03$, $p = .05$). Results suggest the importance of developing gender-sensitive recommendations for the assessment and treatment of substance misuse, and of incorporating techniques focused on addressing difficulties regulating positive emotions.

25. ANXIETY SYMPTOMS AND MARIJUANA OUTCOMES: THE MODERATING ROLE OF PROTECTIVE BEHAVIORAL STRATEGIES FOR MARIJUANA. Nicholas Militello, Hallie Jordan, Michael Madson.

The current study examined the moderating role of protective behavioral strategies for marijuana (PBSM) on the relationships anxiety symptoms have with hazardous marijuana use and marijuana-related negative consequences (MRNC). Participants were a national sample of 477 (56.4% men) traditional aged college students (i.e. 18 to 25 years old) reporting past marijuana use. Participants completed an online survey which included measures of demographics, anxiety symptoms, PBSM use, hazardous marijuana use, and MRNC. The positive relationship between anxiety symptoms and hazardous marijuana use was moderated by PBSM use, such that the relationship was significantly stronger at higher levels of PBSM use: high level (1 SD above mean), $\beta = .72$; average level, $\beta = .53$; low level (1 SD below mean), $\beta = .34$. The positive association between anxiety symptoms and MRNC was moderated by PBSM use, such that the association was strongest at higher levels of PBSM use: high level (1 SD above mean), $\beta = .55$; average level, $\beta = .44$; low level (1 SD below mean), $\beta = .33$. These results suggest PBSM may not be as protective for individuals with certain mental health concerns such as anxiety. Future research should further explore the protective value of harm-reductive strategies for individuals with co-occurring mental health symptoms and marijuana use.

26. GENDER DIFFERENCES IN PREDICTING RETURN TO OPIOID USE FOLLOWING TREATMENT

DISCHARGE. Nina C. Christie, Jordan P. Davis, David Eddie, John Prindle, Shaddy Saba, Emily R. Dworkin, Graham Diguseppi, John Clapp, John F. Kelly.

The use of heroin and prescription opiates is a major health concern in the United States with over 40,000 deaths in 2016 alone and \$80 billion in damages. There are gender differences in the rates of opioid use, with more males using heroin than females. Relapse rates following treatment are similar for men and women, but no study to date has assessed gender differences in the predictors of relapse following treatment from opioid use. The current study employed machine learning (ML) to assess gender differences among predictors to relapse among a large nationally representative sample ($N=1,126$). Random forest modeling revealed that males and females have a unique constellation of predictors of hazard to relapse following treatment; the top predictors for males are age, poly-substance use diagnosis, conduct disorder, substance use problems, and criminal justice involvement while the top predictors for females are criminal justice involvement, substance use problems, unemployment, age, withdrawal symptoms, and conduct disorder. With minimal overlap in the order and content of these predictors, these findings emphasize the necessity for clinicians to utilize more gender-specific treatments and for researchers to integrate gender differences into research and theory.

27. A DAILY PROCESS EXAMINATION OF SEXUAL MINORITY STRESS AND ALCOHOL USE AMONG SEXUAL MINORITY WOMEN. Robin Lewis, Sarah J. Ehlike, Cathy Lau-Barraco, Kristin E. Heron.

Stress and alcohol use are associated in general populations. Little is known, however, about how unique stressors associated with a sexual minority identity (i.e., sexual minority stress [SMS]) are related to drinking behaviors, particularly using ecological momentary assessment methods. The present study aimed to examine: (1) same-day associations between SMS experiences and drinking behaviors; (2) SMS experiences and next-day drinking behaviors. Young same-sex female couples ($N=321$ individuals) completed a 14-day daily diary study. Each morning participants completed a survey about the previous day's SMS experiences (yes/no) and drinking behaviors (consumption

[yes/no], quantity, binge drinking [yes/no], alcohol-related consequences [yes/no]). Regarding aim 1, multilevel models indicated women who experienced SMS were more likely to report same day alcohol use ($B=0.35$, $p=.008$) and alcohol consequences ($B=0.36$, $p=.046$), relative to those who did not experience SMS. Aim 2 results indicated that those who experienced SMS on a given day reported on the following day they drank more ($B=0.37$, $p=.015$), were more likely to binge drink ($B=0.66$, $p=.002$), and were more likely to experience alcohol-related consequences ($B=0.61$, $p=.007$). Results suggest that SMS experiences are linked to risky drinking behaviors among sexual minority women. These findings have important implications for understanding and addressing alcohol use disparities.

28. "I STILL DON'T KNOW WHAT HAPPENED, COMPLETE BLACKOUT": A CONTENT ANALYSIS OF TWEETS REFERENCING ALCOHOL-INDUCED MEMORY LOSS. Rose Marie Ward, Benjamin C. Riordan, Jennifer E. Merrill.

Twitter provides a real-time venue for monitoring alcohol consumption and negative alcohol-related consequences. Twitter represents a relatively unfiltered glimpse at reflections on blacking out. Blackouts, defined by researchers and clinicians as events involving alcohol-induced memory loss, are commonly endorsed among social drinkers. However, drinkers use the term blackout differently than researchers. It is possible that most 'blackouts' posts on Twitter are not referring to alcohol-induced amnesia. We examined the content of blackouts posts on Twitter, focusing on reflections post-drinking that involved clear references to memory loss. As hypothesized, most tweets referencing blackouts did not clearly describe memory loss. In the Tweets that reference memory loss, we identified several themes. Tweeters referenced an 'AlterEgo' whom was responsible for all the intoxicated behaviors that were inconsistent with the Tweeter's personality. The Tweets discussed ways in which the drinker recovered memories, other events that occurred during the memory loss, and regret about having lost memories. Some Tweeters requested assistance reconstructing their drinking event. Since most blackout Tweets are ambiguous with regards to alcohol-induced memory loss, these Tweets might lead people to believe that blackouts are passing out or just periods of heavy intoxication. In addition, themes from these Tweets can inform future interventions.

29. TOBACCO PRODUCT PURCHASING BEHAVIOR AMONG YOUNG ADULTS PRE- AND POST- TOBACCO 21 LAW IMPLEMENTATION. Sara Schiff, Fei Liu, Tess Boley Cruz, Jennifer B. Unger, Samantha N. Cwalina, Adam Leventhal, Rob McConnell, Jessica L. Barrington-Trimis.

Background: Tobacco 21 (T21) laws, which raise the minimum legal age of sale of tobacco products to 21, have been proposed and implemented in states and cities across the US. However, limited data are available on how T21 affects youth tobacco purchasing behaviors and access to tobacco products. Methods: Participants in a southern California population-based prospective cohort completed questionnaires before ($N=1609$, Age=18-19) and after ($N=1502$, Age=19-20) T21 implementation (June 2016). We examined purchase location of tobacco products Pre- vs. Post-T21 among past 30-day users. We also examined whether, Post-T21, participants were refused purchase of tobacco products due to their age, and the perceived ease of purchasing cigarettes and e-cigarettes (vs. Pre-T21). Results: At both time points, most past 30-day users purchased cigarettes from gas stations and e-cigarettes from vape shops. Post-T21, most past 30-day cigarette or e-cigarette users were not refused purchase of cigarettes (65.4%) or e-cigarettes (82.0%) in the past 30 days, despite being underage; half of participants felt it was harder to purchase cigarettes (54.3%) and e-cigarettes (43.6%) Post-T21. Conclusion: Post-T21, few participants were refused purchase of tobacco products, despite the illegality of such sales. Better enforcement of T21 is needed to improve the efficacy of T21 legislation.

- 30. ADDITIVE AND JOINT EFFECTS OF URGENCY AND AFFECTIVE LABILITY ON PROBLEM DRINKING BEHAVIOR.** Sarah J. Peterson, Emily Atkinson, Gregory Smith. Affect has been implicated in the risk process for addictive behaviors, broadly, and for problematic alcohol use, specifically (Atkinson et al., in press). Both affective lability and urgency have been found to predict problem drinking (Simons et al., 2009; Smith & Cyders, 2016). Less work has examined how these processes might jointly confer risk. It is possible that the tendency to act rashly when distressed (negative urgency) or when in a highly positive mood (positive urgency) operates more strongly in those experiencing frequent, intense mood changes. In the current study, we tested whether such a joint effect predicts problem alcohol use in college students. We assessed affective lability, negative urgency, positive urgency, and problem drinking in 358 first year college students and conducted two multiple linear regressions, one examining the joint effect of negative urgency and affective lability, and the second examining positive urgency and affective lability. Significant main effects were found for affective lability and both urgency variants, as well as significant joint effects. In both interactions, the influence of urgency on problem drinking was stronger at higher levels of affective lability. Emotion-based risk factors may transact to further elevate risk. This research was supported by the Lipman Foundation.
- 31. EFFICACY OF BEHAVIORAL TREATMENTS FOR OPIOID USE DISORDER VARIES BY AGE AND GENDER IN YOUTH.** Shaddy Saba, Jordan Davis, John Prindle, David Eddie, Eric R Pedersen, Tara M. Dumas, Nina C. Christie. Background. While behavioral interventions are efficacious in opioid use disorder treatment, little is known regarding which interventions work best for youth, and if outcomes vary by age or sex. We explored latency to opioid use among adolescents and young adults following treatment initiation with: 1) Adolescent Community Reinforcement Approach (A-CRA), 2) Motivational Enhancement Therapy (MET) combined with Cognitive Behavioral Therapy (CBT) or CBT alone (MET/CBT or CBT alone), or 3) treatment as usual (TAU; 12-step facilitation, supportive therapy). Methodology. Adolescents and young adults (N = 785) entering treatment were followed for one year. Survival analysis was used to assess latency to opioid use, and moderation by demographic variables. Results. MET/CBT or CBT alone, and TAU fared better than A-CRA. Adolescent males receiving TAU or A-CRA had poorer outcomes than those receiving MET/CBT or CBT alone, while no differences were found for female adolescents. Female young adults receiving TAU had improved outcomes compared to those receiving A-CRA, and MET/CBT or CBT alone, and male young adults receiving A-CRA had poorer outcomes than those receiving TAU, and MET/CBT or CBT alone. Conclusions. Different treatments may be more efficacious for youth based on developmental age and sex. Clinicians should consider these differences.
- 32. PTSD SYMPTOMS AND ALCOHOL-RELATED OUTCOMES IN COLLEGE STUDENTS: THE MEDIATING ROLE OF POSITIVE AND NEGATIVE COPING STYLES.** Tatum Freeman. This study evaluated the mediating role of coping styles (problem-solving and avoidance coping) on the relationship between posttraumatic stress disorder (PTSD) symptoms and alcohol outcomes (i.e. hazardous drinking and alcohol-related negative consequences [ARNC]). A national sample of 672 traditional age (i.e. 18-25 years old; M = 22.35, SD = 1.97) college students who reported alcohol consumption in the past month were recruited via Amazon's Mechanical Turk website. Participants were 55.1% male and 60.9% White, and they completed measures of PTSD symptoms, coping styles, hazardous drinking, and ARNC. Problem-solving coping (an adaptive form of coping) mediated the positive relationship between PTSD symptoms and hazardous drinking such that PTSD symptoms were negatively associated with problem-solving coping, which was negatively associated with hazardous drinking. Avoidance coping mediated the positive relationship between PTSD symptoms and ARNC through a positive association between PTSD symptoms and avoidance coping. These novel mediations

highlight the importance of adaptive coping styles as a protective factor for college students experiencing co-occurring PTSD symptoms and alcohol use.

33. PAIN INTERFERENCE AND POLYSUBSTANCE USE AMONG ADULTS WITH SUBSTANCE USE

DISORDERS AND CHRONIC PAIN. Victoria R. Votaw, Katie Witkiewitz, Kevin E. Vowles, Roger D. Weiss, Margaret L. Griffin, R. Kathryn McHugh.

A growing body of research has examined the association between opioid misuse and chronic pain. Yet, the impact of substance use on functioning in those with chronic pain is not restricted to opioids. It would be beneficial to examine substance use in chronic pain more broadly and to identify factors associated with polysubstance use in these individuals. Pain interference—the extent that pain affects social, emotional, physical, and recreational functioning—has been associated with substance use development and maintenance, and might also be associated with polysubstance use. We examined the cross-sectional relationship between self-reported pain interference and polysubstance use. Participants were 236 (36% female) adults receiving inpatient treatment for substance use disorders (58% alcohol use disorder, 42% opioid use disorder) that met criteria for chronic pain. Using negative binomial regression, pain interference and number of substances used in the month before treatment were not associated ($IRR=1.05$, $p=0.06$). This association was, however, moderated by gender ($IRR=1.17$, $p<0.01$) and primary substance use disorder ($IRR=0.86$, $p<0.01$). Overall, pain interference was associated with greater polysubstance use among men and those with alcohol use disorder. These subgroups might benefit from intervention efforts targeting pain interference to reduce the concurrent use of multiple substances.

34. IN-SESSION LANGUAGE TEMPORALLY-ORIENTED TOWARDS THE PAST DECREASES ALCOHOL

DEMAND. Yi-Chun Chang, Benjamin O. Ladd, James G. Murphy. Objective: The purpose of the current study was to examine how the temporal orientation of in-session client language influences alcohol demand. Method: Participants were 31 college students (74.2% female, mean age = 17.84 years) with at least two heavy alcohol drinking episodes in the past month participating in a brief alcohol intervention. Alcohol demand was assessed using the Alcohol Purchase Task (APT) before and after the intervention, yielding Omax, a measure of maximum alcohol expenditure. In-session language was coded based on whether utterances were oriented towards the past, present or future. Result: The mean of each temporal orientation (Past, Present, Future) was 3.91% ($SD=2.38\%$), 73.26% ($SD=7.02\%$), and 4.06% ($SD=2.16\%$), respectively. Linear regression showed Past language was associated with significant reductions in Omax ($\beta=-.507$, $p=.005$). However, neither Present nor Future were significantly associated with change in Omax. Similar results were found when the three temporal orientations were entered simultaneously into a regression model. Conclusion: Past temporally-oriented language during session can result in significant reductions in alcohol demand among college drinkers. An improved understanding of the relationship between in-session temporal orientation and behavioral outcomes could inform clinical practice and training, which in turn could lead to improved intervention outcomes.

Poster Session 2: THURSDAY April 2nd 5:00pm – 6:15pm

- 1. SUBSTANCE USE AND MISUSE AMONG ADULTS WITH ASTHMA AND COPD IN THE UNITED STATES. Abdullah M. Alanazi, Mohammed Alqahtani, Leslie Saywer, Wasantha Jayawardene, Mary Brunette, Peter Hendricks.** Background: Few studies reported substance use and misuse among adults with asthma and chronic obstructive pulmonary disease (COPD). This study examines if substance use and misuse are associated with asthma or COPD in a national sample of U.S. adults, accounting for potential confounders. Methodology: Data were drawn from the 2015-2017 National Survey on Drug Use and Health. Weighted logistic regressions were used to measure the associations of last month use of tobacco and other substances (Alcohol, Marijuana, Cocaine, Crack, Heroin, Hallucinogens, Inhalants) and misuse of Opioids, Tranquilizers, Stimulants, Sedatives with asthma or COPD. All regression models were controlled for sociodemographics, perceived health, and last-month psychological distress. Results: Adults with asthma (N_{weighted}=68,884,148) were less likely to use cigarettes (aOR=0.87[95%CI=0.80-0.95]) and smokeless tobacco (aOR=0.80[95%CI=0.66-0.98]), but were more likely to use alcohol (aOR=1.12[95%CI=1.04-1.20]) and marijuana (aOR=1.13[95%CI=1.02-1.26]). Contrary, adults with COPD (N_{weighted}=32,444,773) were less likely to use alcohol (aOR=0.82[95%CI=0.74-0.90]), but were more likely to use cigarettes (aOR=2.42[95%CI=2.12-2.68]), cigars (aOR=1.31[95%CI=1.07-1.62]), pipe (aOR=2.25[95%CI=1.57-3.21]), and marijuana (aOR=1.19[95%CI=1.02-1.39]). Associations for misuse were not significant. Conclusions: Substance use patterns are significantly different between asthma and COPD. Post-diagnosis substance use prevention efforts should address the factors associated with use of specific substances.
- 2. ACTIVE INGREDIENTS OF RECOVERY: INSIGHTS FROM A NATIONALLY REPRESENTATIVE SAMPLE OF PEOPLE WHO RESOLVED A SIGNIFICANT ALCOHOL OR DRUG PROBLEM. Alexandra W. Abry, Claire Kane, John F. Kelly.** Background: Passive predictors of treatment outcome and remission among individuals who resolve an alcohol or drug (AOD) problem have been extensively studied, but little is known about the factors that people in recovery themselves report as having helped them achieve long-term recovery. More knowledge could inform the field about influential variables from a patient-centered perspective. Method: A geodemographically representative sample of U.S. adults (N = 2,002) who had resolved a significant AOD problem was used to conduct systematic qualitative analyses to evaluate answers to the prompt, "List the top three things that helped you resolve your problem with alcohol/drugs." Response items were independently categorized and verified using multiple raters with discrepancies resolved through discussion. Percent agreement was high, validating the classification system. Results: Frequently endorsed categories were positive social support (17.09%), willpower/personal determination (15.02%) and religion/spirituality (11.95%). Physical (8.01%) and emotional (7.46%) consequences were commonly endorsed negative categories. Various demographic and clinical variables were associated with different explanatory categories. Conclusion: In sum, factors consistent with previously documented active ingredients of mental health recovery, including social connection, empowerment, and meaning and purpose, were reported in this study of addiction recovery. Findings suggest common recovery processes may occur across different psychiatric illnesses.
- 3. EXAMINATION OF NEGATIVE AFFECT AS A FUNCTION OF A DEVIANCE REGULATION THEORY INTERVENTION. Angelina Leary, Robert Dvorak, Armando Marin.** A recent intervention for college drinking, grounded in Deviance Regulation Theory (DRT), aims to increase alcohol Protective

Behavioral Strategies (PBS). This intervention has been shown effective, however, it is unclear if this approach affects mental health in addition to alcohol outcomes. The current study examines negative emotion across time during a DRT intervention. **METHOD:** Participants (n = 157) received positive messages about safe drinking, negative messages about unsafe drinking, or attention control as part of a DRT intervention. They completed assessments of alcohol-related outcomes and affect once a week for six weeks. **RESULTS AND CONCLUSIONS:** Across six weeks, participants showed significant declines in negative affect in the positive (depression: -0.08, $p < .001$; anxiety: -0.05, $p = .005$) and negative (depression: -0.06, $p = .005$; anxiety: -0.007, $p = .001$) conditions, but not in the control. Furthermore, regardless of group, use of serious harm reduction PBS each week was associated with lower anxiety, alcohol use was associated with lower depression but not anxiety. Alcohol problems was always related to higher negative affect. Results suggest DRT messaging has positive effects on negative mood, which may operate via changes in personal identity associated with safe drinking.

4. **DOES GOOGLE MATTER?: AN EXAMINATION OF SEARCH STRINGS USED FOR ALCOHOL USE SERVICES.** Anthony Inyang, Lindsey G. Hawkins, Derek Holyoak, Natira D. Mullet, Antover P. Tuliao. Although 20% of college-aged young adults meet the criteria for an alcohol use disorder, only 4% reported having sought help. One way to address this disparity is to understand the information acquisition and decision processes that college students utilize when searching for alcohol treatment services. From a social information processing framework, what information is sought for and acquired is foundational in understanding the underlying decision processes. Adapting the Active Information Search methodology, college student participants (N = 519) were asked to list down the search strings they would use in search engines (e.g., Google) when looking for a mental health professional for alcohol issues. Content analyses results indicated seven search string categories: 1) Alcoholics Anonymous (AA) location, 2) asking for advice, 3) location of nearby mental health services, 4) querying about different types of services, 5) looking for the "best" services, 6) asking about symptoms, and 7) questions about having a problem. Associations between the search string use and stigma towards substance users, medical insurance status, psychological distress, attitudes towards psychological services, alcohol use severity, and prior experience with mental health services were also examined. The current study provides recommendations on how to reduce the need versus utilization gap.
5. **A TEST OF COUNTERFACTUAL THINKING THEORY ON INTENTIONS TO USE PROTECTIVE BEHAVIORAL STRATEGIES.** Ardhy De Leon, Roselyn Peterson, Cianna Piercey, Angelina Leary, Daniel Pinto, Matthew Kramer, Robert Dvorak-Smith. Background: Despite numerous college drinking interventions, alcohol use among college students remains a significant problem. Counterfactual thinking is a novel approach involving internal post-mortem thinking following a negative event. The current study evaluated counterfactual thinking as a new intervention to increase intentions to use protective behavioral strategies (PBS). Methods: A sample of college students (n = 476) completed web-based surveys assessing demographics, drinking, alcohol consequences and PBS use. Those who endorsed an adverse drinking event were randomly assigned to an intervention condition (Control, Negative event only, Negative event with description, or Negative event with counterfactual). Following the intervention, participants reported intentions to engage in each PBS subtype over the next week. Results: Relative to control, the counterfactual condition resulted in greater PBS use intentions. This effect was observed across all three PBS subtypes (Cohen's d s 0.20 - 0.27). Neither the negative event only nor the negative event with description resulted in higher PBS use intentions, relative to control (ps .381-.729). Conclusions: This study provides a new theory driven avenue for alcohol use interventions utilizing counterfactual

thinking to increase PBS use intentions, which is linked to PBS use and potentially subsequent reductions in the likelihood of adverse alcohol use and consequences.

6. **HEAVY EPISODIC DRINKING AND SEXUAL VICTIMIZATION IN WHITE AND ASIAN COLLEGE WOMEN. Aria Wiseblatt, Maria Testa, Jennifer Read.** Heavy episodic drinking (HED) is a robust risk factor for sexual victimization (SV) among college students (Testa & Livingston, 2018). However, little research has considered whether HED has a similar impact on SV across different ethnic groups. White college women engage in more frequent HED than their Asian peers (Gilmore et al., 2016) and thus might be expected to experience higher rates of SV. The present study considered whether ethnicity (White vs. Asian) moderated the association between HED and SV. First-year college women at a large, public university completed online surveys in September (T1; n=612; 26% Asian) and November (T2; n=528; 28% Asian; retention rate=86.3%). Logistic regression analyses were performed in SPSS. SV at both timepoints was dichotomous (experienced SV vs. no experience). After controlling for T1 SV, ethnicity moderated the association between T1 HED and T2 SV, such that the relationship was significantly stronger for Asian ($B=1.43$, $p=.005$) than White ($B=.22$, $p=.06$) women. Despite lower rates of HED, Asian college women may be at greater risk for SV than their white peers when they do binge drink.
7. **SOCIODEMOGRAPHIC CORRELATES OF SUBSTANCE USE AND METHADONE STIGMA AMONG METHADONE MAINTENANCE TREATMENT CLIENTS. Brittany D'Ambrosio, Laramie Smith, Valerie Earnshaw, Chinazo Cunningham.** Background: Understanding who experiences greater stigma related to substance use or methadone could inform targeted interventions to improve treatment outcomes. This study examined sociodemographic correlates of substance use- and methadone stigma in a clinical sample. Methodology: Eighty-four adults enrolled in an urban methadone program ≥ 12 months completed two validated scales. The Substance Use Stigma Mechanisms Scale and the Methadone Treatment Stigma Mechanisms Scale measured experiences of anticipated, enacted, and internalized stigma. Cross-sectional bivariate and linear regression analyses examined the relationships between substance use and methadone stigma mechanisms and participants' sociodemographic characteristics. Results: On average participants were 37 years old ($SD=10.4$), male (53.6%), white (70.2%), averaging 83.8mg of methadone/day ($SD = 29.7\text{mg/day}$). Multiple linear regression observed that younger age was associated with significantly greater anticipated methadone ($B= -.032$, $p=.015$) and substance use stigma ($B= -.025$, $p=.024$) and greater internalized substance use stigma ($B= -.030$, $p=.007$). Having more education was significantly associated with greater anticipated substance use stigma ($B=.803$, $p=.001$), and people living with others who use drugs experienced significantly more methadone stigma ($B=.525$, $p=.022$). Discussion: Age, education, and living environment were associated with different stigma-related experiences. Future, prospective work should assess causality, and whether greater stigma experiences predict poorer treatment outcomes.
8. **A TRANSLATIONAL FRAMEWORK OF ALCOHOL USE DISORDER DEFINITION: A SYSTEMATIC REVIEW OF REVIEWS. Cassandra L. Boness.** Available nosologies for alcohol use disorder (AUD) take a "theory-free" approach that prioritizes reliability and clinical presentation (e.g., consequences) over etiology. As such, current diagnostic frameworks are associated with unknown, or poorly defined, construct validity where AUD is conceptualized as a discrete, categorical phenomenon. This is problematic on numerous grounds, perhaps most notably that (1) diagnosis is not grounded in basic theory and research as is desirable for a science-based approach, and (2) AUD is thought to be dimensional in nature. Consequently, there is significant room for improvement. The current systematic review of reviews integrates core addiction constructs and theories using a translational

approach. The overall goal was to explicitly identify core etiologic mechanisms implicated in AUD. After searching, a total of 142 articles were deemed eligible for review. Synthesis of these reviews resulted in a comprehensive, framework for considering relevant AUD mechanisms, including the major domains of compulsion, cognitive control, reward, negative emotionality, and negative valence. Each domain includes several sub-domains and specific processes that are useful for conceptualizing AUD based on dimensional mechanisms rather than consequences or symptoms. This serves as an important starting point for improving the construct validity of AUD and developing evidence-based diagnostic measures.

9. **RACE DIFFERENCES IN EMOTIONAL FACE PROCESSING AND INTERPERSONAL DISTRESS AMONG INDIVIDUALS WITH AUD. Christian C. Garcia, Hugh Farrow, Ben Lewis, Sara Jo Nixon.** Evidence suggests alcohol-related compromise in processing emotional-facial-expressions (EFEs), as well as, race-related interference among community samples. Historically, studies utilize Caucasian faces limiting understanding of race-related differences. Here, we report race-dependent differences in EFE processing and interpersonal distress among a clinical sample. Community-controls (CCs; n=57) and individuals with AUDs (n=52) completed an EFE task utilizing faces from the Ekman set. A sex judgment task (SJT) was employed as a covariate for comparison of non-emotional face processing. Accuracy and reaction time (RT) analysis were conducted with race, AUD-status, and their interaction as fixed-effects. Correlations were conducted to characterize relationships with interpersonal problems. AUD participants were less accurate than CCs ($t=2.62, p=.01$). However, interactions of race and AUD for accuracy [$F(1,100) = 11.43, p < .01$] and RT [$F(1,99) = 4.97, p = .03$] were detected. Overall, Black-AUD participants were less accurate ($t=3.38, p < .01$) and slower to respond ($t=2.43, p = .02$) than Caucasian-AUD participants. Interpersonal distress and EFE processing appeared consistent across race and AUD-groups (r 's = .30-.41). While these preliminary results may suggest race-related differences, limitations in extant methodologies or both, the degree to which differences may persist utilizing multiracial/race-matched stimuli sets remains unaddressed. This represents an important area of empirical and clinical research given increases in racial/ethnic minority identification in the US.
10. **CULTURALLY RELEVANT CORRELATES OF POLYSUBSTANCE USE AMONG BLACK YOUNG ADULTS. Devin Banks, Richelle Clifton, Paris Wheeler, Tamika Zapolski.** Background: Among Black Americans, young adulthood marks an important developmental period for the initiation of problematic substance use and related health disparities. Culturally relevant factors, such as discrimination and racial identity, influence substance use during this period, but it is unknown whether they influence more severe patterns of polysubstance use. The current study identifies prototypical patterns of substance use among Black young adults and examines whether cultural factors are associated with those patterns. Methodology: Latent class analysis was used to characterize prototypical substance use among a community-based sample of Black young adults ($N = 147$). Culturally relevant correlates of substance use classes (i.e., perceived discrimination and racial identity) were examined in univariate and multivariate models. Results: Five profiles of substance use emerged, including three characterized by polysubstance use. In univariate models, racial identity was differentially associated with membership in classes characterized by co-use of alcohol and marijuana. In both models, discrimination was significantly associated with membership in a class characterized by multiple polysubstance use. Conclusions: Findings suggest that cultural resiliency factors should be integrated into substance use interventions among Black youth. Helping Black young adults build coping skills for discrimination may confer resilience against polysubstance use and mitigate health disparities.

- 11. EVALUATING TREATMENT-SEEKING BEHAVIORS IN INDIVIDUALS WITH ALCOHOL USE DISORDER. Diana Ho, Alexandra Venegas, Lara A. Ray.** Alcohol use disorder (AUD) is largely prevalent; however, treatment rates remain remarkably low. As such, it is crucial to identify factors that promote treatment-seeking in order to inform treatment development. A community sample (N=108, 36.4% female) of treatment-seeking and non-treatment-seeking individuals with current moderate or severe AUD completed an interview designed to assess treatment-seeking behaviors. Those who sought treatment in the past year displayed higher Alcohol Dependence Scale (ADS) ($p=0.04$) and higher Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES) Ambivalence ($p=0.04$), Recognition ($p=0.002$) and Taking Steps ($p=0.02$) subscale scores. Additionally, 19.4% ($n=21$) of participants indicated the perceived need for, but withheld seeking treatment in the past year. They reported consuming alcohol more frequently ($p<0.001$), consuming more drinks per drinking day ($p=0.012$), and more binge drinking days ($p=0.001$). They also displayed higher ADS ($p<0.001$), Penn Alcohol Craving Scale ($p<0.001$), and SOCRATES Ambivalence ($p<0.001$), and Recognition ($p<0.001$) subscale scores and were more likely to meet diagnostic criteria for severe AUD ($p<0.001$). This work examines treatment-seeking behaviors in individuals with AUD with the goal of elucidating malleable factors that may promote treatment-seeking, indicating that these behaviors are primarily driven by heavy drinking and associated problems.
- 12. INCENTIVE SALIENCE AMONG INDIVIDUALS SEEKING ALCOHOL TREATMENT: CONFIRMATORY FACTOR ANALYSIS AND ASSOCIATION WITH DRINKING. Elena Stein, Victoria R. Votaw, Katie Witkiewitz.** The Addictions Neuroclinical Assessment (ANA) describes a framework of three functional domains that may be disrupted in alcohol use disorder (AUD): negative emotionality, executive function, and incentive salience. Prior work by Kwako and colleagues (2019) validated a 3-factor model of the ANA among alcohol using individuals who varied on treatment seeking and AUD status. The present study replicated and extended these findings by evaluating the incentive salience domain among a sample of individuals ($n=563$) entering treatment for AUD as part of a multisite prospective study. We evaluated the factor structure of the incentive salience construct at baseline. Seven items from self-report measures (i.e., Alcohol Dependence Scale, Impaired Control Scale, and Relapse Interview) assessed at baseline were included as indicators in the model and selected based on their theoretical association with the incentive salience domain. We found excellent model fit for the 1-factor model (Model $\chi^2= 19.42$, $p=0.08$; RMSEA=0.035; CFI=0.992). Incentive salience also was associated with percent days abstinent and drinks per drinking day at baseline ($ps<0.001$). This analysis contributes evidence for the ANA incentive salience domain among individuals seeking treatment for AUD. Future work should examine measurement invariance of incentive salience over time, as well as associations with treatment outcomes.
- 13. PROGRAM EVALUATION OF AN INTERNET-BASED "SOBRIETY SCHOOL". Gerard J. Connors, Dezarie Moskal, Holly Whitaker, Julia Bernstein, Stephen A. Maisto.** Internet-based services for alcohol-related concerns are becoming increasingly available. One such program, Tempest Sobriety School (TSS), focuses on creating a new set of positive health behaviors absent alcohol consumption. Participants in this eight-week program receive daily emails and weekly lecture content, are enrolled in a facilitated online program, and can join daily live video sessions for additional support. This external program evaluation of TSS, a for-profit addictions program that attracts patients nationally, was implemented to determine the impact of TSS among 362 participants. They were assessed at baseline, at the end of the program, and four months later. At baseline, they drank on approximately 50% of the days in the past month, consuming an estimated 4.2 standard drinks on a typical drinking day. The participants reported statistically significant changes over the course of the intervention in their alcohol involvement (increases in abstinent days; decreases in drinks per

drinking day, binge drinking days, and alcohol symptomatology) and in their overall life functioning (decreases in anxiety and depression; increases in ratings of overall life functioning). These changes were maintained through the follow-up period. Consistent with previous research in this area, these results are supportive of the application of internet-based sobriety-focused interventions.

14. THE ANTICIPATED CANNABIS EFFECTS SCALE (ACES): INITIAL DEVELOPMENT AND VALIDATION.

Jack T. Waddell, William R. Corbin, Madeline H. Meier, Meghan E. Morean. Prior research suggests that cannabis expectancies are related to cannabis misuse and problems. Unfortunately, existing measures of cannabis expectancies have limitations in item development, sample characteristics, and psychometrics. The extant Cannabis Expectancies Questionnaire (CEQ) addressed several of these limitations and found a two-factor structure (positive versus negative). However, recent conceptualizations of other substances (e.g., alcohol) support a valence- and arousal-based structure of expectancies. Thus, the present study sought to test a similar structure for cannabis. Cannabis expectancy items (n=266) were derived from past questionnaires, subjective response studies, and expert opinion. Preliminary studies assessed the valence and arousal of each item and the extent to which items were relevant to cannabis use. A final pool of 72 items underwent an exploratory factor analysis (N=358 college students) and subsequent confirmatory factor analysis (N=470 community participants). Results suggested a three-factor solution (general positive, high intensity negative, low intensity negative) that was invariant across gender and frequency of cannabis use. While there was differentiation of high and low intensity negative effects, positive effects did not separate by level of arousal or intensity. Future research should assess incremental validity of this new measure relative to the CEQ and other existing measures of cannabis expectancies.

15. OPTIMIZING SUBSTANCE USE DISORDER AND COMORBIDITY SCREENING IN ADDICTION

TREATMENT SETTINGS. James MacKillop, Emily E. Levitt, Sabrina Syan, Alyna Walji, Sarah Sousa, Mary Jean Costello, Andriy Samokhvalov, Randy McCabe, John F. Kelly. Purpose: Substance use disorders (SUD) are frequently comorbid with other psychiatric conditions, but comprehensive diagnostic interviewing is not feasible for universal implementation. The aim of this study is to examine the performance of widely used psychiatric screening measures in relation to diagnostic status from a clinical interview in an addiction population. Methods: Data were collected from 100 patients in an inpatient program at Homewood Health Centre. Participants were given the Diagnostic Assessment Research Tool (DART) clinical interview and self-report screening tools for SUDs, depression, anxiety, and post-traumatic stress disorder. Results: For SUDs, prevalence rates were: 68% alcohol use disorder, 35% stimulant use disorder, 21% tobacco use disorder, 19% cannabis use disorder, 12% opioid use disorder, and 4% sedative use disorder. Fifty-one percent met criteria for at least one anxiety disorder, and 28% met criteria for a depressive disorder. Additionally, 14% met criteria for PTSD. Pending final data processing of screening data, diagnostic rates will be examined in relation to screening data using receiver operating curves. Conclusions: The results indicate high rates of substance use disorders and concurrent psychiatric disorders. Subsequent analyses will be conducted to optimize cut-offs the screening assessment tools.

16. RELIGION, POLITICS, AND WHAT WE THINK IS ADDICTIVE. Jennifer Grant, Joshua Grubbs. Beliefs in what is addictive or what can be addictive (i.e., substances, behaviors, recreational activities) are highly varied among people. Using secondary data, this study aimed to understand whether religiosity and political ideology predict beliefs about what types of activities can be addictive. Using three samples (Undergraduates, N=373; a nationally representative sample of adults in the U.S., N=2075; and a sample matched to U.S. demographic norms, N=1024), we examined beliefs about

what activities and behaviors could be addictive. To do this, we conducted correlations between key variables and regression analyses predicting beliefs in addiction. Results from our undergraduate sample were inconclusive. However, in samples 2 and 3, religiosity predicted the belief that marijuana, masturbation, pornography, and sexual activity with a partner were addictive (β 's=.10-.19). In the second sample, religiosity also predicted the belief that exercise, and shopping were addictive (β =.09-.15). In the third sample, conservative political ideology predicted the belief that marijuana and opioids were addictive (β =-.09-.09). Results generally suggest that religiosity may be predictive of individuals beliefs that some sexual behaviors are addictive, and political ideology appears to be predictive of views about socially salient substances. Implications, including how these results may affect public policy and research, will be discussed.

- 17. RESIDENCE, COLLEGE ALCOHOL BELIEFS, AND ALCOHOL USE IN COLLEGE STUDENTS. Jennifer L. Shipley, Sarah J. Ehlke, Megan Strowger, Abby L. Braitman.** Frequency of alcohol use increases from entry into college through graduation (i.e., across year-in-school). Further, college alcohol beliefs (CABs; belief that drinking is part of the college experience) has a strong positive association with alcohol outcomes. Another risk factor for more frequent alcohol consumption is living off-campus. More research is needed to determine the associations between CABs, residence, year-in-school, and alcohol outcomes. Thus, the current research examined a moderated mediation model where CABs mediated the association between year-in-school and alcohol use, and residence (on-versus off-campus) moderated the association between year-in-school and CABs. Undergraduate students (N=428) who reported past month drinking completed a survey including measures for CABs and alcohol use. Among those living off-campus, juniors reported significantly higher CABs than freshmen, which in turn was associated with higher alcohol use. In other words, CABs mediated the association between year-in-school (for juniors) and alcohol use for those living off-campus, but not those living on-campus. Advancing through years in school may be a protective factor for those living on-campus but a risk factor for those living off-campus. Interventions should focus on addressing CABs, particularly for those later in their college career if they live off-campus.
- 18. DIFFERENTIAL INCENTIVE SALIENCE OF ALCOHOL CUES AND NATURAL REWARDS IS ASSOCIATED WITH DRINKING. Jorge S. Martins, Keanan J. Joyner, Denis M. McCarthy, David H. Morris, Christopher J. Patrick, Bruce D. Bartholow.** Multiple theories posit that drug use produces biased attention toward drugs, relative to natural reinforcers. We examined whether differential neurophysiological responses to alcohol cues and non-alcohol-related rewarding cues is associated with problematic drinking. One hundred forty-three undergraduates completed questionnaires and viewed pictures of alcohol, naturally rewarding activities (erotic and adventure scenes), and neutral images while EEG was recorded. When tested individually, the amplitude of the P3 event-related potential elicited by alcohol cues and natural reward cues showed few associations with alcohol use and problems. However, differential P3 reactivity to both types of cues (i.e., the reward dysregulation P3) showed robust associations with multiple alcohol involvement indices. ROC curve analyses showed that reward dysregulation P3 differentiated high-risk from lower-risk drinkers (AUC = 0.72) nearly as well as did alcohol involvement (AUC = 0.76; $Z = 0.05$, $p = 0.48$). These results provide support for models positing that differential incentive-motivational value of alcohol, relative to naturally rewarding activities, is associated with increased risk for heavy drinking and alcohol use disorder. Findings also suggest that P3 reactivity elicited by visual cues can reflect this posited differential incentive value.
- 19. NON-GAMBLERS' SELF-REPORTED REASONS FOR ABSTAINING FROM GAMBLING. Joseph A. Rosansky, Joshua B. Grubbs.** Understanding the reasons that motivate non-gamblers to abstain

from gambling may help refine theoretical explanations of this behavior and inform interventions designed to help individuals abstain. We recruited $n=911$ adult participants from the United States who reported abstaining from gambling for the past year via YouGov opinion polling. Participants were asked to indicate which of 13 reasons were important in their decisions to abstain and to rank-order from most to least important those reasons they endorsed. Significantly larger proportions of lifelong than non-lifelong abstainers endorsed nine of the 13 reasons, and lifelong abstainers endorsed significantly more reasons than non-lifelong abstainers, $M=.981$, $SD=.241$, $t(909)=65.90$, $p<.001$. Almost all participants (97.9%) indicated that financial reasons motivated their decisions to abstain and a majority indicated this was their primary reason for abstinence (56.9%). With respect to primary reasons for abstinence, more lifelong (12.0%) than non-lifelong (5.2%) abstainers endorsed religious beliefs ($\chi^2=14.26$, $p<.001$) and fewer lifelong (2.7%) than non-lifelong (7.3%) abstainers endorsed knowledge of the odds ($\chi^2=8.96$, $p=.003$). To the extent that these motivations are associated with continued abstinence, intervention programs could focus on educating individuals regarding reasons for abstinence, including the financial consequences of gambling, and building social support for abstinence.

20. **SEVERITY OF ALCOHOL USE DISORDER AND NEGATIVE EMOTIONALITY IN INDIVIDUALS WITH ALCOHOL USE DISORDER.** Julia E. Swan, Victoria R. Votaw, Elena R. Stein, Katie Witkiewitz. Positive and negative affect are associated with alcohol use disorder (AUD) treatment outcomes. Prior studies have relied on proprietary measures of emotion (e.g., Beck Depression Inventory), which are costly and burdensome. To address these constraints, the National Institutes of Health have developed an Emotion Battery "Toolbox" of measures to assess emotionality that are brief and in the public domain. In this study, we sought to examine the core domain of negative emotionality from the Alcohol and Addictions Research Domain Criteria by testing whether the negative emotionality measures of the Emotion Battery represented a single latent factor. Additionally, we hypothesized that negative emotionality would be positively associated with severity of AUD. Participants were individuals with AUD ($n=84$) in a trial examining the efficacy of behavioral intervention to reduce heavy drinking. During a baseline visit, participants completed the Emotion Battery and a diagnostic interview. Confirmatory factor analysis demonstrated the factor structure of the negative emotionality construct, indicated by sadness, anger, fear, and perceived stress, provided an excellent fit to the data. The negative emotionality factor was significantly related to AUD symptom count ($IRR=1.014$, $p<0.001$). The NIH Toolbox Emotion Battery can be used to quickly assess negative emotions in AUD treatment outcome research.
21. **DEVELOPMENTAL TRAJECTORIES OF HIGH-RISK SEXUAL BEHAVIOR AND SUBSTANCE USE DURING YOUNG ADULTHOOD.** Kaitlyn E. Panza, Jenn-Yun Tein, William R. Corbin, Keith A. Crnic, Thao Ha. High-risk sexual behavior (HRSB) and substance use (SU) are highly prevalent in the general population with adolescents and young adults at high risk for engaging in these behaviors. Early and persistent engagement in these behaviors can have detrimental long-term effects on physical and mental health. Unfortunately, little is known about trajectories of health risk behaviors (HRBs) beyond age 25, which is still a critical developmental period regarding these behaviors. This study sought to better understand HRB trajectories, throughout young adulthood, using data from a large ($n = 998$), longitudinal, randomized-controlled trial with intensive measurement of HRSBs and SU (tobacco, alcohol, marijuana) over time. Growth mixture modeling estimated gender-specific trajectories of these variables from ages 22-30. Four unique trajectories resulted for each substance (low use; increasing use; decreasing use; high persistent use) and three for HRSB (low HRSB; increasing HRSB; decreasing HRSB). There were no differences in the number of classes or trajectory patterns between men and women. These results suggest that young adults, beyond age 25, are still

at risk for engaging in HRBs and that studies better understanding factors that lead to vulnerabilities specific to this developmental period are needed to inform targeted interventions.

22. **CIGARETTE, E-CIGARETTE, AND DUAL USE IN A SAMPLE OF HEAVY DRINKING EMERGING ADULTS. Kinsey Pebley, Kevin W. Campbell, James MacKillop, James G. Murphy.** Emerging adult substance use (i.e., cigarettes, e-cigarettes, alcohol) remains a salient public health issue. The current study aimed to assess differences among cigarette, e-cigarette, and dual users in a sample of heavy drinking emerging adults. The current study used baseline data from Project BETA, a longitudinal study of alcohol use and other health behaviors among 21.5 to 25-year-olds who reported at least two past-month binge drinking episodes. Participants (N = 360) completed questionnaires inquiring about demographic information, nicotine dependence, alcohol use and consequences, and e-cigarette and cigarette use (age of first use; reasons for initiating e-cigarettes; readiness for, confidence in, and importance of change in cigarette use). Dual users were more likely to be White, older, a college student, report increased importance to change their tobacco use, consume more alcoholic beverages per week, and report more alcohol-related consequences. Participants who were older were also more likely to use cigarettes only compared to e-cigarettes only, while college students were more likely to use e-cigarettes only compared to cigarettes only. Older participants were more likely to use cigarettes first. There were no significant differences in nicotine dependence scores between groups. Findings may inform identification of and tailored intervention for young substance users.

23. **ADAPTATION OF MISC-2.5 TO PREDICT OPIOID USE AND ALTERNATIVE PAIN CARE STRATEGIES IN VETERANS. Kyle Self, Catherine Baxley, Joannalyn Delacruz, Shahrzad Hassanbeigi Daryani, Benjamin Ladd, Karen Seal, Jennifer Manuel, Brian Borsari.** Motivational Interviewing (MI) is a collaborative and patient-centered approach focused on increasing patients' intrinsic motivation for health behavior change. A recent trial evaluated the use of a four-session Collaborative Care with MI (CCMI) intervention designed to decrease opioid risk, reduce pain, and increase the use of non-pharmacological pain management strategies (Seal et al., 2019). To code these sessions, we adapted the Motivational Interviewing Skill Code 2.5 (MISC-2.5) to explore the impact of MI on sessions aimed at decreasing prescription opioid use and increasing alternative pain care strategies (APCS) for veterans with chronic pain. Within this novel coding system (MISC-APCS), trained coders categorize patient utterances using a parallel decision-making process. For each patient utterance, coders make two decisions relating to Behavioral content and Motivational content. Behavioral content includes the target behavior (opioid use), APCS-Pharmacological (non-opioid medications and supplements) and APCS-Nonpharmacological (behavioral strategies/lifestyle changes). Next, the motivational state of utterances is rated on whether the patient is likely to approach, avoid, or is neutral/ambiguous to the behavior being discussed. Inter-rater reliability of therapist behaviors/patient language subcodes will be presented, as well as their clinical utility in working with veterans experiencing chronic pain and opioid use.

24. **OPIOID USE DISORDER PHARMACOTHERAPY: MEDICATION ATTITUDES AMONG RECOVERY COMMUNITY CENTER ATTENDEES. Lauren A. Hoffman, Bettina Hoepfner, John F. Kelly.** Background: Evidence supports opioid use disorder (OUD) pharmacotherapies (RxOUD) as first-line treatments, yet relatively few OUD patients utilize them. One potential barrier to RxOUD is receptivity, with many OUD patients declining RxOUD and only ~20% of the general population of individuals with substance-related problem histories reporting positive RxOUD attitudes. Rapidly expanding recovery community centers (RCCs) may offer a promising venue for fostering RxOUD support as they operate under the maxim, "many pathways [to recovery], all should be celebrated".

However, little is known about RxOUD attitudes among RCC attendees. Method: Cross-sectional survey (N=320) of adults attending 31 RCCs across New England. Respondents reported attitudes toward agonist/antagonist RxOUD (positive=(strongly) agree; neutral=somewhat agree/disagree, negative=(strongly) disagree). Results: Participants generally had positive agonist (50%) and antagonist (54%) attitudes (negative-agonist: 20%; negative-antagonist: 16%). Factors uniquely associated with positive perceptions were personal utilization of RxOUD treatment and pharmacotherapy-support groups for agonist- and antagonist-RxOUD, respectively. Predictors of negative attitudes included greater spirituality (agonists), absence of regular mutual-help attendance (antagonists), less education and history of regular alcohol use (agonists/antagonists). Conclusion: RxOUD attitudes are predominantly positive among RCC attendees. Though results reveal several predictors of negative attitudes, they highlight opportunities for facilitating RxOUD acceptance within the expanding RCC network.

25. CAN SEXUAL ACTIVITY CHANGE YOUR BRAIN? GRAY MATTER VOLUME ABNORMALITIES IN CSBD.

Malgorzata Draps, Guillaume Sescousse, Mateusz Gola. **BACKGROUND:** In 2019, Compulsive Sexual Behavior Disorder have been included into the ICD-11(WHO, 2019). But neural mechanisms underlying CSBD symptoms remain unclear. In previous study we have shown similarities between CSBD and behavioral addictions (Gola & Draps, 2018). Here we explore the anatomical data in cohorts of CSBD patients and healthy controls (HC). **METHODOLOGY:** We recruited 73 heterosexual CSBD male patients and 40 age-matched HC. Severity of addiction was assessed by SAST-R, BPS and HBI. Anatomical images were acquired with a 3-Tesla MR scanner using a T1-weighted sequence. Voxel-based morphometry data were preprocessed and GLM analysis were run according to Ashburner's manual. **RESULTS:** Compared with HC, CSBD individuals showed a significant gray matter atrophy in posterior cingulate cortex (PCC) bilateral. We have also identified significant positive correlation between CSBD symptoms and brain volume in PCC, caudate bilateral and left thalamus. **CONCLUSIONS:** PCC is an important part of the emotional processing system (Maddock et al, 2003), it is also a central node of the default mode network, playing crucial role in cognitive functions e.g. controlling one's behavior (Brewer et al. 2013). Structural atrophy in PCC is linked to chemical addictions (Xiao et al., 2015) in our results show that it is also present in CSBD

26. PSYCHOPATHY & PROBLEMATIC GAMBLING: THE ROLE OF GAMBLING PROTECTIVE STRATEGIES & URGENCY. Matthew Kramer, Roselyn Peterson, Angelina V. Leary, Tatiana Magri, Katie Moskal, Robert D. Dvorak.

Background: Psychopathy is associated with numerous problematic outcomes, including pathological gambling. The most common conceptualization of psychopathy is a two-factor model of primary and secondary psychopathy, with primary psychopathy comprising more affective and interpersonal traits and secondary psychopathy comprising more antisocial behaviors. Previous research has found strong associations between impulsivity (i.e., urgency) and lower utilization of harm reduction strategies. The current study examined the relationship between both factors of psychopathy, problematic gambling, and possible mechanisms of this relationship. **Method:** College student gamblers (n = 308) completed questionnaires on psychopathy, impulsivity, gambling protective behavioral strategies (PBS), and gambling problems. A negative binomial hurdle model was utilized, with urgency and gambling PBS mediating the relationship between psychopathy and gambling problems. **Results:** Primary psychopathy was negatively associated with gambling PBS while secondary psychopathy was positively associated with urgency. Secondary psychopathy via urgency was a robust predictor of the likelihood of experiencing any gambling problems while primary psychopathy via gambling PBS was a strong predictor of frequency of problems, as was secondary psychopathy directly. **Discussion:** This study furthers the literature on psychopathy and

gambling and highlights the importance of examining psychopathy in a more nuanced fashion when considering addictive behaviors such as gambling.

27. **A PROTOCOL TO ASSESS ALCOHOL PRICE AND PROMOTIONS AT BARS: IMPLICATIONS FOR HIGH-INTENSITY DRINKING.** **Melissa Cox, Melissa J. Cox, Meredith Moskwiak, Beth H. Chaney, Madison Garrigues, Kathleen L. Egan, Joseph G. L. Lee, Ryan J. Martin.** High-intensity drinking (HID), or consumption that exceeds twice the binge drinking threshold, peaks in young adulthood. Bars are common settings for heavy alcohol consumption in this population and alcohol promotive environments, such as those with low pricing, are particularly risk-inducing. The current study utilized a mixed methods approach to develop a protocol to collect objective data on how alcohol price and promotions are implemented in locations known to be high-risk for excessive alcohol consumption among young adults. Following focus groups (N=5 groups, 34 total participants) to identify factors associated with HID, we conducted a field study on two weekend nights via direct observation in a census of bars (N=18 bars/night) in the downtown district of a small city. Data on alcohol pricing as well as interior and exterior alcohol promotions were collected. Inter-observer agreement was high (89%) and observation protocols provided largely complete data, indicating that this assessment is feasible to conduct in real-time. Implications for further assessment of the retail environment pertaining to HID are provided. We demonstrate the utility of this protocol to quantify risk factors in bar settings for HID and consequences that can be leveraged in preventive interventions and policies.
28. **ARE HONEST (OPEN) PLACEBOS EFFECTIVE FOR PAIN MANAGEMENT? AN EXAMINATION WITH ACUTE PAIN PATIENTS.** **Michael H Bernstein, Molly Magill, Arnold-Peter Weiss, Charlotte Blease, Ted Kaptchuk, Sara J. Becker, Josiah D Rich, Irving Kirsch, Steven Mach, Francesca L. Beaudoin.** As concern regarding the opioid crisis mounts, physicians are facing pressure to develop new methods of pain management with less reliance on opioids. Although unusual, one promising possibility is open (i.e. 'honest') placebos. Participants (70% female) were recruited from a hand surgery practice (n=6) or an Emergency Department (n=4). All patients were prescribed a short-term supply of opioids. Patients were also instructed to take one placebo, honestly described as such, with each opioid pill. A lengthy rationale was provided regarding why the placebos might work. Patients were given the option of taking un-paired placebos as well. Daily phone assessments were conducted for one week, in addition to a phone exit interview that included a pill count. In total, 33 opioid pills were taken, and all (33/33) were paired with a placebo as instructed. Based on self-report, 9/10 patients took at least one placebo not paired with an opioid (range: 2-22, M=7.45 [SD=5.75]). The average number of placebos taken was 10.0 according to self-report, and 16.7 according to the pill count. Perceived analgesia from the opioids and placebos were not statistically different (Wilcoxon Z=.97, p=.33). Open placebos taken as an adjunct to opioids are a promising treatment option worthy of further exploration.
29. **ASSOCIATIONS BETWEEN CHILDHOOD ABUSE AND CHRONIC PAIN IN ADULTS WITH SUBSTANCE USE DISORDERS.** **Nadine R. Taghian, Margaret L. Griffin, Alexandra R. Chase, Shelly R. Greenfield, Roger D. Weiss, R. Kathryn.** Background: Childhood abuse and chronic pain are common in people with substance use disorders. Several studies have found that exposure to childhood abuse is associated with the presence of chronic pain in adulthood; however, few studies have examined this association in people with substance use disorders. Our aim was to characterize the association between childhood abuse and chronic pain presence and severity in adults with substance use disorders. Method: Data were obtained from 672 participants seeking treatment for substance use disorders on an inpatient detoxification unit. Regression models evaluated whether childhood

physical or sexual abuse were associated with greater likelihood of chronic pain and with markers of pain severity: pain catastrophizing, pain severity and pain interference. Results: The presence of childhood physical and sexual abuse was associated with significantly higher likelihood of chronic pain. After controlling for potential confounding variables, childhood physical abuse was associated with higher pain severity, whereas childhood sexual abuse was associated with higher pain catastrophizing and greater pain interference. Conclusion: Childhood physical and sexual abuse were associated with a heightened likelihood of chronic pain in people with substance use disorders. Among people with chronic pain, exposure to childhood abuse was associated with greater pain severity, more catastrophic interpretations of pain and more pain-related interference.

30. IMMUNE RESPONSE OF HEALTHY YOUNG ADULTS TO ACUTE MODERATE ALCOHOL AND POSSIBLE GENDER DIFFERENCES.

Philip Sternberg Lamb, Mollie A. Monnig, Christina M. Martone, Jose M. Parras. Heavy drinking elicits microbial translocation, a pro-inflammatory, gut-mediated process. Lipopolysaccharide (LPS) is a marker of microbial translocation and potent immune modulator. Binge doses of alcohol may cause an initial inflammatory response, followed by transient immune suppression. Inflammatory responses to alcohol are associated with alcohol use disorder (AUD). This pilot study sought to extend previous research by characterizing immune response to a lower, moderate dose. Participants consumed a dose calculated to attain a blood alcohol concentration of 0.07 g/dl. Plasma was collected at baseline and 1, 2, and 3 hours post-consumption. LPS and markers of innate immune response [soluble CD14 (sCD14), LPS binding protein (LBP), cytokines] were measured with immunoassays. The sample (N=11) averaged 26.6 years old, was 55% female, and reported 3.3 ± 1.9 drinks/week. Over the 3-hour period, we observed a significant linear decrease in LPS ($p=.029$) significant linear decrease in MCP-1 ($p=.007$), and significant non-linear changes in LBP ($p=.003$) and sCD14 ($p=.012$). U-shaped trajectories in sCD14 and LBP were more pronounced in males, and time-by-gender interactions were significant ($p's < .05$). Results provide novel evidence of a marked immune response to moderate alcohol. Further research is needed to investigate whether gender-based differences in sCD14 and LBP trajectories relate to etiology of AUD.

31. IDENTITY AND ALCOHOL USE AMONG COLLEGE MEN: EXAMINING THE ROLE OF PROTECTIVE BEHAVIORAL STRATEGIES.

Robert Whitley, Michael Madson, Byron Zamboanga, Richard Mohn, Bonnie Nicholson. Recent literature has consistently identified conformity to traditional masculine norms as motivating the hazardous drinking behaviors of college men. One concern with this line of research has been relative inconsistencies in findings and a lack of proximity of male norms to drinking behavior. The present study sought to better elucidate the proximity of male norm conformity to drinking behaviors through including specific identity factor related to alcohol use: drinking identity. This study also sought to examine how these factors of identity predicted the safe drinking behaviors of college men or lack thereof to possibly identify behavioral intervention targets in the association between norm conformity and hazardous drinking. The study found that conformity to the norms of playboy, power over women, self-reliance, and risk-taking predicted male students more strongly identifying as drinkers which, in turn, predicted a lack of protective behavior and negative alcohol outcomes (i.e., hazardous drinking and negative consequences). The study also found that conformity to the emotional-control norm might also play a protective role through limiting identification as a drinker and promoting protective drinking behaviors.

32. PROSPECTIVE RELATIONS BETWEEN POSITIVE URGENCY, TYPICAL DRINKING CONTEXT, AND FUTURE DRINKING.

Shane D. Marohnic, Jack T. Waddell, William R. Corbin. Positive urgency (i.e., rash, ill-advised action during positive mood states) is associated with heavier drinking during 21st

birthday celebrations and positive mood states (Dinc & Cooper, 2015; Whitt et al., 2019). Stimulating contexts (e.g., parties, tailgates) are also established predictors of heavier drinking, and positive urgency may be particularly relevant in these types of settings. However, to our knowledge, no prior studies have examined potential interactions between positive urgency and drinking contexts that may be conducive to positive mood states. Accordingly, the present study tested whether positive urgency moderated the relation between stimulating contexts and typical drinking quantity over a one-year period. After controlling for impulsive traits other than positive urgency, baseline drinking, and sedating drinking contexts, we found a significant interaction between stimulating drinking environments and positive urgency ($b = 0.32, p = 0.04$). At both high ($b = 0.32, p < 0.01$) and mean ($b = 0.17, p < 0.05$) levels of positive urgency, drinking in stimulating contexts was associated with heavier drinking. These findings warrant additional investigation into potential interactions between drinking environments (e.g., sedating contexts) and impulsive traits (e.g. negative urgency) in predicting drinking behavior.

Poster Session 3: FRIDAY April 3rd 8:30am – 9:45am

- 1. AN ECOLOGICALLY-INFORMED ANALYSIS OF COLLEGE STUDENTS' PRESCRIPTION STIMULANT MISUSE IN DAILY LIFE. Alexandra Barringer, Lauren M. Papp.** College students evidence a relatively high risk for engaging in prescription stimulant misuse, a behavior with costly personal and public health implications. However, we know surprisingly little about how and when this consequential behavior occurs in daily life. We conducted an ecological momentary assessment (EMA) study to identify academic factors across multiple levels that predict real-time prescription misuse. Freshman and sophomore students with an elevated risk for prescription drug misuse (N = 300; 69% female; mean age 19.5 years (SD = 0.71) were trained to complete a combination of signal-based (scheduled across the day) and event-based (self-initiated when misuse was about to occur) EMA reports. Reports collected hypothesized predictors of misuse in the moment and other measures tapped academic characteristics of the participants and the timing of reporting period. Overall, participants completed an average of 73.65 reports (SD = 24.07) for an average of 24.68 (SD = 5.44) days. Multilevel analyses will be conducted to identify the strongest academically relevant predictors of prescription stimulant misuse in daily life, including momentary stressful academic experiences, grades, and timing (e.g., finals week). Implications for campus-based prevention and intervention initiatives will be discussed.
- 2. SELF- AFFIRMATION AND COLLEGE STUDENTS: POSITIVE SELF-EVALUATIONS AND BINGE DRINKING INTENTIONS. Angelo M. DiBello, Cristian Cortez, Kate B. Carey, Nadine R. Mastroleo.** Self-Affirmation Theory (SAT) posits that if person's self-perceptions are threatened by negative information, people respond defensively to restore global self-worth. One way a person can be made to be more open to threatening information is through completing a brief self-affirmation manipulation. Two studies were conducted. The first examined two different self-affirmation exercises compared to a control condition to test their impact on enhancing positive self-evaluations. The second examined a single self-affirmation task [n=86] compared to a control task [n=106]) to test its impact on (a) self-evaluations and (b) binge drinking intentions among mandated college students required to complete an alcohol intervention. In both studies, the students who completed a self-affirmation exercise would give more positive ratings) and in study 2 would report lower binge drinking intentions following the alcohol intervention. Results indicated that relative to control, self-affirmation tasks resulted in significantly higher self-evaluation scores ($p < .001$). Results of study 2 revealed that compared to the control condition, those who completed the self-affirmation manipulation reported significantly lower intentions to binge drink alcohol in the next month. The results of these studies provide support to further explore including the brief writing exercise as an approach to enhance alcohol risk reduction interventions.
- 3. PSYCHOMETRIC VALIDATION OF THE CRAVING SCALE. Catherine D. Trinh, R. Kathryn McHugh, Margaret L. Griffin, and Roger D. Weiss.** Craving is associated with near-future substance use in adults with substance use disorders and thus is an important variable to measure in clinical settings. The Craving Scale is a 3-item self-administered measure that was previously validated in cocaine use disorder. The aim of this study was to quantify the psychometric properties of the Craving Scale in other substance use disorder populations to provide clinicians and researchers with a brief measure to anticipate future risk and inform treatment options. Data for this analysis were taken from a study of adults receiving inpatient substance use disorder treatment (N=1,246) at McLean Hospital. Participants completed a battery of self-administered measures, including the Craving Scale.

Participants with a primary diagnosis of alcohol use disorder (AUD; n=814) or opioid use disorder (OUD; n=432) were included in analyses. Analyses of readability and grammatical complexity demonstrated acceptable readability. Internal consistency was strong in both groups (alphas > .78). Exploratory and confirmatory factor analyses supported a 1-factor solution, and each item was strongly and significantly associated with the latent factor (all standardized factor loadings >.50). The Craving Scale demonstrated strong psychometric properties in AUD and OUD, supporting its use in clinical and research settings.

4. **EVALUATING THE IMPACT OF OUTPATIENT MEDICATION-ASSISTED TREATMENT FOR OPIATE USE DISORDER.** **Dezarie Moskal, Jeffrey De Flavio, Joy Sun Cooper, Bethany Sneathen, Gerard J. Connors, Stephen A. Maisto.** Opiate use disorder (OUD) remains a significant public health problem. Medication-assisted treatment (MAT) presents one potential option for reducing OUD prevalence. This study aims to conduct an external program evaluation of one such program, Groups, a for-profit addictions program. Within Groups, patients receive comprehensive evidence-based care, including Suboxone to manage cravings, weekly group therapy, and care coordination. Patients (N = 168) from 7 Groups sites were evaluated at intake and 1, 3, and 6 months post-intake on opiate involvement and on overall life functioning. Results showed statistically significant improvements from intake to Month 1 in opiate use involvement (e.g., decreases in percentage of opiate use days; increases in the percentage of Suboxone use days; decreases in cravings) and in overall life functioning (decreases in chronic pain, in difficulty falling/staying asleep, and in feeling depressed, anxious, or very upset). These positive changes from baseline to Month 1 were durably maintained over time, with limited, if any, reduction evident at the Month 3 and Month 6 assessments. Additionally, treatment attendance was consistently associated with higher rates of percentage of days abstinent from opioids. These results align with previous research indicating that outpatient MAT-based treatment programs are a promising approach for reducing OUD.
5. **ESTABLISHING A LABORATORY PROTOCOL FOR TRANSDERMAL ALCOHOL BIOSENSOR RESEARCH.** **Emily B. Saldich, Chunming Wang, Gary Rosen, Susan E. Luczak.** Wearable transdermal alcohol biosensors make it possible for researchers to unobtrusively measure alcohol consumption in naturalistic settings. Variability in the transdermal alcohol concentration (TAC) data these devices produce across individuals and drinking episodes, however, leads to a complex relationship between TAC and breath/blood alcohol concentration (BrAC/BAC), thus limiting the utility of TAC as a research tool. In the current study, we established an alcohol administration protocol that incorporates multiple commercially available biosensors to capture biological variables that may affect the TAC-BrAC/BAC relationship. We modified our protocol over the course of running 40 participants of varied ethnicity, age, sex, and BMI. Our final protocol includes four drinking sessions per participant, three patterns of alcohol consumption, two TAC devices that also measure skin temperature and infrared light, and additional devices to obtain heart rate, movement, blood pressure, and ambient temperature and humidity over the entire BrAC curve. We resolved several methodological issues (e.g., inconsistent skin contact, long duration between TAC readings, mouth alcohol affecting BrAC) via protocol revisions as well as via smoothing algorithms and data processing techniques. Our protocol and codes can be used in additional research seeking to translate TAC into a meaningful, quantifiable biological variable for alcohol research.
6. **UNDERSTANDING IMPULSIVITY AND SOCIAL INFLUENCES IN ALCOHOL USE, MISUSE, AND RECOVERY.** **Emily E. Levitt, Allan Clifton, Robert Stout, John F. Kelly, James MacKillop.** Perspectives on both personal and social determinants of substance use have rarely been explored simultaneously. This study examines the relationship between drinking behaviour and multiple

measures of impulsivity and social network factors. Data came from Alcoholics Anonymous Mechanisms of Behaviour Change study. Thirty-six participants aged 18-65 from three addiction centres were analysed at baseline. A comprehensive assessment battery was administered including drinking quantity and severity, UPPS-P Impulsive Behaviour Scales (UPPS-P), NIH toolbox, and egocentric social network analysis. Significant correlations were found between drinking quantity and positive urgency, a subscale of the UPPS-S ($r = .41$, $p = .03$), and drinking severity and perceived hostility, a subscale of the NIH toolbox ($r = .38$, $p = .04$). Regression analyses were conducted to examine independent contributions of each variable to the overall variance in drinking behaviour. Both positive urgency and perceived hostility accounted for 14% of the variance in drinking quantity and severity, respectively ($ps = .03$). Finally, the mean score for drinking severity for the 20 individuals within the social network was 44.35 (SD = 15.98) out of a possible score of 100. The results indicate a significant relationship between a measure of impulsivity and social influence with drinking quantity and severity as well as moderate drinking patterns within an individual's social network. Subsequent analyses will be conducted to further examine impulsivity and drinking behaviour and egocentric social network analysis.

7. **NEGATIVE AFFECT AND ALCOHOL CONSEQUENCES: A MODEL OF SERIOUS HARM REDUCTION AND SEXUAL ORIENTATION.** Emma Wedell, Matthew R. Pearson, Adrian J. Bravo, Protective Strategies Study Team. Objective: The present study examined cross-sectional data of college student alcohol users to investigate whether the indirect association of negative affect symptoms (i.e., stress, anxiety, and depression) and alcohol-related consequences through the use of serious harm reduction protective behavioral strategies (PBS-SHR) differed as a function of sexual orientation. Method: Participants included 2589 college students (of which 522 self-reported a sexual orientation other than exclusively heterosexual) who consumed alcohol in the last 30 days. Most students were female (71%), identified as non-Hispanic White (64.3%), and the mean age was 20.89 (Median = 20; SD = 4.37) years. Results: PBS-SHR use mediated the associations between negative affect symptoms (stress, anxiety, and depression) and negative alcohol-related consequences such that greater symptoms of negative affect were associated with lower PBS-SHR use, which was associated in turn with more negative alcohol-related consequences. We found a significant moderated-mediation effect with sexual orientation, where the indirect effect of negative affect on alcohol-related consequences through lower PBS-SHR use was stronger among sexual minority students. Conclusions: Our findings suggest that sexual minorities experiencing more negative affect are at a heightened risk of alcohol-related consequences through lower use of PBS-SHR strategies.
8. **CANUE: A THEORETICAL MODEL OF PAIN AS AN ANTECEDENT TO SUBSTANCE USE.** Erin Ferguson, Emily Zale, Joseph Ditre, Danielle Wesolowicz, Bethany Stennett, Michael Robinson, Jeff Boissoneault. Pain and substance use disorder are prevalent, costly, and often comorbid. Evidence suggests that self-medication of pain and pain-related distress using alcohol and other substances is common, and this behavior can be understood through the theory of negative reinforcement. Broad reciprocal associations between pain and substance use have been proposed, such that they interact in a positive feedback loop resulting in worsening of both conditions over time. The purpose of this narrative review was to propose a testable, focused model of pain as an antecedent to substance use that may guide future research and inform clinical practice. The resulting Catastrophizing, Anxiety, Negative Urgency, and Expectancy (CANUE) model highlights modifiable risk factors for self-medication of pain with substance use, including increased negative affect and maladaptive pain-related attitudes (i.e., pain catastrophizing, pain anxiety, and fear of pain), negative urgency, and substance-related outcome expectancies for pain relief and enhanced pain-coping. Targeted behavioral and psychological interventions that address these factors may

facilitate development of more adaptive pain-coping responses, thereby reducing self-medication and risk for substance use disorders. Future systematic research is needed to evaluate the validity and clinical utility of this model.

9. PORNOGRAPHY CONSUMPTION AND PLEASURE OF SEX. Ewelina Kowalewska, Mateusz Gola.

Aims: To assess difficulties in sexual functioning among problematic pornography users (PPU). **Methodology:** 193 PPU and 112 control males completed survey assessment on: 1.) severity of CSBD, 2.) sexual activity; 3.) sexual performance. **Results:** PPU reach for pornography and engage in solitary practices more often than controls neglecting the sexual sphere of relation with a partner and rating lower dyadic sexual experiences. They also struggled more often with recurrent sexual fantasies and pornographic flashbacks. PPU and controls differentiate in frequency and amount of pornography use between age 15 and 20. Amount of pornography use stabilize by the age of 20 in controls while in PPU continually increases. First sexual experiences with partner are less pleasurable among PPU than controls. **Conclusions:** Considering the fact that PPU and controls consumed pornography on regular basis before their first sexual intercourse it is possible that quality of their first experiences of sex determines further sexual activity choices. For PPU who had less pleasurable first experiences pornography and masturbation might have been more attractive. On the other hand, excessive consumption of pornography prior to sexual initiation may contribute to lower satisfaction from first intercourses.

10. LIFETIME HISTORY OF ILLICIT SUBSTANCE USE AMONG SUBTYPES OF CANNABIS USERS: THE ROLE OF CANNABIS USE METHOD. Helen Sanchez, Laura Harvey, Saman Essa, Autena Torbati, and Marcel de Dios.

Background: Previous studies have found ethnic/racial differences in preferred method of cannabis ingestion.¹ The use of blunts among ethnic/racial minorities in the US is often stigmatized and linked to greater risk of cannabis and nicotine use disorders.²⁻³ However, findings regarding blunt users' attitudes towards, and use of, other illicit substances have been mixed.³⁻⁴ **Methods:** The current study used data from a multisite RCT of 302 individuals in treatment for Cannabis Use Disorder.⁵ Hierarchical cluster analysis was used to identify subgroups of cannabis users based on their primary method of cannabis ingestion. Groups were compared on their lifetime history of illicit substance use with Chi-square tests. **Results:** Three clusters were empirically identified: 1) Primarily Blunt Users (n=121), 2) Primarily Bowl, Bong, or Pipe Users (n=120); and 3) Primarily Joint, Vape, & Edible Users (n=61). Cluster 1 (Blunts Users) had a significantly lower lifetime history of using opioids/pain medications [$\chi^2(2, N=302)=7.85, p<.05$], cocaine [$\chi^2(2, N=302)=10.55, p<.01$], hallucinogens [$\chi^2(2, N=302)=33.15, p<.01$], inhalants [$\chi^2(2, N=302)=15.56, p<.01$], and benzodiazepines/ tranquilizers [$\chi^2(2, N=302)=23.57, p<.01$]. **Conclusions:** Findings offer a more nuanced and protective perspective on blunt use which is particularly relevant to ethnic/racial minority cannabis users in the US.

11. ADULT ADVERSE LIFE EXPERIENCES AMONG STIMULANT-USING SEXUAL AND GENDER MINORITY PERSONS. J. Michael Wilkerson, Angela Di Paola, Elizabeth Obekpa, Angela Nash, Vanessa Schick.

Background: Sexual and gender minority (SGM) persons are more likely to engage in illicit substance use compared to their cisgender heterosexual peers. Research is needed to identify variables most associated with stimulant use among SGM persons. **Methods:** Between March 2016 and January 2017, SGM persons ages 13+ were recruited on social media to complete a cross-sectional health survey that included items about recent substance use and adverse adult life experiences. Bivariate and multivariate analyses were used to understand differences between participants who did or did not engage in stimulant use in the past 12-months (18.0% and 82.0%, respectively). **Results:** Of the 1273 participants, 46.3% were cisgender females and 15.5% were transgender persons; 42.7% were

nonmonosexual; and 47.1% were a racial/ethnic minority. Stimulant users were more likely than non-stimulant users to be younger, uninsured, living with HIV, engaging in hazardous drinking, using opioids and marijuana, and injecting drugs. When adverse adult life experiences were entered into the regression model, having experienced recent intimate partner violence remained significant. However, at the bivariate level, more stimulant users also reported recent discrimination, incarceration, and homelessness. Conclusion: Evidence-based interventions are needed for stimulant-using SGM persons that address co-occurring substance use and adverse life experiences.

12. **A MOBILE-PHONE BASED INTERVENTION IS ASSOCIATED WITH CHANGES IN CANNABIS-IMPAIRED DRIVING COGNITIONS.** Jenni Teeters, Shelby A. King. Objective: Driving after cannabis use (DACU) is a significant public health concern and represents one of the riskiest cannabis-related behaviors. The present study examined the efficacy of a mobile phone-based intervention with personalized feedback and text messaging to increase perceptions of danger of DACU and to decrease the perceived amount of cannabis that can be consumed safely prior to driving. Method: Participants were 77 college cannabis users (65.8% women; average age = 21.2; 88.3% Caucasian) who endorsed DACU at least three times in the past three months. After completing baseline measures, participants were randomly assigned to receive a) substance information, b) personalized feedback, or c) personalized feedback plus interactive text-messaging. Participants completed outcome measures three months post intervention. Results: Repeated measures ANOVAs revealed that compared to cannabis users receiving the information document, students receiving the mobile phone-based intervention including personalized feedback and text messaging reported significantly greater increases in perceived dangerousness of DACU and significantly greater decreases in the perceived amount of cannabis that can be safely consumed prior to driving (p 's < .05). Conclusions: These findings provide preliminary support for the short-term efficacy of a mobile phone-based intervention for changing perceptions related to DACU among college cannabis users.
13. **HISTORICAL TRAUMA, COPING STYLES, AND SUBSTANCE USE AMONG AMERICAN INDIAN PEOPLE WITH CURRENT SUBSTANCE USE PROBLEMS.** Julie A. Gameon, Monica C. Skewes. Among survivors of interpersonal trauma, there is a strong relationship between trauma symptoms and using substances to cope. Using substances to cope, in turn, is associated with worse alcohol and drug problems. In the U.S., American Indian (AI) people suffer health disparities associated with substance use and also experience historical trauma symptoms resulting from colonization. Our team collected cross-sectional survey data from 198 tribal members with substance use problems from a rural reservation community. We examined the associations between historical trauma, coping styles, and substance use. Historical trauma was assessed using the Historical Losses and Associated Symptoms Scale, coping styles were measured with the Brief COPE, and substance use was measured with the Timeline Followback. Findings showed that greater historical trauma was associated with more substance use coping styles ($b = 0.07$, $p < .01$) and with fewer abstinent days ($b = -0.84$, $p < .01$), while greater substance use coping was associated with fewer abstinent days ($b = -5.26$, $p < .01$). The relationship between historical trauma and abstinent days was mediated by substance use coping. In addition to learning new coping skills, AIs may benefit from reframing historical trauma and creating a new narrative of Native resilience.
14. **BARRIERS TO IMPLEMENTATION OF MAT IN ADULT DRUG TREATMENT.** Justin North-Olague, Minerva Tuliao, Antover Tuliao. Prior research confirms that use of Medication Assisted Treatment (MAT) is effective in assisting clients to stop using opioids (Lindgren et al., 2015; Guerrero et al., 2016). Despite these findings, administrators and therapists are still reluctant in implementing MAT. While research indicates that counselor attitudes are key to client referrals and MAT endorsement

(Rieckmann et al., 2007), there is growing evidence of the influence of organizational and social contexts in which counselors work and MAT use (Abraham et al., 2013; Guerrero et al, 2016; Knudsen et al, 2010). The goal of this qualitative study is to examine the organizational and systemic processes, factors, barriers and drivers associated with the implementation of MAT use in adult drug treatment centers in the United States. Interviews were conducted with administrators and counselors who work with adult clients in both inpatient and outpatient settings using MAT (N=5) and not using MAT (N=2). Preliminary findings show that the most prevalent barrier to MAT implementation was a lack of current education and training of clinicians related to MAT and its effectiveness. Other findings which may be useful for administrators and counselors in identifying organizational contexts to implementing MAT in drug treatment centers will be discussed.

15. **MIXED METHODS ANALYSIS OF FEEDBACK ON BRIEF INTERVENTIONS FOR REDUCING ALCOHOL AND CANNABIS USE.** Kathryn Soltis, Rachel Pace, Youkyung Hwangbo, Alton J. Withers, Ashley A. Dennhardt, Brian Borsari, Matthew Martens, James G. Murphy. The current study examined qualitative and quantitative feedback provided by college students (N=313) after a brief alcohol or cannabis intervention, which included a BMI for alcohol or cannabis use followed by relaxation training (RT) or behavioral economic-based substance-free activity session (SFAS). Students rated their level of interest, relevance, and perceived effectiveness in modifying substance use behaviors. They also provided narrative feedback on the most and least useful elements of the BMI+RT or the BMI+SFAS. Overall, students rated both interventions highly (M=8.6-9.2 of 10). Both heavy drinkers (M=8.65, SD=1.34; $t(232)=-2.68$, $p=.008$) and cannabis users (M=9.16, SD=1.33; $t(80)=-2.36$, $p=.02$) in the BMI+RT condition rated the overall intervention as more interesting compared to those in the BMI+SFAS condition; however, across both trials students rated the BMI+SFAS condition as more effective in modifying college student alcohol (M=7.4, SD=1.8, $t(232)=2.38$, $p=.02$) and cannabis (M=7.9, SD=1.5; $t(71.27)=2.55$, $p=.01$) use patterns. Broad themes from the narrative feedback include high information utility, increased awareness of use patterns, and interest in making a change. Participants generally found the visual aids for presenting information to be helpful but were split on the utility of the feedback on alcohol/cannabis use and consequences (BMI-specific) and the connection with long-term outcomes (SFAS-specific).
16. **SEXUAL ORIENTATION MODERATES ROLE OF NEGATIVE URGENCY, PROTECTIVE BEHAVIORAL STRATEGIES, AND ALCOHOL.** Kayleigh Webster, Emma Wedell, Matthew R. Pearson, Adrian J. Bravo, Protective Strategies Study Team. Objective: The present study examined whether the indirect association between negative urgency and problematic alcohol use via use of protective behavioral strategies (PBS) differed across sexual orientation groups (i.e., heterosexual vs homosexual) in a large sample of college student alcohol users. Method: Participants were 2151 (90 self-reported as homosexual) college students who consumed alcohol in the last 30 days. The majority of students identified as being female (69.4%), were White (77.7%), and reported a mean age of 20.94 (Median=20; SD=4.78) years. Results: PBS use mediated the association between negative urgency and alcohol consequences, such that higher negative urgency was associated with lower PBS use; which in turn was associated with more alcohol consequences. A significant moderated-mediation effect was found such that the indirect effect was stronger among students who reported being homosexual. Exploratory analyses revealed that significant differences across sexual orientation groups particularly occurred when examining the association between negative urgency and specific subscales of PBS (i.e., PBS-manner of drinking and PBS-serious harm reduction). Conclusions: Our findings suggest that homosexual individuals who are high in negative urgency are at increased risk of problematic alcohol use via lower use of PBS, particularly manner of drinking and serious harm reduction.

- 17. THE EFFECT OF INSECURE ATTACHMENT STYLES ON PREFRONTAL CORTEX FUNCTIONING IN ALCOHOL USE DISORDERS.** Kelly Chroback, Spencer Bradshaw, Antover Tuliao. Research shows alcohol cues are associated with prefrontal cortex (PFC) functioning in individuals with Alcohol Use Disorders (AUD). Research also shows that individuals with AUD are more likely to have an insecure attachment style. There is a large research gap investigating how attachment styles impact PFC functioning in individuals with AUD. Research is needed to examine this relationship. This study consisted of 52 participants with AUD who viewed a presentation consisting of 48 images in total, twelve of which were alcohol-related images. During the presentation, Functional Near-Infrared Spectroscopy (fNIR) was used to measure cerebral blood flow, specifically measuring changes of blood oxygenation and thus, total blood volume. Bivariate correlations were run to examine associations between insecure attachment styles and regional prefrontal cortex (PFC) activation. Bonferonni corrections were also made to compensate for the increased risk of Type I error. We hypothesized insecure attachment styles would negatively correlate with PFC activation, specifically in the right dorsomedial (DMPFC) region, in response to alcohol-related images. We also hypothesized insecure attachment styles would positively correlate with the left dorsolateral region (DLPFC) in response to alcohol-related images. Preliminary results indicated a relationship between insecure attachment and DMPFC and DLPFC functioning in response to alcohol-related images. More research is needed to better understand the relationship between insecure attachment and DMPFC and DLPFC functioning.
- 18. BEHAVIOURAL MEASURES OF IMPULSIVITY AND ASSOCIATIONS WITH SUBSTANCE USE AMONG FEDERAL OFFENDERS.** Lana Vedelago, Emma Marsden, Vanessa Morris, James MacKillop, Michael Amlung. Substance use disorders are highly prevalent among offenders in the Canadian correctional system, with estimates as high as 70-80%. Deficits in impulse control (e.g., difficulties with inhibiting inappropriate responses, problems delaying gratification, or excessive risk-taking) are known to contribute to substance use disorders and criminal behavior, but research on the intersection of these variables remains limited. The current study assesses if offenders' history of substance use is related to behavioral measures of impulse control, and whether these variables confer risk for reoffending over and above other relevant risk factors. Participants to date include 97 federal offenders currently incarcerated in correctional facilities in Ontario, Canada. Five computerized tasks were administered via laptop: 1) Go/No-Go task (response inhibition); 2) Balloon Analogue Risk Task (risk-taking); 3) Iowa Gambling Task (risky decision-making); 4) Stroop Colour-Word Task (response inhibition); 5) Delay and Probability Discounting Tasks (impulsive and risky decision-making). History of substance use problems, criminal records, and risk assessments will be obtained from archival data collected by Correctional Services of Canada upon offender intake. Analyses are pending completion of data collection by late 2019. These findings may have important implications for determining risk upon intake and throughout sentence and may inform the development of targeted strategies for rehabilitation.
- 19. MAT STIGMA AMONG THE TREATMENT COMMUNITY REMAINS A BARRIER TO TREATMENT.** Laramie Smith, Brittany D'Ambrosio, Sarah Clingan, Peter Davidson. Background: Medication-assisted treatment (MAT) is effective in treating opioid use disorders but insufficient support within the treatment community undermines MAT success. We explored attitudes towards MAT among substance use treatment providers. Methodology: In-depth interviews were conducted with 20 treatment providers between November 2018 and May 2019. Transcripts were iteratively reviewed, and emergent themes were identified through thematic analysis. Results: A primary theme reflected stigmatizing beliefs about MAT itself (MAT isn't recovery and individuals aren't sober if they're on MAT) and differential stigmatization among MAT medications, with Vivitrol generally accepted while

others aren't. Provider-level subthemes included (1) medical providers' stigma towards substance use deters treatment seeking and access, and (2) many members of the treatment workforce came to recovery through abstinence-based models and find MAT incongruent with their mandate to help people through recovery. Policy-level subthemes suggested that (1) MAT education (webinars/trainings) has reduced stigma and bias among some providers but has had insufficient reach, and (2) regulation prohibiting treatment providers from denying access to MAT patients removed some barriers to care but falls short of changing the organizational culture. Discussion: MAT stigma within the treatment community (providers, organizations) reflect key opportunities for targeted intervention to improve MAT access and implementation.

20. GENDER DIFFERENCES IN HIV RISK BEHAVIORS AMONG INDIVIDUALS WITH OPIOID USE

DISORDER. Laura Harvey, Helen Sanchez, Saman Essa, Autena Torbati, Prakriti Srivastava, Ann Wang, Marcel de Dios. Background: Individuals who inject drugs are at an elevated risk for contracting HIV/AIDS [1]. Broadly, studies have found men engage in greater levels of risk behaviors as compared to women [2]. Yet, among women who inject drugs, HIV risk behaviors are particularly high and exceed that of men [3-4]. Methods: Data from a multisite study [5] of 570 opioid dependent individuals enrolled in a 24-week RCT of buprenorphine-naloxone and extended-release naltrexone were analyzed. Participants completed the Risk Assessment Battery [6] which measures sexual and drug risk behaviors. Repeated measures ANOVAs were used to examine gender differences in risk behaviors across 3 timepoints (baseline, end of treatment, & 3-month follow-up) after controlling for covariates. Results: Females were found to have significantly greater drug risk ($F(1,353)=3.86, p<.05$) and sexual risk scores ($F(1,318)=11.72, p<.01$) at baseline and 3 month follow-up with a noted pattern of decreasing risk during treatment and increasing risk at 3 month follow-up. Conclusions: As expected, sexual and drug use risk behaviors decreased during treatment. However, improvements were not sustained as well beyond treatment for women, which suggests a need for more tailored interventions aimed at strategically targeting post-treatment HIV-risk behaviors [7-9]. Such efforts could be integrated into post-treatment planning and relapse prevention efforts.

21. "PSYCHOMETRIC PROPERTIES OF THE ALABAMA PARENTING QUESTIONNAIRE AMONG HIGH-RISK

ADOLESCENTS. Lindsey M. Nichols, Christopher M. Fleming Jonathan Pedroza, Kaitlin O'Brien, Emily E. Tanner-Smith. Accurate measurement of parenting behaviors is essential in guiding clinical assessments of adolescent behavioral outcomes, particularly among high-risk clinical populations. Therefore, this study explored the psychometric properties of a multi-informant abridged 17-item Alabama Parenting Questionnaire (APQ) among adolescents with histories of substance use disorders (SUDs). The study used data from 323 adolescents ($M_{age}=16.32\pm 1.09$; 41% female) and their parents who were recruited from SUD treatment and continuing care facilities as part of a larger longitudinal study. We conducted two exploratory factor analyses (EFAs) to test whether adolescent- and parent-reported APQ items (respectively) loaded onto three hypothesized latent factors--poor parental monitoring, inconsistent discipline, and positive parenting--and conducted path analysis models to assess predictive validity. Preliminary results generally supported the three-factor structure for both adolescent- and parent-reported responses on the APQ, except for one parental monitoring item. Path analyses confirmed the predictive validity of the latent factors in their associations with subsequent behavioral disorder symptoms. This is the first study to examine the psychometric properties of a multi-informant APQ among adolescents with SUD histories and findings support the utility of the APQ with few exceptions. Clinical implications of multi-informant assessments among substance-involved adolescents and their parents will be discussed.

22. **GAMBLING DISORDER AND COMORBID PTSD: PATHOLOGICAL DISSOCIATION AS A MECHANISM OF CLINICAL SEVERITY.** Louis Moore, Joshua Grubbs. Symptoms of Post-Traumatic Stress Disorder (PTSD), traumatic life events, emotional vulnerability, and Cluster-B personality disorder traits are all related to increased severity of Gambling Disorder (GD). Of these diverse factors, pathological dissociation shows the strongest influence on the relationship between the symptom severities of PTSD and GD. Because gambling is likely used to escape negative affect among those with this dual diagnosis, dissociation might also occur while gambling, providing an additional form of emotional escape. The current study will be the first of its kind to test this conjecture by measuring the interaction of PTSD symptom severity and pathological dissociation in predicting GD severity. Independent cross-sectional analyses will be conducted on two samples of recreational gamblers: an undergraduate college student sample (aged 18 and older, N=200) and an online community sample of adults (aged 21 and over, N=500-800). Structural equation models (one for each study sample) will be constructed to test for predicted relationships and interactions between key study variables, with a goal of determining whether dissociation may be a mechanism used to protect oneself from aversive emotional experiences that also simultaneously exacerbate disordered gambling.
23. **A META-ANALYTIC EXAMINATION OF THE ASSOCIATIONS BETWEEN DRINKING IDENTITY AND USE-RELATED OUTCOMES.** Margott Dela Cruz, Bryan Almeida, Diorlene Arca, Denise Aguiluz, Saray Valenzuela, Yadira Ramirez, Limor Vink, Matthew R. Pearson, Kevin Montes. Drinking identity refers to the extent to which alcohol use is an integral part of an individual's self-concept. Given the number of studies conducted to examine the extent to which drinking identity is associated with negative alcohol use-related outcomes, additional research is needed to quantitatively synthesize findings in this domain. The current study aimed to provide single, weighted estimates of the associations between drinking identity and negative alcohol use-related outcomes, as well as to examine if differences in the associative strength of these associations exist if explicit compared to implicit drinking identity measures were administered. A random-effects meta-analysis was conducted on 40 studies. The results from the current meta-analytic study indicated that both explicit and implicit drinking identity were positively associated with frequency (explicit $rw=.33$; implicit $rw=.30$), quantity (explicit $rw=.37$; implicit $rw=.32$), consequences (explicit $rw=.41$; implicit $rw=.27$), and disorder symptoms (explicit $rw=.45$; implicit $rw=.33$). The moderate/large associations between drinking identity and use-related outcomes indicates that identity may be a marker of risk propensity for negative use-related outcomes. There was heterogeneity in effect sizes as well as differences in effect sizes between explicit and implicit measures of identity and their associations with outcomes. Implications of these findings are discussed.
24. **SEX DIFFERENCES IN THE INITIATION AND PREVALENCE OF OPIOID MISUSE IN A NATIONALLY REPRESENTATIVE SAMPLE.** Minh D. Nguyen, Shelly F. Greenfield MPH, Dawn E. Sugarman, R. Kathryn McHugh. The gap between men and women in the prevalence of substance misuse is decreasing. Women are more likely to be prescribed opioid analgesics and thus have greater exposure to opioids. The goal of this analysis is to describe sex differences in (1) past-year prevalence of opioid analgesic misuse and (2) past-year new initiators of misuse in the US. We evaluated this question utilizing data from the 2017 National Survey on Drug Use and Health (NSDUH). The NSDUH is a cross-sectional survey that gathers data on the use of illicit substances and prescription drugs in the US population from individuals ages 12 and older. Estimates suggested that of the 10.8 million people who misused opioid analgesics, women were less likely than men to report past-year misuse (47% vs. 53%; OR = 0.83, 95% CI = 0.73, 0.94). However, among the 2.7 million people who first misused an opioid analgesic in 2017, 1.16 million (58.7%) were women and 815,000 (41.3%) were men. This difference was statistically significant (OR = 1.34, 95% CI = 1.02,

1.78). Despite increased attention to opioid misuse, millions of people first misused opioids in 2017, and women have surpassed men among past-year initiators of opioid misuse.

25. **A PSYCHOMETRIC EVALUATION OF THE MARIJUANA PROBLEMS INDEX USING CONFIRMATORY FACTOR ANALYSIS.** **Renee Cloutier, Prathiba Natesan, Nathan Kearns, Ashley Knapp.** Although the Marijuana Problems Index (MPI) is widely used in studies with college student samples to reflect a unidimensional measure of cannabis related, no studies have assessed the psychometric properties of the MPI in a college student population. The current study sought to resolve this gap in a sample of 879 college students (18-25 years; 72% Women) reporting past year cannabis use in an online survey. Confirmatory factor analyses (CFA) tested the factor structure of the MPI and measurement invariance across gender. Fit indices and polychoric matrices derived from the initial CFA did not support the original 23-item, single factor model (CFI = 0.99, RMSEA = 0.07, SRMR = .08), but rather, a reduced 20-item three factor model (CFI = 0.99, RMSEA = 0.04, SRMR = .07). Conceptually, these factors reflected: Displaced Priorities (F1), Interpersonal Problems (F2), and Psychological Problems (F3). This revised structure had excellent model fit and satisfied the highest level of measurement invariance across gender (Means/Structural Invariance Model: $\chi^2 = 753.66$ ($n = 879$), CFI = .97; RMSEA = .04). Overall, findings highlight the importance of establishing the psychometric properties for widely used measures across samples and offers some preliminary psychometric validation data on a revised MPI.
26. **THE HEALTH BELIEF MODEL IN THE CONTEXT OF ALCOHOL PROTECTIVE BEHAVIORAL STRATEGIES.** **Roselyn Peterson, Angelina Leary, Ardhy N. De Leon, Daniel Pinto, Matthew P. Kramer, Armando A. Marin, Robert D. Dvorak.** Protective behavioral strategies (PBS) have been linked to a decrease in alcohol consumption and subsequent consequences. Whether the effects of PBS are due to actual effectiveness of PBS or perceived effectiveness remains unknown. Three subtypes of PBS exist: manner of drinking (MD), stopping/limiting drinking (SLD), and serious harm reduction (SHR). The Health Belief Model (HBM) suggests that health behaviors are associated with and decided on due to perceived susceptibility, severity, benefits and barriers. Objectives: The present study examined whether the perceived effectiveness of PBS in the context of HBM led to an increase in use of PBS. Methods: Self-reported demographics, weekly alcohol use (Alcohol Use Disorders Identification Test - Consumption), alcohol related consequences (Young Adult Alcohol Consequences Questionnaire), use of PBS (Protective Behavioral Strategies Scale) and effectiveness of PBS were collected. Results: Perceived PBS effectiveness by subtype is associated with a higher likelihood of using that specific subtype. MD PBS use was associated with alcohol consumption and related consequences, and SHR PBS effectiveness was indirectly associated with alcohol-related consequences. SLD PBS effectiveness was positively associated with SHR use. Conclusion: PBS effectiveness was associated with PBS use for each subtype and was connected to alcohol use and related consequences.
27. **TEENS' ALCOHOL USE IS ASSOCIATED WITH BOTH THEIR OWN AND SIBLINGS' RISKY SEXUAL BEHAVIOR.** **Sarah Thomas, Lynn Hernandez, Mary Kathryn Cancilliere, Anthony Spirito.** Social influences are very salient in adolescence, including a bidirectional influence between siblings on substance use and risky behavior. Less is known about this influence in families with a teen already engaged in problematic substance use. Our study objective was to investigate the influence of alcohol use (AU) and cannabis use (CU) on teen's own, and sibling's own, risky sexual behavior while accounting for dyadic influence. At the baseline visit for a randomized controlled trial for teens referred due to parents' concerns of their substance use ("target-teens"; $n=109$; average age=15.94), we assessed AU, CU, and risky sexual behavior of target-teens and a sibling. Using a cross-sectional actor partner interdependence model, we tested how teens' AU and CU are

associated with their own ("actor effect") and their siblings' ("partner effect") risky sexual behavior. Results indicated for target-teens and siblings, more AU and CU was significantly associated with higher frequency of risky sexual behavior (actor effects). However, greater target-teen AU was associated with less sibling risky sexual behavior (partner effect), representing interdependence. These findings confirm the influence siblings have on one another's behavior in adolescence and have implications for prevention and intervention efforts for teen substance use, to be discussed.

28. **DRINKING MOTIVES AND PROTECTIVE BEHAVIORAL STRATEGIES: ETHNIC DIFFERENCES IN ALCOHOL USE OUTCOMES.** Savannah Pham, P. Priscilla Lui, Banan Ramadan, Heidemarie Blumenthal, Michael Madson. Disparities in alcohol (mis)use reflect disproportionately more adverse drinking-related consequences in ethnic minority than in nonminority populations. Whereas alcohol (mis)use has been shown to be linked to drinking motives and protective behavioral strategies (PBS), studies have relied on predominantly White samples and neglected examinations of ethnic differences. It remains unknown whether and how PBS buffer the relations between drinking motives and alcohol (mis)use across ethnic groups. Asian, Hispanic, and White college drinkers (N=566; 68.2% women; M_{age}=19.93) reported their levels of alcohol consumption, dependence symptoms, and harmful drinking, drinking motives, and PBS use. Partial ethnic invariance emerged for the Drinking Motives Questionnaire and Revised Protective Behavioral Strategies Scale scores. Alcohol consumption, dependence symptoms, and harmful drinking were positively linked to coping motives. Greater use of PBS-controlled consumption predicted less harmful drinking, and greater use of PBS-serious harm reduction predicted less consumption and fewer dependence symptoms. Ethnicity moderated the relations between alcohol use outcomes and PBS x drinking motives. Compared to Whites, use of PBS-controlled consumption predicted less alcohol consumption among Asians endorsing low levels of coping motives whereas use of PBS-serious harm reduction predicted less harmful drinking among Hispanics endorsing low levels of enhancement motives. Conceptual and practical implications are discussed.
29. **CO-USE OF ALCOHOL AND CANNABIS IS ASSOCIATED WITH WAKING UP IN AN UNEXPECTED PLACE.** Shelby King, Sterling M. Hubbard Jenni B. Teeters. Background: The combined use of alcohol and cannabis has been shown to lead to greater global consequences than the individual use of either substance. Little research has examined whether co-users are at greater risk of experiencing specific substance-related consequences, such as waking up in an unexpected place. The present study examined whether young adult drinkers were more likely than co-users to endorse waking up in an unexpected place after substance use. Method: Drinkers were defined as having consumed five or more drinks in a typical week. Combined users consumed five or more drinks weekly and used cannabis five or more times in the previous month. 235 young adult substance users completed measures that assessed substance use frequency and related problems. Results: In a logistic regression model, being a co-user of alcohol and cannabis was a significant predictor of waking up in an unexpected place after substance use. Co-users were three times more likely to have woken up in an unexpected place in the past year (OR = 3.10). Discussion: These results underscore the enhanced dangers of partaking in co-use of alcohol and cannabis and highlight the need for further research on the combined and simultaneous uses of these two substances.
30. **ELUCIDATING THE CONNECTION BETWEEN PTSD AND ALCOHOL USE DISORDER: THE MODERATING ROLE OF DISCLOSURE.** Sterling Hubbard, Shelby A. King, Jenni B. Teeters. Background: Campus sexual assault (CSA) continues to be a national public health concern. The majority of CSA survivors do not disclose that the assault happened. There is substantial evidence

that sexual trauma can lead to symptoms of Posttraumatic Stress Disorder (PTSD) and that PTSD can exacerbate problematic alcohol use. However, little research exists examining the connection between disclosing CSA, PTSD symptoms, and alcohol use outcomes. The present study aims to examine whether disclosing CSA moderates the relations between PTSD and alcohol use disorder symptoms among college students who have experienced CSA. Method: Participants were recruited through the university's subject pool ($n = 42$; 69% female) and completed a battery of measures that assessed substance use and CSA. Results: A moderation analysis was conducted to determine whether disclosure of CSA moderated the relations between PTSD and AUD symptoms. Disclosure of CSA significantly moderated the relations between PTSD symptoms and AUD symptoms ($b = .10$, $p < .01$). Discussion: These results suggest that not disclosing CSA is significantly associated with AUD symptoms. Having a support system that a survivor of CSA trusts and feels comfortable talking to is crucial and further efforts to provide supportive, confidential services on college campuses is warranted.

31. MINDFULNESS BASED RELAPSE PREVENTION WITH OLDER AND YOUNGER TREATMENT SEEKERS: A SECONDARY ANALYSIS. Tyree J Dingle, Sarah Bowen.

Mindfulness-Based Relapse Prevention (MBRP) has been shown to outperform other relapse-oriented treatment modalities in clinical trials. However, it is currently unclear if MBRP's higher performance is true for all treatment seekers. The purpose of this study was to examine the differential efficacy of substance use treatments for younger (below 40) versus older (40+) adult treatment seekers ($N=225$), using data from a randomized controlled trial from a community-based substance abuse treatment center (Bowen et al., 2014). Primary outcomes were rates of abstinence and percentage of days used at 1-year follow up. Age ranged from 19 to 62 ($M=39$, $SD=11$) with most participants identifying as either Caucasian (51.6%) or male (68.4%). However, results yielded significant differences by treatment for both outcome variables in older, but not younger, participants. Specifically, individuals over 40 in the MBRP condition reported a significantly lower ($p < .000$) percentage of days of use compared with standard cognitive behavioral relapse prevention (RP) and 12-step based treatment as usual (TAU). In addition, older but not younger participants in both RP and MBRP had significantly higher abstinence rates compared with those in TAU. Overall, findings suggest that treatment type may be more important for older individuals than for younger ones.

32. BEHAVIORAL ECONOMIC MODERATORS OF THE ASSOCIATION BETWEEN INTENTION AND CHANGE IN DRINKING. Ulysses Savage, Ashley Denhardt, Brian Borsari, Matthew Martens, James Murphy.

Intention to change predicts of change in drinking following an intervention, but many people who intend to change do not follow through and little research has examined factors that might account for this intention-change disconnect. Behavioral economic research suggests that elevated alcohol demand and deficits in environmental reward are associated with stable heavy drinking, and the current study tests the hypothesis that these individual difference risk variables will moderate the relationship between intention and change in drinking in a sample of heavy drinking college students following a brief alcohol intervention. Moderation analyses were conducted with demand intensity and environmental reward (moderators), self-reported likeliness to change (independent variable), and change in weekly alcohol consumption (dependent variable). Greater post-session intent to change predicted greater drinking reductions at the six-month follow-up ($B = -.12$, $SE = .02$, $p < .001$), and baseline demand intensity and environmental reward moderated this association (p 's $< .05$). Individuals with low intent to change, combined with elevated demand or low substance-free reward, are least likely to reduce their drinking; however, elevated behavioral economic risk did not reduce the predictive utility of post-session intentions on drinking reductions, suggesting that post-session intentions are positive prognostic indicators even among high risk drinkers.

33. **PATIENTS' EXPERIENCE OF TRANSITIONS IN OPIOID PRESCRIBING PRACTICES IN HIV SPECIALTY PRIMARY CARE.** **Victoria Ameral, Michael Stein, Lisa Uebelacker, Megan Pinkston, Debra Herman, Risa Weisberg.** While epidemiologists have documented the large-scale impacts of policies to reduce US opioid prescriptions, limited research has examined the lived experiences of patients during this period of rapid transformation in prescribing practices. This mixed-methods study provides a cross-sectional snapshot of this unique time in one specialized primary care practice, for a sample of patients with chronic pain receiving HIV treatment in a primary care setting. Data were collected soon after the site began efforts to transition high-risk patients from opioid medications to buprenorphine. The sample (n=67) included patients receiving opioid pain medications (n=39) or buprenorphine (n=28) at the time of data collection. Qualitative results for each group describe patient reactions to conversations with providers regarding recent or potential transitions from opioid to buprenorphine treatment. Non-parametric comparisons show higher rates of overdose history for the buprenorphine group, while groups were similar on a number of variables, including adequacy of pain relief and concern regarding future availability of medication. These results offer a view of patient experiences in one clinic during a unique period for US healthcare, and provide an initial framework for capturing such information during rapid transitions in healthcare practices.
34. **READINESS TO CHANGE PREDICTS TONIC ALCOHOL CRAVING.** **Wave-Ananda Baskerville, ReJoyce Green, Spencer Bujarski, & Lara A. Ray.** Previous research has demonstrated the importance of alcohol craving as an indicator of problematic alcohol use and readiness to change drinking behavior improving treatment outcomes. However, few studies have examined the relationship between these two constructs. The current study examined whether readiness to change predicts tonic alcohol craving in a community sample (N=130) of heavy drinkers. Participants completed an in-person assessment battery where craving was assessed by the Penn Alcohol Craving Scale (PACS) and Obsessive Compulsive Drinking Scale (OCDS). The Readiness to Change (RTC) ladder was used to assess motivation to reduce drinking. Individuals were separated into two intrinsic motivational categories: low (RTC score of 0 - 4) or high (RTC score of 6 - 10). Hierarchical regression results revealed that over and above AUD symptoms and Alcohol Dependence Scale scores, RTC significantly explained an additional 1.9% of the variance in PACS scores such that those in the high intrinsic motivation group had lower PACS scores (B=-1.85, p=.03). RTC significantly explained an additional 1.8% of variation in OCDS compulsive subscale, with those in the high intrinsic motivation group having lower OCDS compulsive subscale scores (B=-.80, p=.02). These results suggest that greater motivation to change may suppress craving for alcohol.

Poster Session 4: FRIDAY April 3rd 5:00pm – 6:15pm

- 1. RACIAL PATTERNS OF DEPRESSION AND ILLICIT DRUG USE. Abdulrasak Ejiwumi, Manik Ahuja, Rajvi Wani.** Introduction: The relationship between depression and drug use and has been extensively investigated in several studies in the past. However, the mediatory role played by race/ethnicity on the association between depression and illicit drug use requires further investigation. Methods: Data were employed from the nationally representative Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003. Illicit drug use was based on past year drug use. We used logistic regression to test the association between past year major depressive episode re-parameterized by race, and past year illicit drug use. We controlled for income, gender, and age. Results: Overall, past year MDD (OR=2.94, 95% CI, 2.53-3.43; $p<.0001$) was associated with past year illicit drug use. When examining race, past year episode of MDD among Asians (OR=5.67, 95% CI, 3.27-9.82; $p<.0001$), was associated with the highest odds of illicit drug use, followed by Whites (OR=3.32, 95% CI, 2.62-4.21; $p<.0001$), Blacks (OR=2.25, 95% CI, 1.71-2.96; $p<.0001$), and Latinos (OR=2.70, 95% CI, 1.89-3.87; $p<.0001$). Conclusion: Depressive symptoms can lead to other comorbidities such as illicit drug use and dependency. With rising rates of substance abuse and mental health problems, race/ethnicity should be considered, particularly among mental health treatment providers. Cultural competency and other barriers must also be addressed.
- 2. ASSOCIATION BETWEEN ACCULTURATION AND LONGITUDINAL ALCOHOL, CANNABIS, CIGARETTE, AND OPIOID USE. Anthony Rodriguez, Elizabeth D'Amico, Regina Shih.** We examined the association between acculturation, as measured by the AHIMSA's four orientations, with longitudinal substance use including alcohol, cannabis, cigarettes, and opioids. Using longitudinal data collected on a diverse sample of adolescents through early adulthood ($n=2,019$), latent growth models were estimated to determine whether assimilation (preference for U.S. culture) and integration (preference for U.S. and family native culture) predicted initial substance use as well as the rate of change over time. Results indicate that adolescents higher on assimilation were more likely to use alcohol, cannabis, cigarettes, and opioids. However, assimilation did not predict the rate of change or increased likelihood of use over time. Adolescents higher on integration had lower initial likelihoods of alcohol, cannabis, cigarette, and opioid use, but integration did not predict the rate of change or increased likelihood of use over time. These findings highlight possible protective effects of bi/multiculturalism wherein lower rates of all substance use were noted for more integrated adolescents, but greater assimilation may have deleterious effects in terms of initial use. Overall, these results indicate that acculturation plays in important role in initial use, however, may be less important in the actual rate of change in substance use over time.
- 3. IMPAIRED CONTROL OVER ALCOHOL PREDICTS ALCOHOL RELATED PROBLEMS AMONG YOUNG ADULT HEAVY DRINKERS. Ben Berey, Tessa Frohe, Bonnie Hannah Pruitt Rowland, Stephanie O'Malley, Robert Leeman.** Impaired control over alcohol (frequent attempts to limit drinking and/or difficulties limiting drinking) is common among young adults and relates to negative outcomes. However, identifying whether impaired control predicts future alcohol-related consequences is germane to intervention development yet remains understudied. In this secondary analysis, we predicted alcohol-related outcomes prospectively among young adult heavy drinkers based on impaired control and other variables. Participants ($N=99$; 49% female) engaged in blood alcohol content-based intervention and an alcohol self-administration session. Parts 1 and 2 of the Impaired Control Scale (ICS; Heather et al., 1993); Young Adult Alcohol Consequences Questionnaire (YAACQ;

Read et al., 2006); self-reported alcohol consumption and covariates were measured at baseline and 6-month follow-up. We hypothesized impaired control would relate to alcohol-related consequences at baseline and follow-up. More attempts to limit drinking (ICS Part 1; "attempted control") and difficulties limiting drinking (ICS Part 2; "failed control") related to alcohol-related consequences cross-sectionally at baseline ($p < .01$). Only ICS Part 1 predicted alcohol-related consequences prospectively ($p < .01$). There were no significant relationships between impaired control and self-reported alcohol consumption. Persistent attempts to limit drinking may identify individuals at risk for negative alcohol-related outcomes. Adapting interventions including moderate drinking strategies may benefit young adults with impaired control.

4. EFFECTS OF EXPERIMENTALLY-INDUCED MUSCULOSKELETAL PAIN ON ALCOHOL DEMAND.

Bethany Stennett, Darya Vitus, Molly Barlow, Erin Ferguson, Jesse Dallery, Meryl Alappattu, Michael Robinson, Jeff Boissoneault. Pain serves as an antecedent for alcohol use, increasing risk for hazardous drinking. Delayed onset muscle soreness (DOMS) induction produces clinically-relevant but time-limited musculoskeletal pain. This study investigated whether DOMS induction on the dominant elbow flexor influenced alcohol demand using the Alcohol Purchase Task (APT). We hypothesized DOMS induction would increase alcohol demand. Based on studies of sex differences in pain self-medication, we also predicted this effect would be stronger in men than women. Participants ($N=40$; 57% women) were randomly assigned to eccentric (DOMS) or concentric (sham) exercise. Participants completed the APT pre-exercise and 48-hours post-exercise. Repeated measures GLM indicated the DOMS procedure effectively induced pain in the elbow flexors, assessed using a 100mm VAS [$M_{DOMS}=30.02(18.53)$ vs $M_{sham}=1.05(1.67)$, $p < .0001$]. Significant interactive effects in APT indices were detected. In the DOMS group, intensity and breakpoint increased in men from pre-exercise to post-exercise, but were unchanged or decreased in women. In contrast, Omax and Pmax decreased in women, but not men. As hypothesized, men in the DOMS group showed increased alcohol demand. However, decreased demand in women was unexpected. Results indicate DOMS induction may be a useful model to study pain as an antecedent for alcohol use.

5. A QUANTITATIVE SENSORY TESTING STUDY OF ACUTE TOLERANCE TO THE ANALGESIC EFFECTS OF ALCOHOL. Darya Vitus, Bethany Stennett, Erin Ferguson, Michelle Williams, Michael Robinson, Sara Jo Nixon, Jeff Boissoneault. Acute tolerance is the well-established phenomenon that a given breath alcohol concentration (BrAC) is associated with differential neurobehavioral and subjective effects depending on whether BrAC is rising or falling. However, it is unknown whether the analgesic effects of alcohol differ between the ascending and descending limbs. Eighteen healthy social drinkers completed two sessions: placebo and alcohol (.08 g/dL target BrAC). Each session involved two bouts of quantitative sensory testing using a thermal stimulus (32-50°C at .5°C/s): one on the ascending limb and one on the descending limb. In each, participants indicated the moment sensation transitioned from warmth to pain (threshold) and reached intolerable (tolerance). Fifteen seconds after stimulus removal, participants indicated residual pain via a visual analogue scale. We examined the interaction effects of beverage condition and time on threshold, tolerance, and residual pain sensations. BrAC limb moderated the effect of beverage condition on threshold, such that alcohol increased threshold to a greater extent on the ascending limb than the descending limb ($F_{1,16}=4.77$, $p=.044$, $\eta^2p=.229$). Findings provide initial evidence that alcohol's analgesic effects are stronger on the ascending than descending limb, suggesting that using alcohol to self-medicate pain may involve high-risk drinking patterns.

- 6. PARENTAL MONITORING AND SUBSTANCE USE IN A LONGITUDINAL SAMPLE OF SOUTHERN CALIFORNIA ADOLESCENTS.** Francesca Keogh-Clark, Francesca Keogh-Clark, Evan A. Krueger, Adam M. Leventhal. Background: Parental involvement and supervision (i.e., "parental monitoring;" PM) is associated with reduced alcohol and marijuana use among youth. However, few studies have assessed the role of PM in adolescent substance use initiation over time, or across a wider range of substances, including those that are increasingly popular or emerging (e.g., vaping, cannabis edibles, opioids). Methodology: Utilizing cohort data from 3,281 students across 10 Southern California high schools (2014-2017), we assessed, among never-users at baseline, the role of PM in initiation of 12 substances (e.g., various tobacco products, prescription stimulants, psychedelics) at follow-up, controlling for sociodemographic characteristics. Interactions assessed differences by gender. Results: For all substances except prescription stimulants, PM was associated with lower odds of use at follow-up (OR range: 0.35 to 0.80). Differences by gender were observed for illicit drugs, psychedelic drugs, cannabis, and e-cigarettes; greater PM was associated with lower odds of initiation among girls, compared to boys. Discussion: PM is associated with reduced use of multiple substances among adolescents over time, particularly for girls. To identify areas for intervention, future research should more comprehensively assess family dynamics (e.g., relationship quality), as they relate to substance use initiation.
- 7. FEASIBILITY OF INTEGRATING OSA SCREENING FOR VETERANS WITH PTSD/SUD ON A VA RESIDENTIAL UNIT.** Guadalupe L. Rivera, Peter Colvonen, Moira Haller, Sonya Norman. Individuals with co-occurring posttraumatic stress disorder (PTSD) and substance use disorder (SUD) have higher rates of physical health problems, psychiatric co-morbidities, and poorer treatment outcomes compared to individuals with a single disorder. Obstructive sleep apnea (OSA) is highly co-occurring with both disorders, yet often goes undiagnosed and untreated in residential treatment facilities. This study aimed to show the feasibility of incorporating OSA screening and treatment onto a SUD Residential Rehabilitation Treatment Program (SARRTP). OSA was diagnosed using Nox T3 recorders, a Type-3 portable OSA screener (using Apnea Hypopnea Index > 5). Participants logged their sleep-wake schedule with a daily Sleep Diary and wore an actigraphy watch. Participants were 35 consecutive veterans admitted to the SARRTP PTSD track who consented to screening. 64.7% of Veterans screened positive for OSA. 11.8% were previously diagnosed with OSA, but did not use a CPAP machine; 17.6% were previously diagnosed and were using a CPAP machine; and 35.3% were newly diagnosed with OSA. Taken together, OSA screening on the unit was accepted by the participants, feasible, and effective in diagnosing OSA. OSA screening should be considered as necessary screening on SUD and PTSD units. Future studies will need to examine OSA treatment on treatment outcomes.
- 8. DOES THE VAGUS NERVE PROMOTE SELF-REGULATION IN DAILY SMOKERS.** Hannah Brinkman, Allison Borges, Amy Gong, Min-Jeong Yang, Teresa Leyro. The vagus nerve is conceptualized as a socially sensitive physiological marker of self-regulation. The role of vagal activity in promoting self-regulation following a stressor has been understudied in smokers and may inform stress precipitated smoking. This study examined the effect of vagus nerve activity (i.e. vagal tone and vagal withdrawal) on stress appraisal in fifty-eight adult daily smokers (61.7% male; $M_{age} = 34.57$, $SD = 7.05$; $M_{CPD} = 14.05$, $SD = 4.93$) randomized to receive positive or negative non-verbal evaluative feedback during a socioevaluative stressor. We hypothesized that vagal indices would moderate the effect of feedback on stress appraisal such that smokers with greater vagal activity receiving positive feedback would report a more adaptive stress appraisal, as compared to smokers low in vagal activity receiving negative feedback. A significant interaction was observed between vagal withdrawal and feedback on stress appraisal ($b = 0.65$, $SE = 0.26$, $CI_{95\%} = 0.13, 1.18$; $R^2 = 0.24$,

$F(4,53)=4.26, p=0.005$), but not between vagal tone and feedback ($F(4, 53)=2.03, p=0.10$). Specifically, greater vagal withdrawal was associated with a more adaptive stress appraisal in the positive feedback condition, and a more maladaptive stress-appraisal in the negative feedback condition. Findings suggest vagal withdrawal may play a more important role in modulating stress appraisal, than vagal tone, in the context of social feedback.

9. WITHDRAWN

10. UNCOVERING THE HOMEOSTATIC UNDERPINNINGS OF OPIOID ADDICTION USING

COMPUTATIONAL MODELING TECHNOLOGY. J. Tory Toole, Matthew Morris, Cole Lyman, Brian Amos, Caroline Easton, Gordon Broderick. Background: The brain and body consist of complex networks of interconnected feedback and feed forward loops. Because these networks are capable of supporting multiple homeostatic states, a stressor or combination of stressors will cause the network to become "stuck" in a persistent maladaptive state, for example, chronic pain and the potentiation of opioid dependency. Methodology: The current research uses the text mining of over 14000 publications to assemble a regulatory circuit consisting of 44 immune and neurotransmission mediators linked by 188 documented interactions. Parameters dictating the decisional dynamics of the network were estimated such that predicted behavior would adhere to observed pathologies. Results: Analysis of this psycho-neuroimmune network confirmed that a broad family of behavioral kinetics may be equally capable of supporting dynamically stable conditions of chronic pain, depression and addiction behaviors. Despite differences in the predicted course of onset, these models typically point to characteristic patterns of increased inflammatory activity in the brain for each of these pathologies, specifically increased expression of the protein complex NF-kB and inflammatory signaling proteins IL1-B, IL6, and TNF. Conclusion: Potential treatments targeting both addiction and chronic pain may therefore benefit from the use of anti-inflammatory drugs as pharmacological potentiators of current behavioral interventions.

11. PARENTAL AND PEER INFLUENCES ON MULTIPLE TOBACCO PRODUCT USE AMONG US YOUTH.

Juhan Lee, JeeWon Cheong. Background: Due to the recent increase in e-cigarette use, there is a growing public health concern on the co-use of e-cigarettes and other tobacco products among US youth. However, the knowledge gap still exists on the patterns of using multiple tobacco products and the related risk factors (e.g., parent/peer tobacco use). Methods: Using the youth datasets (Waves 1 and 3) of the Population Assessment of Tobacco and Health (PATH) Study, we conducted latent class analysis (LCA) to identify the patterns of tobacco product use among adolescents (ages 14-17) based on the use of tobacco products at Wave 3 (e.g., cigarettes, e-cigarettes, hookah, smokeless/snus). Class membership was then predicted by parental and peer tobacco use at Wave 2. Results: We identified three classes of tobacco use patterns: (1) "non-users" (n=7294; 92.2%); (2) "poly-users" (n=155; 3.5%); and (3) "primarily e-cigarette users" (n=377; 4.2%). Adolescents who have tobacco using peers at Wave 2 were more likely to belong to "poly-users" (aOR=4.28) and "primarily e-cigarette users" (aOR=2.64) than non-users. However, parental tobacco use at Wave 2 did not predict class membership. Discussion: The current findings highlight peer tobacco use as a risk factor for adolescent e-cigarette use and its co-use with other tobacco products.

12. PERCEPTIONS OF RURAL APPALACHIAN RESIDENTS CONCERNING EXCESS PRESCRIPTION OPIOIDS IN THE HOME. Kathleen L Egan, Mark Wolfson, Kaylee M. Lukacena-Buzzetta, Monique S.

McLeary, Carina Mazariegos Zelaya, Donald W. Helme. Disposal of unused prescription opioids is a popular strategy to prevent their diversion and nonmedical use. This study presents baseline data on participant perceptions on retaining prescription opioids in their home and past disposal

behaviors. In Fall 2019, 491 community members (79% female, 97% White, mean age: 40 years) residing in five rural, Appalachian counties (3 in Kentucky and 2 in North Carolina) completed a web-based survey. Participants ranked (1=Strongly Disagree to 5=Strongly Agree) statements about perceptions on prescription opioids in the home and self-reported disposal practices. Participants endorsed low levels of agreement with statements concerning 'worrying about' (Mean (M)=2.57 SD=1.53) and 'risks related to' (M=2.70, SD=1.55) 'having prescription pain medicine in their homes because it may be misused' and 'importance of removing unused prescription pain medicine from my home because they may be misused' (M=2.79, SD=1.58). They felt confident in 'knowing how to dispose of unused prescription pain medicine' (M=3.82, SD=1.34). The last time they had unused prescription opioids, 48.0% disposed at home, 20.7% used a disposal program, and 31.3% did not dispose of medication. These findings will be used to inform development of a communications campaign to facilitate disposal of unused prescription opioids among rural Appalachian residents.

13. TRAJECTORIES AND PREDICTORS OF ALCOHOL-INDUCED BLACKOUTS IN HEAVY DRINKING YOUNG ADULTS. Kevin Campbell, Samuel F. Acuff, Kinsey Pebley, Ashley A. Dennhardt, Matthew P.

Martens, Brian Borsari, James G. Murphy. Alcohol-induced blackouts are reported by approximately half of college students and are associated with negative consequences, including increased likelihood of injury or missing class. The current study aimed to identify distinct trajectories of alcohol-induced blackouts and determine baseline predictors related to class membership. Participants (N = 393) enrolled in a brief alcohol intervention trial completed assessments at baseline, 1, 6, 12, and 16 months. A parallel process growth mixture model was estimated to identify trajectories of blackouts above and beyond the effects of heavy drinking. Results indicated four trajectories: no blackout (NB; n = 48, 12.1%), moderate decreasing (MD; n = 198, 50.4%), high decreasing (HD; n = 113, 28.7%), and high stable (HS; n = 35, 8.8%). Between-class comparisons suggested that greater sensation-seeking, cannabis use, and alcohol demand were associated with an increased probability of membership in the high stable trajectory. Lower levels of anxiety, sensation-seeking, cannabis use, alcohol demand and greater self-regulation, life satisfaction, future orientation, and reward availability distinguished the no blackout trajectory from the other classes. Predictors associated with increased risk for exhibiting persistently high rates of blackouts may inform targeted, more effective interventions.

14. DAILY ASSOCIATIONS BETWEEN SLEEP DISTURBANCE AND ALCOHOL USE. Lindsey Freeman, Chan Jeong Park, Nicole Hall, Pradeep Sahota, Christina McCrae, Mary Beth Miller.

Prospective research has suggested that insomnia symptoms predict subsequent alcohol consumption and consequences. However, fewer studies have examined daily associations between sleep disturbance and alcohol-related behaviors. Self-reported insomnia symptoms and alcohol consumption were assessed once per day in young adults with insomnia (N = 66) who reported at least one past-month heavy drinking episode. Participants responded to daily electronic surveys for 7 days. Multilevel models were conducted to predict the likelihood of a person consuming alcohol on a given day, the number of drinks consumed on drinking days, and whether or not participants endorsed alcohol-related consequences drinking days. Neither participants' self-reported sleep quality nor their total sleep time significantly predicted likelihood of consuming alcohol the following day, or number of drinks consumed on drinking days, after controlling for gender and college status. However, increases in person-level sleep quality ratings predicted a decreased likelihood of experiencing any alcohol related consequences (OR = .38, p = .025, 95% CI [.14, .85]) on drinking days. Subsequent analyses will incorporate objective measures of sleep quantity and quality in predicting alcohol use and consequences. Findings suggest that poor sleep quality may be a pathway over time to negative alcohol-related outcomes among young adults who drink.

15. THE INTERPLAY OF DISINHIBITION AND ALCOHOL DEMAND IN PREDICTING ALCOHOL-RELATED PROBLEMS. **Madison Raybuck, Keanan J. Joyner, Christopher J. Patrick.** The externalizing spectrum model links etiological factors related to antisocial behavior, aggression, and substance use (Krueger et al., 2002) by positing a broad liability factor - termed trait disinhibition (Patrick et al., 2013) - contributing to problems of these various types (Krueger et al., 2007). In contrast with this general liability factor, alcohol demand (Murphy et al., 2009) is a specific risk and maintaining factor for alcohol misuse and dependence. The current study sought to examine how general disinhibitory liability combines with a more specific process, alcohol demand, to predict alcohol-related problems. College and community adults ($n = 110$ tested to date; target $N = 150$) completed the Alcohol Purchase Task (APT), alcohol use and problems scales from the Externalizing Spectrum Inventory (ESI), and the Crime and Analogous Behaviors (CAB) Scale, along with disinhibition scales composed of items from the ESI. Mediation and moderation models between disinhibition, alcohol demand metrics (Intensity, Breakpoint, Omax, and Elasticity), and alcohol problems were explored. APT-Intensity (max consumption) fully accounted for the association between disinhibition and alcohol problems, whereas disinhibition and APT-Omax (max expenditures) evidenced completely independent pathways to alcohol problems. The other demand metrics, psychophysiological (EEG/ERP) correlates of disinhibition, and future research implications will be discussed.

16. OUTCOMES OF SMOKING CESSATION TREATMENT INTEGRATED IN A COMMUNITY BEHAVIORAL HEALTH CLINIC. **Marc Budgazad, Jon Marrelli.** Rates of smoking among individuals with mental illness (MI) are more than twice that of the general population. Integration of smoking cessation services in behavioral health settings is key, given limited availability of resources and misconceptions about smokers' motivation and ability to quit. We examined outcomes of a 12-month integrated health care program providing smoking cessation services to adults at an outpatient mental health clinic. Smoking was assessed by self-report, and breath carbon monoxide (CO). Of the larger sample ($N=369$), there were 82 smokers at baseline. Most were daily smokers ($n=70$; 85%) and 89% expressed interest in smoking cessation. Twenty-six baseline smokers (32%) reduced smoking frequency by the 12-month timepoint. Of those, 16 (20%) quit smoking. Reliability of self-report was supported by 12-month CO levels. Mean breath CO at 12-months for patients who reduced or quit smoking ($n=26$; $M=6.60$, $SD=6.47$) approached levels indicative of abstinence ($CO < 7$ ppm), and was significantly lower than the other program completers [$n=56$; $M=13.20$, $SD=8.67$; $t(80)=3.40$, $p < 0.01$]. Our findings support that screening and tobacco cessation treatment integrated into behavioral health service programs are effective. The results reveal that smokers with MI are motivated to quit smoking and successful when smoking cessation services are easily accessible.

17. DOES PARENT-CHILD RELATIONSHIP QUALITY MEDIATE RELATIONS BETWEEN PARENT MARITAL STATUS & ALCOHOL USE. **Maria P. Frangos, Jessica D. Hartman, William R. Corbin.** Research has shown that parental marital status (MS) is a predictor of adolescent/young adult alcohol use. However, it remains unclear how MS confers this risk. The current study sought to examine whether parent-child relationship quality (PCRQ) mediates the relationship between MS and alcohol use. We analyzed data from a large-scale survey administered to students the summer before college matriculation ($N = 280$; 60% female). Results showed that having divorced parents was associated with significantly higher levels of drinking ($B = .854$, $SE = .381$, $p = .026$). There was also an indirect effect of MS on alcohol use through PCRQ ($z = 1.97$, $SE = .09$, $p = .048$). Having divorced parents was associated with lower PCRQ which, in turn, conferred risk for heavy drinking ($B = -.957$, $SE = .306$, $p = .002$). Further, when accounting for PCRQ, there was no longer a significant direct effect of MS on alcohol use ($B = .653$, $SE = .408$, $p = .111$). Given high rates of divorce, these results have important

implications for interventions targeting risk for alcohol problems in children of divorce. Efforts to maintain positive parent-child relations amid divorce may serve to reduce risk for heavy drinking among adolescents.

- 18. DECISION MAKING PROCESSES AND HELP-SEEKING ATTITUDES IN INDIVIDUALS SELECTING AN ADDICTION COUNSELOR.** Marisa Weerts, Derek Holyoak, Lindsey Hawkins Natira Mullet, and Antover Tuliao. This study examines potential clients' online search patterns while they actively search for an addiction counselor. Based on decision sciences and information processing theories, the basis of this study assumes that the information acquired by potential clients lays the foundation for decision making and subsequent choices. The goal of our study was to examine the active search patterns and decision making processes of individuals as they select a substance use counselor. Though help-seeking literature highlights several barriers and facilitators to seeking treatment, no studies have examined the active search patterns, using process tracing, to understand how individuals choose a substance use counselor. Based on the guidelines outlined in the Think-Aloud Protocol (TAP), college-aged participants (N=21) were asked to actively seek for and select a substance use counselor while verbally speaking aloud the thoughts and decisions made. Audio and video recordings of the participants were collected. Following the protocol suggested by Straus and Corbin, video and audio data will be analyzed using inductive grounded theory with themes and subthemes being developed. Results will produce a theory of decision making for potential clients selecting an addiction counselor. Results and clinical implications will be presented and discussed.
- 19. INVESTIGATING A MODIFIED MARIJUANA PURCHASE TASK TO CHARACTERIZE CANNABIS DEMAND IN EMERGING ADULTS.** Meenu Minhas, Elizabeth Aston, Jane Metrik, James Murphy, James MacKillop. Background: One avenue in exploring cannabis misuse is through the behavioural economic lens of demand. It generates various indices which have been associated with cannabis dependence and craving. The current study utilized a modified version of the marijuana purchase task (MPT) to examine the relationship between the reinforcing value of cannabis, motivation to use cannabis, cannabis misuse and severity. Methodology: Participants were emerging adults (ages 19.5-24.9) recruited from Hamilton, Ontario (N = 396; Canadian sample) and Memphis, Tennessee (N = 275; American sample). The analysis included the following validated measures of interest: MPT, Marijuana Consequences Questionnaire, Cannabis Use Disorder Identification test, and motivation to change cannabis use. Results: The same two-factor latent structure was identified with the MPT indices in the Canadian and American samples. Factor 1 included intensity, Omax, and elasticity. Factor 2 included Pmax and breakpoint. In the Canadian sample, Factor 1 and Factor 2 predicted cannabis misuse and severity. In the American sample Factor 1 predicted cannabis misuse and severity, there was no effect of Factor 2. Lastly, in both samples, bivariate correlations revealed that Factor 1 was significantly associated with how important individuals believed it was to change cannabis use and how confident they were that they could change cannabis use. Conclusion: The demand for marijuana encompasses two different factor structures with differential relationships to marijuana misuse, severity, and the motivation to change cannabis use. These data highlight the utility of a behavioural economic approach in assessing cannabis involvement.
- 20. TRANSDIAGNOSTIC EMOTIONAL PSYCHOPATHOLOGY DIFFERENCES IN AA MENTHOL & NON-MENTHOL CIGARETTE SMOKERS.** Nausheen Wakhlu. Background: Menthol (vs. non-menthol) cigarette use is prevalent among disadvantaged populations, such as African Americans (AA) and those with transdiagnostic emotional psychopathology (e.g., depressive and anxiety symptoms). However, the scarce amount of literature exploring the intersectionality between these two populations has left it unclear whether the prevalence of menthol cigarette use is higher among

racial/ethnic minority populations with transdiagnostic emotional psychopathology. The current study examined differences across several domains of transdiagnostic emotional psychopathology between AA menthol and non-menthol smokers. Methods: 791 non-treatment seeking AA daily cigarette smokers (menthol smokers = 62%) completed self-report questionnaires assessing several domains of transdiagnostic emotional psychopathology (i.e., psychomotor restlessness and agitation, impulsiveness, depressive and anxiety symptoms, anxiety sensitivity, and obsessive compulsive symptomatology) during a baseline visit. Independent samples t-tests were conducted to examine whether there were significant differences between the groups. Results: Results demonstrated significantly greater levels of transdiagnostic emotional psychopathology, such as depressive (i.e., appetite loss, psychomotor restlessness and agitation, and ill-temperament; $p < .001$) and anxiety symptomatology (i.e., panic disorder and traumatic intrusions; $p = .004-.023$), and obsessive compulsive symptomatology (i.e., obsessing, hoarding, checking, and neutralizing behaviors; $p = .03 - <.001$), among AA menthol (vs. non-menthol) smokers.

21. PROSPECTIVE RELATIONS BETWEEN ADOLESCENT EMPLOYMENT AND INITIATION OF ALCOHOL USE. Neo Gebru, Tim Janssen, Cassidy LoParco, JeeWon Cheong, Kristina Jackson, Robert Leeman.

Background: Alcohol is the most widely used substance among adolescents and early use is associated with deleterious outcomes. Thus, identification of risk factors is needed. One potential risk factor is employment, which is cross-sectionally associated with alcohol use. However, prospective relations remain largely understudied. Thus, we examined the prospective role of employment on alcohol use initiation. Methods: Data from the first five annual rounds of the National Longitudinal Survey of Youth-1997 (N = 6,089; ages 14-18 at baseline) were utilized. Discrete time survival analyses were used to assess the impact of employment (defined as, "yes/no", ≥ 1 week of employment) on initiation of (1) any drinking and (2) heavy drinking. Gender, race, and familial factors were included as covariates. Results: Employed youth had a significantly higher hazard ratio (HR) for initiation of any drinking (HR=1.34, 95% CI: 1.22-1.49) and heavy drinking (HR=1.49, CI: 1.34-1.7), compared to unemployed youth. Boys, White youth, and youth without strict parents also had higher HRs for both any and heavy drinking, compared to their counterparts. Conclusions: Employment facilitates earlier initiation of alcohol use in youth. Further research identifying mechanisms underlying this relationship (i.e., employment industry, exposure to risky peers) is needed.

22. SUBJECTIVE INTOXICATION AFTER ALCOHOL INTAKE IS ASSOCIATED WITH RESTING STATE FUNCTIONAL CONNECTIVITY OF THE CEREBELLUM. Nicholas Bush, Bethany Stennett Victor Schneider II, Darya Vitus, Sara Jo Nixon, Michael Robinson, Jeff Boissoneault.

Subjective intoxication (SI) associated with an alcohol dose varies between individuals. Examining the relationship between functional connectivity (FC) of resting-state brain networks and SI may help elucidate SI's functional correlates. In this secondary analysis from an ongoing placebo-controlled study of alcohol analgesia, fifteen healthy social drinkers (10 women; age: 25-45 years) completed a testing session in which they consumed alcohol (target BrAC: 0.08 g/dL). Nine-minute resting-state fMRI scans were acquired 30-35 minutes after beverage administration. Salivary alcohol concentration measures collected approximately 6 minutes after the resting-state fMRI scan averaged .078 g/dL (SD=.018). SI was measured using an electronic visual analogue scale. Seven resting-state networks were identified using group independent component analysis with the CONN toolbox: cerebellar, default mode, dorsal attention, frontoparietal, salience, sensorimotor and visual. Whole-brain regression analyses for each network were conducted to identify regions where FC was associated with SI. SI was associated with greater FC between the cerebellar network (CN) and rostral anterior cingulate cortex, bilateral paracingulate gyrus, right thalamus and right globus

pallidus (clusterwise $pFDR < .0018$). Results suggest that variability in CN FC after alcohol intake may help explain individual differences in SI.

23. MYSTICAL EFFECTS OF KETAMINE AS PREDICTORS OF TREATMENT OUTCOME IN ALCOHOL

DEPENDENCE. Rebecca Rothberg, Nancy Haug, Nour Azhari, Elias Dakwar. Psychedelic-assisted therapies such as ketamine have potential to enhance addiction treatment outcomes. More research is needed to determine if the psychoactive effects of psychedelic therapeutics are an important mechanism of change. Previous work has indicated the benefit of mystical-type experiences associated with ketamine including motivation to quit and reduction in craving, which may be due to existential reappraisal (Dakwar et al., 2018). The current study examined mysticism, an aspect of spirituality, as a mediator of ketamine on at-risk drinking (as defined by NIAAA). Participants included 35 individuals (53% female, 70% Caucasian; Mean age = 53, $SD=9.8$) seeking treatment for DSM-IV alcohol dependence enrolled in a randomized clinical trial. They completed the Hood Mysticism Scale (HMS) and Clinician Administered Dissociative States Scale (CADSS) post-infusion and the Timeline Follow-Back (TLFB) for 5 weeks post-infusion. Mystical experience was found to mediate the effect of ketamine on drinking behavior but dissociation was not significant [HMS: $Exp(B)= 0.957$, $p < 0.05$; CADSS: $p=0.673$]. This study aligns with previous research and contributes evidence to the importance of mystical experiences in ketamine treatment for Alcohol Use Disorder. Findings have clinical implications for the use of psychedelic pharmacotherapies to improve treatment for addiction and mental health.

24. PSYCHOMETRIC EVALUATION OF THE MARIJUANA-SPECIFIC ADOLESCENT REINFORCEMENT

SURVEY SCHEDULE. Ricarda Pritschmann, JeeWon Cheong, Richard Yi, Ali M. Yurasek. Purpose: Increased reinforcement from drug-related, relative to drug-free activities, is associated with increased risk severity. A psychometric analysis of an alcohol-specific reinforcement measure identified subscales characterized by the social make-up rather than nature of the activity. The current study examined the psychometric properties of an adapted marijuana reinforcement assessment. Methods: Participants were 309 college students ($M_{age} = 19.49$; 37.5% male) who reported past month marijuana use ($M = 10.54$ days) and completed a web-based survey, including past-month marijuana reinforcement by providing activity frequency and enjoyment ratings across 32 marijuana-related and marijuana-free activities. Ratings were multiplied to obtain a cross-product score reflecting reinforcement derived from activities. Relative reinforcing value of marijuana use was computed [$(\text{marijuana-related total} / (\text{marijuana-free total} + \text{marijuana-related total}))$]. Exploratory and confirmatory factor analyses were conducted to examine factor structure of the scale. Results: Reinforcement was best explained by five factors: Social activities with dates, friends, and family; sexual activities with dates; and studying/chores. Items that did not load or cross-loaded were also identified. Conclusion: Findings highlight that type of activity and people involved in it may influence marijuana-specific reinforcement. Indeterminate loadings suggest formative research is needed to identify additional marijuana-involved activities not captured by the current measure.

25. THE NEURAL CORRELATES OF ALCOHOL DEMAND IN INDIVIDUALS WITH ALCOHOL USE DISORDER.

Sabrina Syan, Shannon McNally, Micheal Amlung, Lawrence Sweet, James MacKillop. Understanding the neural mechanisms that underlie alcohol demand is critical to creating effective interventions for problem drinkers. The current study used an event-related fMRI paradigm to investigate the neural correlates of alcohol demand. Thirty-seven participants (AUD: $n=16$; CTRL: $n=21$) completed the Alcohol Purchase Task during an fMRI scan. This task was used to investigate alcohol demand across two decision making epochs (decide and choose) and three conditions of

alcohol use (1) inelastic (maximum consumption); (2) suppressed (zero consumption); (3) elastic (ambivalent consumption; between maximum and zero). All participants in the AUD group endorsed alcohol use greater the high-risk drinking NIAAA guidelines and met DSM-5 criteria for alcohol use disorder. CTRLs were comprised of recreational drinkers (low-risk drinkers as per NIAAA guidelines). Relative to CTRLs the AUD group demonstrated decreased BOLD activation in the right frontal pole ($p=0.015$, FWE-corrected) during inelastic vs. elastic trials (input epoch). Using a seed-to-voxel approach, the AUD group showed increased functional connectivity between the bilateral anterior insular cortex (seed region) and angular gyrus ($p=0.02$, FWE-corrected) during inelastic vs. elastic trials (decide epoch). Results suggest differences in the neural underpinnings of alcohol demand in individuals with AUD vs. CTRLs in regions associated with cognition and reward networks.

26. REWARD FUNCTIONING AND HIGH-INTENSITY ALCOHOL CONSUMPTION AMONG EMERGING ADULTS. Samuel Acuff, Alton J. Withers, Kevin Campbell, Youkyung Hwangbo, James MacKillop, James G. Murphy. High-intensity alcohol use, marked by rapid consumption and most often studied in the form of binge drinking episodes, is a major concern for emerging adults. These episodes, occurring over a small amount of time, result in rapid increases in blood alcohol concentrations (BAC) and are marked by alcohol-induced blackouts (periods of amnesia where individuals engage in normal activities without remembering the events), which are predictive of most other alcohol problems. Thus, it's important to identify predictors of various markers of high-intensity alcohol use. Heavy drinking has previously been connected to deficits in alternative (substance-free) rewards (reinforcement ratio) and an excessive valuation of alcohol (alcohol demand). The current study examines relations between reward functioning and high-intensity alcohol use among emerging adults ($N=602$). Alcohol demand and reinforcement ratio were both positively correlated with binge drinking, peak BAC, and the number of past month blackout episodes. Measures of anhedonia, reward availability, and likelihood of experiencing reward were less consistently correlated with markers of high-intensity alcohol use. The results suggest that reward functioning may play a role in high-intensity drinking and may be a useful target to reduce high-intensity episodes, which may reduce alcohol problems in general.

27. MACHINE-ASSISTED CLASSIFICATION OF ALCOHOL USE DISORDER FROM FACEBOOK. Sarah Sant'Ana, Maggie Mataczynski, Diane Camarda, Kendra Paquette, John Curtin. Hazardous alcohol use is a persistent, prominent problem among the college population, with roughly a quarter of students meeting criteria for alcohol use disorder (AUD). However, most students with AUD do not perceive a need for treatment, and those that do wait to seek treatment until alcohol-related problems become severe. Thus, a significant barrier to treatment is students' unawareness of their own hazardous use, which effective screening could solve. Current university screeners suffer from under-reporting due to fear of retaliation, and university health centers likely catch only the most severe cases of AUD. Social media provides one platform for passive data to provide unbiased estimates of AUD status to students and encourage them to seek treatment sooner. The current project employed machine learning to classify collegiate AUD from Facebook. 836 undergraduates provided full data from their Facebook accounts and underwent in-session diagnostic screens for AUD. Analyses utilized data from Facebook posts, private messages, demographics, and more. The optimum combination of feature sets (e.g. Bag of Words, Word2Vec), tuning parameters, and classification algorithm (e.g. elastic net logistic regression, random forest) was selected using repeated nested k-fold cross validation. Results demonstrated predictive utility within social media data for classifying collegiate AUD.

28. DAILY-LIFE SHAME AND DRINKING IN INDIVIDUALS WITH BORDERLINE PERSONALITY DISORDER.

Taylor Vebares, Andrea Wycoff MA, Ashley Helle, Tim Trull. Borderline personality disorder (BPD) is associated with substantial impairment and is highly comorbid with alcohol use disorder and problematic drinking. Individuals with BPD also have difficulty regulating negative emotions. Shame, a global negative evaluation of the self, has been identified as a particularly relevant negative emotion for individuals with BPD. Shame is associated with increased alcohol use in community samples; however, little research has studied the potential relationship between shame and drinking in individuals with BPD. The current study examined shame and drinking in two independent samples of individuals with BPD (total N=117), using ecological momentary assessment (EMA). We hypothesized that individuals with BPD would use alcohol in response to feelings of shame. Participants in both studies completed 21 days of EMA during which they reported on their drinking behaviors and affect, including shame. Results from generalized estimating equations suggest that individuals who reported feeling more shame, relative to the sample average, were more likely to report drinking in the moment, even when controlling for other types of negative affect. Findings may point to shame as an important target in efforts to decrease problematic alcohol use in individuals with BPD.

29. MOBILE HEALTH INTERVENTION APP DEVELOPMENT FOR BEHAVIORAL RESEARCHERS: OBSTACLES AND WAYS FORWARD. Tessa Frohe, Maria C. Benvenuti, Patricia Chauca, & Robert F. Leeman.

Smartphone intervention applications (apps) offer great promise for data collection, intervention, and relapse prevention for substance use disorders. Once developed and tested, app-based interventions are convenient to administer; have low patient and provider burden; and are complementary to mobile-interventions and data collection approaches. However, implementing smartphone interventions into research can be challenging. The authors will describe the process of designing, developing and implementing a novel smartphone application in order to conduct attentional bias retraining as a 2-week intervention via an ecological momentary assessment (EMA) app for opioid users. We will discuss obstacles for researchers, ways to improve implementation and dissemination, and the importance of exploring promising avenues for cognitive tasks as complementary interventions to improve the efficacy of current, empirically-supported treatments. There are pros and cons to contracting internal (i.e., within one's organization) versus external app developers. Creating a user-centered app can be time consuming and expensive; therefore, research teams must often choose between iOS- or android-based platforms. Researchers should readily share code and apps to unify and adopt a robust mechanism that collects, updates, and improves existing apps. This would enable more efficient use of federal resources with continued quality assurance to create the best user experience for participants.

30. ALCOHOL USE AND AFFECT IN DAILY LIFE: A SYSTEMATIC REVIEW OF THE LITERATURE. Tiffany

Jenzer, Ian Troidl, Matthew Sadi, Greg A. Egerton, Jennifer P. Read. Self-Medication Theory (SMT; Khantzian, 1997) suggests that problematic drinking occurs because individuals rely on alcohol to cope with negative affect. Though SMT is often invoked to explain problem drinking, little is still known about the association between affect and alcohol in daily life. The present study offers a systematic review of research on this topic. Studies were included if they used intensive longitudinal designs and examined the association between a mood-related variable (e.g., daily mood, internalizing symptoms) and an alcohol outcome (e.g., use, craving). Following PRISMA guidelines (Moher et al., 2009), a Boolean database search was conducted in two databases (Psycinfo, Pubmed) which, after screening, yielded 118 studies. These were further reduced to a final sample of 55 studies. Most (98%) were adult and non-clinical samples (76.3%). 65.4% of the studies found a positive association between negative affect and alcohol use, 21.8% found no association, and 9.1%

found an association in the opposite direction than SMT would predict. Moderators that may explain these mixed findings will be discussed. Findings enhance our understanding of how, when, and for whom affect may impact alcohol use.

- 31. DOES EARLY SUBSTANCE USE PREDICT YOUTH'S FUTURE PERSPECTIVE AND PROBLEM BEHAVIOR AT HIGH SCHOOL END? Tim Janssen, Michelle Haikalis, Kristina M. Jackson.** Introduction: Early substance use initiation disrupts normative development and delays the desistance of problematic behavior). Consequences of substance use that interfere with attainment of developmental milestones (e.g., high school graduation), may also negatively impact youth's future perspective. Method: 1,023 Rhode Island adolescents (52% female, 76% White, 12% Hispanic; $M_{age}=12.5$ ($sd=1.0$)), completed web-surveys for up to 8 years until high school completion. We used Multiple-Event-Process-Survival-Modeling to identify latent classes of substance initiation trajectories, using alcohol, tobacco, marijuana use, and other drug initiation as predictors. We related substance use classes to latent profiles of future perspective (e.g., aspirations, expectations) and problem behavior (e.g. delinquency, aggression) at end of high school. Results: Vuong-Lo-Mendel-Rubin tests supported 3 classes of substance use trajectories (early onset, normative onset, non/late onset), 3 classes of future perspective (satisfied, aspiring/independent, mixed), and 3 classes of problematic behavior (high-delinquent, high-negative-emotion-driven, low-all). Early and normative onset (vs. late) was associated with greater likelihood of membership to high-delinquent, or high-emotion (vs. low-all) classes, but not with future perspective. Conclusion: In the first investigation of its kind using MEPSUM, substance use initiation impacted problematic behavior, but not future perspective. Future research may benefit from characterizing substance initiation trajectories into MEPSUM classes as we did, considering their strong interrelation.
- 32. JUST RELAX: RESTING STATE FUNCTIONAL CORRELATES OF SUBJECTIVE RESPONSE TO ALCOHOL. Victor J Schneider II, Bethany Stennett, Nicholas Bush, Darya Vitus, Sara Jo Nixon, Michael Robinson, Jeff Boissoneault.** Examining relationships between functional connectivity (FC) of resting-state brain networks and subjective response to alcohol may inform mechanisms underlying individual differences in alcohol effects. In this secondary analysis from an ongoing study of alcohol analgesia, 15 healthy social drinkers (10 women, age 24-45 years) completed two testing sessions: alcohol (target BAC: 0.08 g/dL) and placebo. Subjective response was assessed using the Subjective Effects of Alcohol Scale (SEAS) ~15 minutes post-beverage. Nine-minute resting-state fMRI scans were acquired ~35 minutes post-beverage. Salivary alcohol concentration measures collected ~6 minutes after the resting-state fMRI scan averaged .078 g/dL ($SD = .018$) in the alcohol condition. Six resting-state networks were identified using group independent component analysis with the CONN toolbox: cerebellar, default mode, dorsal attention, frontoparietal, salience, and sensorimotor. Whole-brain network-to-voxel regression analyses were conducted to identify regions where FC was associated with subjective response. Greater low-positive subjective response (e.g. relaxed) in the alcohol condition vs. placebo was associated with greater FC between the cerebellar network (CN) and several clusters including right putamen, right pallidum, left thalamus, and left insular cortex (cluster-wise $pFDR<.01$). Results suggest CN FC may contribute to inter-individual variability in the low positive dimension of subjective alcohol response.

Poster Session 5: SATURDAY April 4th 8:30am – 9:45am

- 1. SIMULTANEOUS USE OF ALCOHOL AND TOBACCO IN DAILY LIFE: ASSOCIATIONS WITH ALCOHOL CRAVING AND AFFECT. Andrea M. Wycoff, Courtney A. Motschman, Sarah A. Griffin, Ashley C. Helle, Timothy J. Trull.** Simultaneous use of alcohol and tobacco is highly prevalent and associated with negative health-related outcomes. Laboratory studies show that simultaneous use is related to increased alcohol craving, which initial daily-life studies have corroborated. The present study replicates and extends this work among concurrent alcohol and tobacco users with a range of emotional and behavioral dysregulation (N=41; 68.3% with borderline personality disorder; 80.5% female). We hypothesized that simultaneous use would lead to increased alcohol craving compared to alcohol use alone. Further, we examined simultaneous use as potentially negatively-reinforcing by testing whether simultaneous use predicted lower negative affect compared to alcohol use alone. Participants completed 21 days of ecological momentary assessment, reporting on alcohol and tobacco use, affect, and alcohol craving 6-10 times daily. Results from multilevel models indicated that smoking cigarettes while drinking alcohol predicted increased alcohol craving (Est.=0.18, SE=0.09, p=.041), fear (Est.=0.11, SE=0.04, p=.003), and hostility (Est.=0.10, SE=0.04, p=.017) compared to alcohol-only moments, controlling for subjective stimulation and drinking quantity. Findings are consistent with evidence showing increased alcohol craving in response to alcohol and tobacco co-use and contradict the negative reinforcement hypothesis. Understanding factors that influence and maintain simultaneous use of alcohol and tobacco may inform prevention and intervention efforts.
- 2. BEHAVIORAL ECONOMIC INDICATORS AND LEVELS OF CANNABIS USE AMONG HEAVY DRINKING YOUNG ADULTS. Ashley Dennhardt, Andrew Voss, James MacKillop, James G. Murphy.** Cannabis is the most common drug used concurrently with alcohol among young adults and co-use of these substances is associated with increased social and behavioral consequences. However, the level of cannabis use associated with increased risk is unclear. Further, the relationship between behavioral economic (BE) predictors of substance use severity and levels of cannabis use in drinkers has not been fully examined. The current study examined BE variables and cannabis use in a diverse sample of emerging young adult heavy drinkers ranging from 21-25 years old (N=547; 46% Black; 58% Women). Of 547 young adults, 19.9% reported monthly cannabis use, 12.6% reported weekly use, 21% reported daily use. A series of ANCOVAs indicated that co-users of alcohol and cannabis show elevated levels of the following BE indicators of severity: reinforcement derived from substance use, environmental suppressors, delay discounting, and demand for alcohol. Daily and weekly users of cannabis had higher levels of reward deprivation and greater reinforcement from substance-related activities. Weekly users also had higher demand intensity for alcohol and daily users of cannabis had higher delay discounting. These results suggest that it is important to consider the frequency of the cannabis use in heavy drinking young adults.
- 3. ALCOHOL AND STRESS: HEART RATE VARIABILITY AS A BIOMARKER OF STRESS. Brigitte Stevens, Jon Houck.** Stress is consistently related to alcohol use disorder (AUD) and is often measured by self-report. However, AUD is also associated with compromised biological stress responses, including dysfunctional autonomic regulation, such as low Heart Rate Variability (HRV). HRV could serve as a biomarker for physiological stress levels to gauge those at risk for hazardous alcohol use and relapse, as well as provide a target for intervention (e.g., HRV biofeedback). Subjects (N=31; Age: M=27.26, SD=9.54; Sex: 58% Female) were non-treatment-seeking adult drinkers (AUDIT M=13.06,

SD=7.22) recruited from a southwest metropolitan area. Heart rate was recorded (5min) from each subject during a motivational interviewing session and analyzed with Kubios. Physiological stress was quantified by Baevsky's Stress Index (SI)(M=11.36, SD=5.16). The Perceived Stress Scale (PSS)(M=19.00, SD=6.14) measured general life-stress that is self-reported. SI and PSS were not significantly correlated ($r=.278$, $p=.131$). Regression indicated that stress was significantly associated with AUDIT ($R^2=.351$, $F=7.57$, $p=.002$), both SI ($b=.505$, $t=2.28$, $p=.031$) and PSS ($b=.447$, $t=2.40$, $p=.023$). While physiological and perceived stress overlap to some degree, these results suggest that each is independently related to drinking. A biological index such as HRV may capture additional aspects of stress relevant to alcohol treatment that are not captured by self-report.

4. **POSTTRAUMATIC STRESS AND DRUG MISUSE: INDIRECT EFFECTS OF DIFFICULTIES REGULATING POSITIVE EMOTIONS. Brittany Zaring-Hinkle, Asheley Roberts, James Bray.** Posttraumatic stress (PTS) co-occurs with both alcohol and drug misuse at high rates (McCauley et al., 2012) and has been found to be positively related to difficulties in regulating positive emotions (DRPE; Weiss et al., in press). PTS and DRPE have been linked to alcohol and drug misuse (Goncharanko et al., 2019; Weiss et al., 2015). This study examined whether the effects of PTS on alcohol and drug misuse are mediated by DRPE. Data were collected from an undergraduate psychology participant pool ($N = 787$; $M_{age} = 19.28$; 54.6% female). Participants completed measures assessing PTS symptoms, DRPE, and alcohol and drug misuse. Two analyses were conducted to examine the relationship between PTS symptoms and alcohol and drug misuse mediated by DRPE. There was a significant indirect effect of PTS on drug misuse through DRPE ($B = 0.006$, $SE = 0.002$, 95% CI = [0.002, 0.011]) but not with alcohol misuse ($B = 0.003$, $SE = 0.0031$, 95% CI = [-0.005, 0.007]). This study found that PTS symptoms are mediated by DRPE for drug misuse, but not alcohol misuse. This information can inform prevention efforts by expanding the focus to regulating positive emotions in individuals with co-occurring PTS and drug misuse.
5. **EXPLORING POTENTIAL FOR MEDICATION MISUSE IN RELATION TO PTSD AND FUNCTIONAL IMPAIRMENT IN VETERANS. Brooke Buckley, Cecilia Olin, Natalie Clausel, Meghan McDevitt-Murphy.** Posttraumatic stress disorder (PTSD) and substance misuse are major public health concerns, particularly in the veteran population. Concerns about misuse of prescription medications have been expressed in the literature although there are few studies examining this phenomenon. We investigated the relations between PTSD severity, prescription medication use, and functional impairment in a sample of OEF/OIF veterans ($N=109$; 87.2% male, 64.2% Caucasian). Of those who met criteria for PTSD ($N=71$; 62.3%), seven (9.8%) reported being prescribed opioids and 11 (15.5%) were prescribed benzodiazepines. Among those who did not meet criteria for PTSD ($N=38$; 33.3%), one person (2.6%) was prescribed opioids and five (13.2%) were prescribed benzodiazepines. In t -tests comparing the severity of PTSD and psychosocial functioning (Brief Inventory of Psychosocial Functioning; B-IPF) among those with and without opioid prescriptions and among those with and without benzodiazepine prescriptions, we found no difference in PTSD severity. Participants who had a prescription for an opioid showed higher scores on the B-IPF than those who did not ($p=.05$). The same pattern was found in comparing those who had been prescribed a benzodiazepine ($p=.009$). Clinical implications will be discussed.
6. **WITHDRAWN**
7. **INITIAL DEVELOPMENT OF A NOVEL OPIOID CRAVING ASSESSMENT USING QUALITATIVE DATA COLLECTED ON AMAZON. Cecilia Bergeria, Justin Strickland, Andrew Huhn, Eric Strain, Kelly Dunn.** There is no universally accepted assessment of opioid craving. Responses to open ended questions

about craving were collected using Amazon Mechanical Turk (AMT; an online crowdsourcing platform) from individuals with regular opioid use to identify constructs that characterize opioid craving. Participants (n=1,601) completed an online screener on AMT to qualify for participation in a "Survey on Health Behaviors". Of those, 43 individuals met inclusion criteria and completed a series of closed and open-ended questions about their opioid use and craving. Responses to the question "What do you mean when you say you are craving opioids?" were coded into themes and grouped according to constructs (e.g., anxiety) and subscales (e.g., anticipation of negative reinforcement) of existing, commonly used opioid craving assessments. In response to the open-ended question, participants most often described craving as (1) feelings of anxiety/restlessness (11/43 participants), (2) something that disrupts thoughts/concentration (10/43) and (3) a need for relief (10/43). 10/43 participants described cravings as withdrawal symptoms (e.g., chills, bodyaches, nausea). These data suggest craving is a multidimensional construct. There is a need to incorporate the identified constructs into a standardized opioid craving assessment that can be thoroughly tested for its psychometric properties.

8. **THE ROLE OF DRIVING DISTANCE IN ALCOHOL IMPAIRED DRIVING DECISIONS. Courtney A. Motschman, Andrea M. Wycoff, Denis M. McCarthy.** Alcohol-impaired driving (AID) is a significant public safety concern, responsible for 1 in 3 vehicle crash deaths annually. Scant research has addressed AID decisions, despite potential utility to inform prevention efforts. This study was designed to examine whether situational factors (i.e., driving distance) influence variability in AID decisions. We recruited 42 young adults in a within-subjects alcohol/placebo administration study. At multiple points along the BrAC curve, participants rated their subjective intoxication and perceived dangerousness of driving prior to indicating their willingness to drive distances of 1, 3, and 10 miles. Multinomial logistic regressions evaluated the maximum distance participants were willing to drive (not willing, 1-3 miles, 10 miles) at discrete timepoints on the ascending (M BrAC=.088) and descending (.084) limbs and at peak BrAC (.101). A greater proportion of participants were willing to drive the maximum distance on the descending (43%) than ascending (17%) limb. On the descending limb, perceived danger and subjective intoxication predicted willingness to drive a short (vs. long) distance, $ps < .01$. This study presents some of the first data to suggest that individuals vary in their AID decision-making as a function of driving distance, particularly on the descending limb, when real-world AID decisions are often made.
9. **PREDICTORS OF MARIJUANA AND TOBACCO CO-USE IN YOUTH: THE MEDIATING ROLE OF AGE AT FIRST USE. Crystal L. Smith, Sterling McPherson, Brittany Cooper.** Co-use of marijuana and tobacco is frequent in youth and can have negative effects beyond those expected from additive effects of the two substances. We aimed to examine the mediating role of age at first use of marijuana or tobacco (AU) between youth factors of internalizing, externalizing, and sensation seeking and co-use. Path analytic modeling using data from the Population Assessment of Tobacco Health (PATH) allowed us to examine these relationships. The lifetime use model indicated significant direct relationships between each of the three youth factors and the mediator, AU, as well as the primary outcome, lifetime co-use. It also indicated a direct relationship between AU and lifetime co-use. Indirect relationships, through the mediator, AU, were present for all youth factors. In the past 30-day use model significant direct paths from AU and sensation seeking to past 30-day use were present. No indirect paths were significant. Results indicate that, for youth who have co-used in the past 30 days, direct impacts of sensation seeking and AU appear to be the most influential factors. Based on the results of this study, programs or interventions targeting sensation seeking and aiming to stave off AU should promote decreased tobacco and marijuana co-use.

- 10. TOBACCO AND CANNABIS USE, PAIN CATASTROPHIZING, AND OPIOID USE DISORDER SYMPTOMS IN ADOLESCENTS PRESENTING WITH ACUTE PAIN.** Denise Dao Tran, Emily Kenyon, Sarah Feldstein Ewing, Anna C. Wilson. Opioid use is a major public health concern. Tobacco and cannabis use increase risk for prescription opioid misuse. The current study aims to describe associations between current tobacco and cannabis use, pain catastrophizing, and opioid misuse. Adolescents ($n=98$, $M_{age}=16.40$, $SD=1.32$) receiving treatment for acute pain from ambulatory medical settings were recruited (51% male) as part of an ongoing longitudinal study. Self-reported tobacco and cannabis use, pain catastrophizing, perceptions of risk associated with opioid use, and symptoms of opioid use disorder (OUD) were gathered. Preliminary analyses indicate that 7.14% and 14.29% of the sample reported lifetime tobacco and cannabis use, respectively. Mild-to-severe symptoms of OUD were reported by 8.16% of the sample. Older age was associated with higher levels of OUD symptoms ($r=.29$, $p<.01$), and pain catastrophizing was positively correlated with OUD symptoms ($r=.27$, $p<.05$). Tobacco use, cannabis use, and perceived harm of opioid use were not associated with OUD symptoms. Additional analyses will examine additive and interactive effects of age at tobacco and cannabis initiation on OUD symptoms and perceived harm of opioids in this sample. Prevention programs may benefit from consideration of pain catastrophizing as well as tobacco and cannabis use, especially in older teens receiving opioid prescriptions.
- 11. MOTIVES FOR CANNABIS USE AND VAPING PRACTICES AMONG MEDICAL VS. RECREATIONAL USERS.** Dushyant (Shawn) Makadia, Sara Krasner, Nancy A. Haug. Distinct differences between medical and recreational cannabis users have been found with overlap between the groups (Roy-Byrne et al., 2015). Medical users are more likely to vape cannabis, use edibles, and endorse relief of medical symptoms compared to recreational users. The current study examined vape users: medical vs. recreational vs. both. Participants ($N = 101$) completed an online cannabis vaping survey with ongoing data collection that includes the Comprehensive Marijuana Motives Questionnaire (CMMQ) with an additional Health Motives subscale. Preliminary results indicated no differences among groups in substitution for smoked cannabis and increased use since initiation of vaping. However, the type of user significantly differed [$F(2,98) = 3.22$, $p = .04$] in overall cannabis use since vape initiation; Medical users ($M = 3.5$, $SD = .85$) reported significantly higher overall cannabis use compared to those who use both ($M = 2.65$, $SD = 1.02$). One-way ANOVAs showed that Social Anxiety [$F(2,98) = 8.33$, $p = .00$] and Health Motives [$F(2,98) = 23.02$, $p = .00$] had significant post-hoc differences, with recreational users endorsing lower scores than medical and both. Findings corroborate previous work and contribute evidence to the importance of motives and practices in cannabis vape users.
- 12. DISTINCT MOTIVATIONAL PATHWAYS FROM SOLITARY AND SOCIAL DRINKING TO ALCOHOL PROBLEMS.** Frances Holmes-Henry, Jack T. Waddell, William R. Corbin, Shane D. Marohnic. Problematic drinking patterns often emerge in young adulthood so it is critical to understand mechanisms of risk during this developmental period. Drinking motives are well-established and proximal risk factor for alcohol problems, and motives for both positive reinforcement (e.g., social) and negative reinforcement (e.g., coping) have been implicated as risk factors. Yet, our understanding of the etiology of these distinct motives is limited. The premise of the current study is that drinking contexts may play a critical role in shaping the development of drinking motives and risk for alcohol problems, with solitary drinking leading to the development of stronger coping motives and social drinking leading to the development of stronger social motives. We tested these hypotheses in a sample of 448 moderate to heavy drinking young adults assessed at baseline (ages 21-25), 6-month, and 12-month follow up. Consistent with hypotheses, solitary drinking was indirectly related to later alcohol problems through increases in coping motives ($b=.06$, $SE=.04$,

95%CI=[.01,.17]), whereas social drinking was indirectly related to later drinking problems through increases in social motives ($b=.09$, 95%CI=[.01,.23]). These findings suggest that understanding young adults' typical drinking contexts may inform prevention and intervention programs targeting unique mechanisms of risk for later alcohol problems.

13. **CROSS-CULTURAL COMPARISON OF ALCOHOL-RELATED CONSEQUENCES IN U.S. AND SWEDEN.** **Frank Schwebel, Matthew R. Pearson, Claes Andersson, Nicole Fossos-Wong, Katie Witkiewitz, Mary E. Larimer.** The present study examined measurement invariance of a 26-item version of the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989) that included items added on drink-driving across secondary school students in the United States ($n=1,181$) and Sweden ($n=2,171$). Using multigroup confirmatory factor analysis, we found support for scalar invariance across countries. Overall, Swedish secondary students reported experiencing more negative consequences (latent mean difference=.637, $p<.001$), though difference in specific items were observed. For example, US students ($M=.33$, $SD=0.89$) were more likely than Swedish students ($M=.07$, $SD=0.34$) to go to work or school high or drunk; $t(426.37)=5.87$, $p<0.001$. Next, we compared the antecedents to consequences across countries. In terms of alcohol use indicators, frequency of alcohol use was the strongest predictor of consequences in the US sample ($\beta=.260$, $p<0.001$) whereas peak quantity was a stronger predictor of consequences in the Swedish sample ($\beta=.216$, $p=.002$). Protective behavioral strategies were more strongly associated with decreased consequences in the US ($R\text{-square}=.174$) than the Swedish sample ($R\text{-square}=.089$). Despite cultural differences, our findings support the use of this version of the RAPI for cross-cultural research in this population. Further, our findings support exploring differences in the salience of distinct risk/protective factors for problematic drinking.
14. **READINESS RULERS IN RELATION TO DRUG ABSTINENCE SELF-EFFICACY AND MOTIVATION TO CHANGE.** **Gabrielle Swisher, Dushyant Makadia, Jennifer Stewart, Talia Kori, Emily Kaiser, Nancy A. Haug.** Readiness Rulers are practical tools used in Motivational Interviewing (MI) to help people express their commitment to change (Moyers et al., 2009). Although Readiness Rulers are frequently employed by clinicians, they have not been evaluated in real-world clinical settings. Participants ($N = 28$) included patients enrolled in an addiction medicine clinic (57% male, 68% Caucasian, Mean age = 39.6; $SD = 15.7$) who were administered Confidence and Importance Rulers at an Intake MI session; the Drug-Abstinence Self-Efficacy Scale (DASE), which measures confidence in abstaining from substances; and The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES) to assess motivation and readiness for changing substance use. Results indicate that the Confidence Ruler was significantly correlated with DASE Negative Affect, $r(28) = .55$, $p = .003$; Social Pressure/Positive Settings, $r(27) = .39$, $p = .04$; and Physical Pain/Illness, $r(28) = .55$, $p = .003$ subscales. The Importance Ruler was significantly correlated with SOCRATES Recognition, $r(28) = .42$, $p = .024$; and Taking Steps, $r(27) = .42$, $p = .03$ subscales. Findings suggest that Readiness Rulers relate to established measures and may be valuable tools for clinicians to quickly assess self-efficacy and motivation to change in addiction treatment and clinical settings.
15. **DESIGNING A MOBILE REAL-TIME ALCOHOL CONSUMPTION APPLICATION FOR USE IN THE LAB AND FIELD.** **Georgia Wong, Georgia Wong, Kyla-Rose Walden, Yun Bao, Emily B. Saldich, I. Gary Rosen, Chunming Wang, Susan E. Luczak.** As part of our real-time methodology research program, we previously designed a web app (Luczak, Rosen, & Wall, 2015) and also used a commercially-available app to track alcohol consumption in naturalistic settings (Luczak et al., 2018). We also reviewed commercially-available apps, with this review conducted just prior to Apple removing many of these apps following revision of its "Physical Harm" guidelines (Wong et al., 2019). Here we

seek to create a phone app that combines the features of our prior web app system along with useful features from commercial apps to aid in conducting real-time alcohol research. Our app comprises three components: 1) a standardized drinking session protocol used to calibrate our BrAC Estimator software, which is designed to convert transdermal biosensor alcohol data into estimated BrAC/BAC, 2) a set-timed protocol that uses timed alerts to track drinking and related factors (e.g., location, context, food, subjective responses) throughout a drinking episode, and 3) a flexible monitoring protocol that allows individuals to enter their drinks and responses according to their own preferred timing. We describe how these will be used in our research program and could be used by other researchers to capture naturalistic drinking behaviors and associated responses.

16. **ASSOCIATIONS BETWEEN DRUG USE/CONSEQUENCES AND CROSS-COMMODITY DELAY DISCOUNTING AMONG YOUNG ADULT USERS OF ALCOHOL OR CANNABIS.** Hailey Taylor, Ricarda Pritschmann, Ali M. Yurasek & Richard Yi. Delay discounting (DD) refers to the reduction in the subjective value of outcomes as a function of delay. High rates of DD are associated with higher rates of drug use and associated negative consequences, leading some investigators to conclude that individuals with unhealthy patterns of use have a generalized preference for immediate outcomes. In contrast, we hypothesize that individuals with unhealthy patterns of use prefer delayed outcomes when the delayed outcome is the drug of choice. To evaluate this, we compared the pattern of associations between substance use/consequences and assessments of cross-commodity DD (drug now - money later, money now - drug later) among young adult, regular recreational users of cannabis (n=115) or alcohol (n=51), from two different studies. It was hypothesized that high rates of drug use/consequences would be positively associated with drug now - money later DD, and negatively correlated with money now - drug later DD. Preliminary analyses among cannabis users indicate association consistent with hypotheses (all p's < .005). In contrast, none of the associations among alcohol users reached conventional levels of significance (all p's > .05). We consider explanations for this divergence, specifically, the nature of recreational use of cannabis versus alcohol.
17. **THE INTERACTION OF ALCOHOL CONSUMPTION AND CARDIOVASCULAR FUNCTIONING: ASSOCIATIONS WITH SLEEP AND MOOD.** Hannah Schildmeyer, Haley Cline, Gabrielle Karwath, Ty Brumback. The autonomic nervous system (ANS) sits at the nexus of substance use, mood, and sleep and is hypothesized as a mechanism of the associations among these constructs. For example, poor sleep, indexed by daytime tiredness, has been associated with greater alcohol use, higher levels of impulsivity, and lower levels of mood. In the present study, we investigated the relationships between resting state parasympathetic (i.e., vagal tone) and sympathetic influences on heart-rate variability (HRV) and alcohol use and interactions with sleep and mood (i.e., BDI-II) in 37 young adults (70% female) social drinkers. We constructed linear models predicting HRV with past year drinking, mood, and sleep, while controlling for sex, age, and BMI. Model results indicated that sleep ($\beta=1.2$, $p<.001$) and drinking ($\beta=-.02$, $p<.05$) affected sympathetic, but not parasympathetic, inputs to cardiovascular functioning. Furthermore, drinking and mood exhibited a significant interaction ($\beta=-.05$, $p<.05$) indicating an interplay between mood and drinking that may affect cardiovascular functioning. Our study provides evidence that alcohol consumption, sleep, and low mood are associated with dysregulation of sympathetic-parasympathetic balance as measured by HRV. The various influences on the ANS highlight its central role in psychosocial and health functioning in young adults.
18. **THE IMPACT OF A MINDFULNESS-BASED GROUP INTERVENTION FOR ADDICTIVE DISORDERS ON ANXIETY AND DEPRESSIVE SYMPTOMS.** Jennifer Stewart, Dushyant Makadia, Gabrielle Swisher,

Talia Kori, Emily Kaiser, Nancy A. Haug. The development of third-wave contextual behavioral therapies has fostered renewed efforts to improve treatment for addictive disorders in real-world clinical settings. This study investigated the effect of a mindfulness-based group intervention on anxiety and mood symptoms in patients (N = 26) at an addiction medicine clinic (62% female, 56% Caucasian, Mean age = 40.5; SD = 16.6). The intervention addressed processes such as values, committed action, acceptance, defusion, and mindful awareness but did not directly target psychological symptoms. Participants completed the Depression, Anxiety and Stress Scale (DASS), and the Acceptance and Action Questionnaire for Substance Abuse (AAQ-SA) at baseline and post-group (12-weeks). Wilcoxon signed-rank tests for paired differences showed significant reduction in anxiety ($Z = -2.01, p = .04$) and stress ($Z = -2.39, p = .02$), with a trend approaching significance for depression ($Z = -1.77, p = .07$). Regression analyses indicated that the AAQ-SA Defusion acceptance subscale significantly predicted anxiety, stress and depression scores post-intervention when controlling for baseline Defusion Acceptance. Results suggest that a mindfulness-based group intervention for patients with SUDs may be effective in reducing symptoms. Clinical implications include targeting cognitive and behavioral flexibility as a potential mechanism for symptom reduction in patients with addictive disorders.

19. **POLYSUBSTANCE USE ACROSS THE WEEK AND ACROSS THE LIFESPAN. Jon Houck, Brigitte R. Stevens.** Alcohol use in emerging adults is higher on weekends than on weekdays. As polysubstance has become prevalent it is important to evaluate whether similar polysubstance use patterns are apparent across the lifespan. The goal of the present study was to test associations between age and sex on weekday and weekend/holiday single and polysubstance use. Existing data were obtained from a large multisite emergency department study. At baseline, males were significantly more likely to report weekend/holiday polysubstance use ($p = .038$). At follow-up, males were significantly more likely to report both weekday ($p < .001$) and weekend/holiday polysubstance use ($p = .024$). We used negative binomial regression to test the association between age and gender and weekday and weekend/holiday substance use (days of use in the 90 days following the initial intervention). There were no effects of age or gender on weekday use. However, weekend/holiday use was associated with age ($p < .05$), such that those aged 46 and older had significantly fewer weekend/holiday days of use than did emerging adults ($B = -0.252, 95\% \text{ CI } [-0.456, 0.457], p = .016$). Results support the notion that polysubstance use is of particular concern in emerging adults. Future work should address the role of specific substance combinations and approaches to addressing polysubstance use in intervention sessions.
20. **ACCEPTABILITY AND UTILITY OF VIRTUAL REALITY AMONG PEOPLE WHO ARE INCARCERATED WHO USE DRUGS. Kasey Claborn, Kasey R. Claborn, Fiona Conway, Liesl Nydegger, Eric Nordquist, Erin Nolen, Katlyn Brinkley, Regan Hill.** Virtual reality (VR) allows a platform to create common scenarios of environmental trigger situations to elicit drug cravings. We know little about acceptability of VR among people who are incarcerated who use drugs. Mixed methods explored VR perspectives and stress response among 20 inmates with a substance use disorder at a county jail. Cardiovascular data were collected to determine if exposure to the VR environment provoked a stress response. Repeated measures mixed models were used to assess stress reactivity measured by three heart rate variability indices (HR, RMSSD, and HF-HRV). Qualitative interviews assessed acceptability and perceived utility on VR in the jail setting. Cardiovascular data analyses showed no significant increase in stress reactivity for HR ($b = -3.14, t(18) = -3.85, p < .01$), RMSSD ($b = -0.06, t(18) = -1.06, p = 0.30$) and HF-HRV ($b = -0.21, t(18) = -1.71, p = 0.10$). Qualitative data indicate high levels of acceptability and potential utility in the following thematic areas (1) mental health and substance use interventions; (2) community re-entry skills training; and (3) communication and

conflict resolution skills. Results demonstrated high acceptability and no significant stress response of VR among people who are incarcerated who use drugs.

- 21. THE EFFECTS OF ESTRADIOL AND PROGESTERONE ON HEROIN SELF-ADMINISTRATION IN OVARECTOMIZED RATS.** Kenzie M. Potter, Sarah B. Ethridge, Abigail N. Gibson, Huailin Zhang, Alexander T. Casimir, Andrea M. Robinson, Mark A. Smith. We previously reported that heroin intake decreases during the proestrus phase of the estrous cycle in female rats. Estradiol and progesterone rise and fall in rapid succession during proestrus, and therefore is not known which of these two hormones contribute to the decrease in heroin intake observed during proestrus. The purpose of this study was to examine the effects of exogenous estradiol and progesterone on heroin intake in ovariectomized female rats. Ovariectomized female rats were implanted with intravenous catheters and trained to self-administer heroin. In Experiment 1, separate groups of rats were treated chronically with estradiol, progesterone, estradiol + progesterone, or vehicle. In Experiment 2, an artificial proestrus state was experimentally induced by administering estradiol (or vehicle) 22 hours and progesterone (or vehicle) 30 minutes before a heroin self-administration session. In Experiment 1, estrogen-treated rats self-administered significantly less heroin than rats treated with progesterone. In Experiment 2, estradiol administered 22 hours before a test session significantly decreased heroin intake, and this effect was independent of progesterone administration. These data indicate that estradiol, but not progesterone, decreases heroin intake in ovariectomized rats and may be responsible for proestrus-induced decreases in heroin intake.
- 22. OBESITY, DEPRESSION, AND SUBSTANCE USE AMONG WOMEN.** Manik Ahuja, Manik Ahuja, Thiveya Sathiyaseelen, Rajvi Wani, Praveen Fernandopulle. Introduction: Nutritional psychiatry is an emerging field of research and it is currently exploring the impact of nutrition and obesity on brain function and mental illness. Prior studies have found associations between higher levels of BMI and depression. However, less is known if substance use mediates that relationship, particularly among women. Methods: Data were employed from the nationally representative Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003. In the first model, logistic regression was used to determine the association between gender, BMI levels, substance use, and MDD outcomes. In the second model, we stratified by gender, and tested the association between Major Depressive Disorder (MDD) and substance use predictors. Results: Obesity was associated with an increased risk for past year MDD (OR=1.27, 95% CI, 1.12-1.46) and lifetime MDD episode (OR=1.23, 95% CI, 1.13-1.37) among women versus men. Women who reported alcohol dependence, and past year cannabis use also reported past year and lifetime MDD, while past year smoking was not associated with MDD outcomes. Conclusion: Depressive symptoms can lead to other comorbidities such as substance abuse and dependency. With rising rates of substance abuse, females should be closely monitored to figure out if poor diets and obesity play a role in substance abuse patterns.
- 23. OFC VOLUME OF YOUTH AND ITS RELATIONSHIP WITH FAMILY HISTORY, ALCOHOL SIPPING, AND DELAY DISCOUNTING.** Maria Bordyug, Natasha E. Wade, Kelly E. Courtney, Susan F. Tapert. Objective: Orbitofrontal cortex (OFC) plays an important role in reward response, impulse control, delay discounting, and executive functioning, known markers of future risk in adolescence. OFC volume in early adolescence is a predictor of later substance use. Here we examine the relationship between OFC volume and family history of alcohol dependence (FH+), alcohol sipping before age 9-10, and delay discounting. Methods: Data from the Adolescent Brain Cognitive Development (ABCD) Study were used: adolescents aged 9-10 years old, n=10421. Mixed models were used to predict OFC volume from FH+, delay discounting, and number of alcohol sips, controlling for sex, family income, age, and total brain volume. Bilateral medial and lateral OFC regions were analyzed

separately. Results: More alcohol sipping was marginally associated with smaller left medial OFC ($p=0.08$, $r^2=0.40$). FH+ status was marginally associated with smaller right medial OFC ($p=0.08$, $r^2=0.42$). Conclusion: Here we found weak relationships between risk factors for early substance use (early alcohol experimentation and FH+) and smaller medial OFC volume. Prior research similarly suggests smaller OFC volume is predictive of later substance use. Although small in effect, results suggest a need to assess medial OFC volume as a predictor of future alcohol use within a longitudinal framework.

24. **SOCIAL NETWORKS AND ALCOHOL USE AMONG EMERGING ADULTS NOT IN FOUR-YEAR COLLEGE.** **Matthew Meisel, Angelo M. DiBello, Mary Beth Miller, Suzanne M. Colby, Nancy P. Barnett.** Social factors are implicated in the initiation and maintenance of alcohol use behavior. The composition of a person's social network, including the presence of drinkers and drinking buddies, significantly predicts greater alcohol use. However, existing literature predominately examines college students. Thus, the aims of the current study were to investigate the social network characteristics of emerging adults not currently in a four-year college and to examine how these characteristics relate to alcohol use. Emerging adults not currently enrolled in four-year college ($n=477$; 46% male; average age= 22.25, $SD=2.09$) were recruited through a Qualtrics panel. Participants completed measures of alcohol use and consequences, in addition to a social network questionnaire (i.e., participants nominated up to 10 important people and answered questions about each network member). On average, participants nominated 4.76 ($SD=3.26$) important people. Greater perceived network drinking and greater drinking with friends, but not parents, was associated with greater participant alcohol consumption and alcohol-related problems. These results suggest that, similar to four-year college students, the influence of parents may diminish during this time. Friends may be the predominant influence on drinking among emergent adults not in four-year college.
25. **WITHIN-SUBJECT CHANGES IN CRAVING AND DEMAND FOLLOWING ALCOHOL ADMINISTRATION.** **Olivia M Warner, Kayleigh N. McCarty, Michael Amlung, Denis M. McCarthy.** Behavioral economic models hold that drinking behavior is driven by variability in the valuation of the reinforcing rewards of alcohol consumption, typically assessed as alcohol demand. Previous studies from our group (Amlung et al., 2015) have demonstrated that both craving and demand are sensitive to alcohol priming effects but this has not been examined in within-subject designs. In this within-subjects alcohol/placebo administration study we hypothesized that alcohol intoxication would increase both craving and demand (intensity, breakpoint, O_{max}), relative to placebo. Consistent with hypotheses, both craving and demand indices of intensity and O_{max} were higher in the alcohol condition ($b=0.840$, $p<0.005$; $b=0.460$, $p<0.005$; $b=1.609$, $p<0.01$). This effect was not significant for breakpoint. Quadratic (limb-specific) effects were non-significant. There was a negative linear effect for time such that craving, intensity, breakpoint, and O_{max} decreased over time ($b=-0.271$, $p<0.005$; $b=-0.231$, $p<0.005$; $b=-0.221$, $p<0.005$; $b=-0.789$, $p<0.005$). There were no time x condition interactions, indicating the decrease was consistent across alcohol and placebo. Results support a pharmacological effect of alcohol such that both craving and demand increase during intoxication.
26. **MARIJUANA USE IMPACTS TOBACCO USE IN HIGH-RISK LONGITUDINAL SAMPLE.** **Ryan Trim, Tamara Wall, Mark Myers, Sandra Brown.** Evidence of co-occurring cannabis and tobacco use among adults is an issue of growing concern. As cannabis use may impede smoking cessation, these behaviors when combined could increase the likelihood of long-term consequences from tobacco use. The present study examined three waves of data in a high-risk sample followed from late adolescence through early adulthood, investigating prospective relations between tobacco and

marijuana use. Data were drawn from a larger longitudinal study of youth recruited from the juvenile justice system, substance abuse treatment facilities, and schools for youth with behavioral problems. The study sample (n = 187) had an average age of 17.5 years, 23.5 years, and 29.4 years at Waves 1, 2, and 3, respectively. Unconditional latent growth models showed decreasing trajectories for both substances during this time period. Time-varying covariate models showed that higher levels of marijuana use uniquely predicted time-specific elevations in tobacco use above and beyond what was expected based on the underlying trajectory of tobacco use. As such, marijuana use in adulthood increased the likelihood of tobacco use and may serve as a significant barrier to cessation efforts.

27. **GENDER DIFFERENCES IN CANNABIDIOL (CBD) USE AMONG CANNABIS VAPE USERS.** Sara Krasner, Dushyant Makadia, Nancy A. Haug. Cannabidiol (CBD) is a non-psychoactive cannabinoid with anxiolytic effects (Blessing et al., 2015). Consumers are being exposed to an increasing variety of CBD and mixed CBD-THC products for health and wellness. The aim of this study was to examine gender differences in cannabis vaporizer use, motives and preferences. It was hypothesized that women vape CBD at higher rates than men and report different motives for CBD use than men. Participants (N = 102, 50% female, 56% Caucasian, Mean age = 31.5, SD=11.3) were recruited to participate in an online survey with ongoing data collection. Preliminary results indicate that both genders are equally likely to vape CBD, however men reported greater THC-dominant cannabis vaping use than women ($X^2(21)= 5.12, p = .02$). Additionally, women were significantly more likely than men to endorse vaping of CBD to reduce anxiety and stress ($X^2(1)= 3.31, p = .05$). No differences were found between men and women in other reasons for CBD use, including pain and sleep. Findings have implications for understanding gender differences in motives to vape CBD. Considering recent concerns regarding the health impacts of vaping, this study provides valuable information on the perspectives and experiences of female cannabis users.
28. **THE EFFECTS OF CHRONIC ESTRADIOL ADMINISTRATION ON OPIOID SELF-ADMINISTRATION IN FEMALE RATS.** Shannon L. Ballard, Sarah B. Ethridge, Kenzie M. Potter, Mark A. Smith. Data collected in our laboratory indicate that heroin intake decreases significantly during proestrus in normally cycling female rats, and that this effect is mediated by endogenous estradiol but not endogenous progesterone. The purpose of this study was to determine whether chronic administration of exogenous estradiol decreases intake of the semi-synthetic opioid, heroin, and the fully synthetic opioid, remifentanil, in intact female rats. Intact female rats were implanted with intravenous catheters and trained to self-administer heroin on a fixed ratio (FR1) schedule of reinforcement. Rats were treated chronically with daily administration of either a low dose of estradiol (0.0005 mg, sc), a high dose of estradiol (0.005 mg, sc), or vehicle (peanut oil, sc). After two weeks of heroin self-administration training, dose-effect curves were determined for both heroin and remifentanil. Chronic administration of estradiol non-significantly decreased heroin intake ($p = 0.09$) and significantly decreased remifentanil intake ($p = 0.03$). Estradiol-induced decreases in heroin intake were greatest in rats treated with the high dose of estradiol. These data indicate that chronic estradiol administration decreases opioid intake in intact female rats. These findings further suggest that an estrogen-based pharmacotherapy may represent a novel treatment approach for women with opioid use disorder.
29. **ALCOHOL AND MARIJUANA USE AMONG FIRST-YEAR COLLEGE STUDENTS: THE ROLE OF PARENTAL ATTACHMENT.** Stephanie Strong, Paula Floyd, Nora Charles. Associations between parental attachment among college students and alcohol and drug use is an underexplored topic. The current study sought to replicate and expand upon previous findings (Labrie and Sesson, 2012) by examining

the relationship between parental attachment and both alcohol and marijuana use among first-year college students. A sample of 217 students ($M = 18.64$; 87% female; 70% White) from a large Southern university completed an online survey assessing mother and father attachment, alcohol use, alcohol-related negative consequences, and indicators of problematic marijuana use. Previously reported associations between parental attachment and alcohol use were replicated for frequency ($r = -.31, p < .01$), quantity ($r = -.26, p < .01$), and consequences ($r = -.31, p < .01$). Similarly, independent samples t-tests indicated that students who had poor maternal attachment security drank more often ($p < .001$), drank in higher quantities ($p < .01$), and reported more alcohol-related consequences ($p < .001$). Exploratory analyses for marijuana found that maternal attachment was also significantly correlated with problematic marijuana use ($r = -.27, p < .05$) and that students with poor maternal attachment security had more problematic marijuana use ($p < .01$). These findings suggest that improving the parent-child relationships could have an effect on problematic alcohol and drug use.

30. **ALCOHOL INCREASES ECONOMIC DEMAND DURING AN ALCOHOL CHALLENGE AMONG ALCOHOL DEPENDENT INDIVIDUALS. Steven Joseph Nieto, ReJoyce Green, Lara Ray.** Alcohol demand is a key behavioral economic concept that provides an index of alcohol's reinforcing value. Studies in predominately social and heavy drinkers find that alcohol demand increases during alcohol challenge and after exposure to alcohol cues. However, whether alcohol administration increases demand in the presence of alcohol cues is an understudied area. To address this gap in the literature, we assessed alcohol demand during an alcohol challenge and cue-reactivity paradigm. Non-treatment seeking, alcohol dependent participants ($N = 42$) completed two counterbalanced intravenous placebo-controlled alcohol administration sessions (placebo vs. alcohol) followed by a controlled and counterbalanced cue-exposure paradigm (neutral cues vs. alcohol cues). At baseline and $BrAC = 0.06$ g/dl, participants completed an Alcohol Purchase Task (APT), which assessed estimated alcohol consumption along escalating prices. Participants were also assessed for alcohol demand following each cue exposure. During the intravenous alcohol challenge, alcohol versus placebo administration decreased price sensitivity (elasticity). Additionally, alcohol relative to placebo administration decreased measures of consumption at zero cost (intensity) regardless of cue exposure. These findings provide initial evidence that alcohol administration increases alcohol demand during alcohol challenge but not after exposure to alcohol cues.
31. **THE ROLE OF OVARIAN HORMONES IN PROESTRUS-INDUCED DECREASES IN HEROIN INTAKE. Tallia Pearson, Sarah B. Ethridge, Huailin Zhang, Madison M. Marcus, Kenzie M. Potter, Andrea M. Robinson, Karl T. Schmidt, Jessica L. Sharp, Mark A. Smith.** We previously reported that heroin intake decreases during the proestrus phase of the estrous cycle in female rats. The purpose of this study was to replicate these findings in Long-Evans (LE), Lewis (LEW) and Sprague-Dawley (SD) rats, determine if proestrus-induced decreases in responding extended to a nondrug reinforcer, and determine the ovarian hormones mediating these effects. Female rats were implanted with catheters and trained to self-administer heroin. Estrous cycle was tracked daily. LE, LEW, and SD rats self-administered low and high doses of heroin (Experiment 1) and then self-administered sucrose (Experiment 2). The ability of the estrogen-receptor antagonist, raloxifene, and the progesterone-receptor antagonist, mifepristone, to block proestrus-induced decreases in heroin intake was tested in experimentally naive LE rats (Experiment 3). Heroin intake decreased significantly during proestrus in all three rat strains under at least one dose condition, and these effects were most robust in LE rats. Sucrose intake did not decrease during proestrus in any strain. Raloxifene, but not mifepristone, significantly blocked proestrus-induced decreases in heroin intake in LE rats. These data indicate that responding maintained by heroin, but not a nondrug reinforcer, significantly

decreases during proestrus in female rats; these effects are mediated by estradiol but not progesterone.

32. **DETERMINANTS OF SMOKING CESSATION AMONG SPANISH-SPEAKING MEXICAN AMERICAN SMOKERS.** **Tatiana Londoño, John Moore, Zully Guerra, Yessenia Castro.** Although numerous studies demonstrate that affective and interpersonal factors are critical determinants of smoking cessation, the extant research largely under-represents minority smokers, thus limiting generalizability. As such, the current study examined associations between affective and interpersonal factors and intermediary smoking cessation variables among 290 Spanish-speaking Mexican-American smokers. We regressed the Contemplation Ladder (CL) and Smoking Abstinence Self-efficacy (SASE) onto each of the Center for Epidemiological Studies Depression (CESD) scale, Positive and Negative Affect Schedule (PANAS-NA and -PA), Interpersonal Support Evaluation List (ISEL), and Loneliness scale. Significant predictors of each of CL and SASE were simultaneously entered into final models to determine their unique predictors. Analyses controlled for gender, age, and physical dependence (Heaviness of Smoking Index). PANAS-NA, CESD, Loneliness and ISEL were significantly associated with CL. PANAS-NA, PANAS-PA and ISEL were significantly associated with SASE. In the final models, no measure was significantly associated with CL. PANAS-PA ($b=.05$, $SE\ b=.02$, $p<.01$) and ISEL ($b=.05$, $SE\ b=.01$, $p<.001$) were significantly associated with SASE. Positive affect and social support had unique associations with smoking abstinence self-efficacy. Such resilience factors may be more important for smoking cessation among Mexican-American smokers than negative affect, which are typically a large focus of cessation interventions.
33. **RISK AND PROTECTIVE MECHANISMS OF THE ASSOCIATION BETWEEN DEPRESSION AND ALCOHOL CRAVING IN WOMEN VETERANS.** **Tosca D Braun, Cathryn Glanton Holzhauer, Ana Marie Abrantes.** Depression has been associated with greater stress vulnerability, alcohol cravings, and relapse among women. While mechanisms underlying these associations remain unclear, nascent research suggests shame, mindfulness, and self-compassion are promising candidate risk/protective factors. The current study in women Veterans with alcohol misuse explored (a) associations of these factors with depressive symptoms; (b) whether these factors differed among women with and without depression; and (c) a preliminary investigation of whether shame, mindfulness, and/or self-compassion mediate the association between depressive symptoms and alcohol craving in response to a stressor. Data were drawn from a larger experimental trial about women Veterans with alcohol misuse; data collection is ongoing (final $n=22$). Validated self-report measures of depression were highly correlated with those of shame ($r=.80$), mindfulness ($r=-.59$), self-compassion ($r=-.84$), and stress-induced alcohol craving ($r=.49$). Compared to women with alcohol misuse alone ($n=9$), women with co-occurring depression ($n=9$) had lower self-compassion ($p=.001$), mindfulness ($p=.048$), and greater shame ($p<.001$) and stress-induced craving ($p=.040$). Of the three mediation models, shame alone mediated the link between depression and stress-induced craving ($p<.001$; $BCa[.006, .103]$). Shame may help explain the association between depression and vulnerability to stress-induced alcohol cravings among women Veterans, and self-compassion may play a protective role.
34. **SMOKING SOCIAL NORMS AMONG SPANISH SPEAKING MEXICAN ORIGIN AMERICAN SMOKERS.** **Zully Guerra, Tatiana Londoño, John Moore, Nazanin Heydarian, Yessenia Castro.** In the US, smoking rates increase with greater acculturation among Mexican-origin women, but not men. Conversely, greater acculturation is associated with higher likelihood of quitting among Mexican-origin male smokers, but not among their female counterparts. Long-standing speculation is that adoption of U.S. perceived smoking norms that are less restrictive for women and more restrictive

for men (c.f. perceived Mexican norms) may account for these patterns. However, no research has examined whether smokers actually perceive such differential norms. The current study compared the US and Mexican perceived descriptive and injunctive smoking norms for men and women among 290 Mexican-American smokers. Men perceived that men in Mexico smoke more than in the US (6.91 vs 6.15, Wald (df=1)=31.61, $p<.00$), and that it is more acceptable for men to smoke in Mexico than in the US (3.37 vs 3.10, Wald (df=1)=13.92, $p<.00$). Among women, US and Mexican perceived descriptive (6.03 vs 5.93) and injunctive (2.84 vs 2.88) norms were not significantly different. Findings do not support long-time speculation that differential social norms may explain the acculturation-smoking relationship among Mexican-origin women. US vs Mexican smoking social norms may differ for men and should be investigated as a mechanism of the acculturation-cessation relationship among men.