SUNDAY, JUNE 17 10:00AM–11:30AM
SYMPOSIUM   25–28
Novel Ways to Target Adolescent Alcohol and Cannabis Use: Promising New Findings From Behavioral, Cognitive, and Pharmacological Intervention Approach
Organizers/Chairs: Lindsay Squeglia and Margot Peeters

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TRAJECTORIES OF ALCOHOL AND CANNABIS USE FROM EARLY TO LATE ADOLESCENCE AND IMPORTANT DETERMINANTS FOR INTERVENTION PURPOSES

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Alcohol and cannabis use are subject to change during the adolescent period. Social, contextual and developmental factors influence the patterns of use of these substances. Longitudinal trajectory studies can shed light on the normative development of the use of these substances as well as on problematic patterns of use. It is important that underlying determinants of problematic and relatively normal use are identified so treatment efforts can be aligned towards these determinants. Results are therefore discussed with a focus on informing the development of effective intervention strategies. In this study, data of large longitudinal national representative study are presented including +/−2,230 adolescents who were followed from 11–22 years (study is ongoing). Trajectories of alcohol and cannabis use covering the whole adolescent period (14–22 years) are evaluated in relation to important cognitive determinants such as behavioral control and reward sensitivity. Latent transition analyses revealed that pubertal development as well as reward sensitivity are important predictors of the increase in both substances. Relatively stronger increase in behavioral control skills predicted decrease in the use of alcohol use, not in cannabis use, and only in a small group of adolescents (<10%). Post hoc analyses revealed that socio-cultural and adult role factors such as educational level explained the predictive effect of behavioral control. First, these results underline the difference and similarities between developmental patterns and important determinants of alcohol and cannabis use in adolescents. Second, the results reveal the importance of considering the context, including important (adult role) transitions, in which substance use takes place. Lastly, the results suggest that treatment efforts focusing on behavioral control might be useful though not so much in targeting adolescents' alcohol use directly but rather in supporting naturally occurring developments in adolescence and emerging adulthood. Future directions using computer technology in targeting adolescents alcohol and cannabis use are discussed, particularly focusing on new emerging computerized intervention methods such as the use of serious gaming approaches.

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VIEWING ADOLESCENT ADDICTION TREATMENT RESPONSE VIA THE BRAIN

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Our goal is to develop more efficacious treatments for adolescents who struggle with addiction. Our perspective is that substantive treatment advances are most likely to stem from integrative approaches reflective of the developing brain, in order to guide articulated interventions to this very specific period of neural development. To elucidate how adolescents respond to clinician language during psychosocial addiction treatment, we have enrolled $N = 92$ binge drinking adolescents ages 14–19 (M age = 18.63; 66% female; M alcohol problems score = 7.63; M cannabis problems score = 4.70), and randomized them to receive 2.1-h individual sessions of motivational interviewing (MI) or 2.1-h individual sessions of brief adolescent mindfulness (BAM). All youth are then brought into the functional magnetic resonance imaging (fMRI) environment to complete our Neural In-Session Language (NILE) task. Here, youth are re-presented visually and auditorily with the voice of their study therapist in three therapist language conditions: Complex Reflections for the MI condition (e.g., "Your drinking puts your safety at risk, and this really scary."); Mindfulness statements for the BAM condition (e.g., "You notice the link between drinking and your safety"); and, Confronts as a control condition representative of standard addiction treatment approaches in this age group (e.g., "Your drinking puts your safety at risk"). Thus far, imaging data reflects significant main effects for all three types of therapist language (e.g., Complex Reflections: activation within precuneus, parahippocampal gyrus, insula; Mindfulness statements: activation in precentral gyrus, right posterior cingulate; Confronts: activation within superior frontal gyrus). We have also observed differential activation by therapist language type, with significantly greater activation for Complex Reflections versus Confronts (within the precentral gyrus) and for Complex Reflections versus Mindfulness statements (within the superior frontal gyrus and left inferior frontal gyrus). We believe that these data continue to highlight the specific nature and developmental function of the adolescent brain in the addiction context, as well as their specific neurodevelopmental response to addiction treatment elements. These data are critical to elucidating a framework for future adolescent addiction treatment development efforts.

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THE EFFECT OF COGNITIVE BIAS MODIFICATION ON ADOLESCENT CANNABIS AND ALCOHOL USE: A MULTISITE INVESTIGATION

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Background: Approach Avoidance Training (AAT) is a computerized cognitive bias modification intervention that aims to retrain approach biases toward harmful cues and has been effective in treating alcohol use disorder in adults. The effects of AAT have not been examined in adolescents or cannabis users. The aim of this multi-site study was to understand the effect of marijuana AAT (MAAT) on adolescent cannabis and alcohol use outcomes.
Methods: Eighty non-treatment-seeking regular cannabis users (50% female; average age = 19 years; using cannabis ~4 days per week and alcohol 1–2 days per week) were recruited from two geographic locations (Charleston, South Carolina and San Diego, California) and were randomized to complete either six sessions of MAAT or sham training. No other treatment was provided within the study. Substance use interviews and approach bias assessments were administered pre- and post-intervention.
Results: Participants randomized to MAAT reported, on average, 7% less cannabis use days versus 0% for sham, but 10% more alcohol use days versus 3% for sham post-intervention (ps < 0.05). Approach bias for cannabis cues decreased in the MAAT condition compared to sham ($p = 0.06$).
Conclusion: Computer-based cognitive bias modification paradigms may be promising interventions for reducing adolescent cannabis use and modifying approach biases; however, reduction of one substance may have unintended effects on co-occurring use. Future work should consider developing a paradigm that addresses both alcohol and cannabis use in motivated treatment seekers or as an adjunctive treatment to existing substance use interventions.

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EFFECTS OF TOPIRAMATE ON CANNABIS USE AMONG ADOLESCENTS AND YOUNG ADULTS IN A RANDOMIZED CONTROLLED CLINICAL TRIAL TARGETING ALCOHOL MISUSE

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Despite clinical demand for effective substance-use interventions for youth, less than one-third experience sustained benefit from the best available psychosocial treatments. In addition, adolescents and young adults often misuse multiple substances, namely alcohol and cannabis, which requires treatment approaches that yield cross-drug beneficial effects. The major objective of this study was to address the urgent need for empirical data on medications that may advance treatment options for youth. Specifically, we randomized 82 youth, ages 14 to 24 to topiramate (up to 200 mg/day) or placebo, combined with biweekly motivational enhancement and cognitive behavioral therapy, for 8 weeks using a two-group, double-blind design. Topiramate is an anticonvulsant medication shown to be efficacious for reducing alcohol use among adults, and recent preliminary data suggest it also may reduce cannabis use (Miranda, Treloar, Blanchard, et al., 2017). It is the only medication that reduces drinking in adults that has approval from the Food and Drug Administration for use with adolescents, albeit for other indications. Although youth were recruited from the community specifically for alcohol misuse, 64.6% also reported cannabis use during the trial. Of this subset, half (52.8%) were randomized to topiramate. These youth were primarily White (66.0%) or Black (20.8%); 17% Hispanic or Latino ethnicity; 39.6% were female; average age was 20.3 years (SD = 2.2). Results showed youth assigned to topiramate reported 12.0 fewer cannabis use days and smoked 7.3 fewer grams of cannabis than youth assigned to placebo, during the 28-day period at target dose. In a regression including participant baseline demographics, topiramate treatment predicted reduced use days, $\beta = -0.38$, $p = 0.004$, and reduced total grams smoked, $\beta = -0.38$, $p = 0.022$. Indeed, topiramate accounted for an additional 10% of the variance in cannabis-use outcomes over and above the influences of gender, age, race, and ethnicity, $R^2 = 0.28$ and 0.22 for use days and grams smoked, respectively; $\Delta R^2 = 0.14$ and 0.10, respectively. This study provides much needed data on the tolerability and efficacy of topiramate for treating substance misuse among adolescents and young adults while adding important new information about its potential for reducing cannabis use among youth who also misuse alcohol.