

**COLLEGE ON PROBLEMS  
OF DRUG DEPENDENCE**

**June 14-19, 2008  
The Caribe Hilton  
San Juan, Puerto Rico**



*Mini-Program:*  
**Focus on  
Women & Sex/Gender  
Differences**



**NIDA** NATIONAL INSTITUTE  
ON DRUG ABUSE

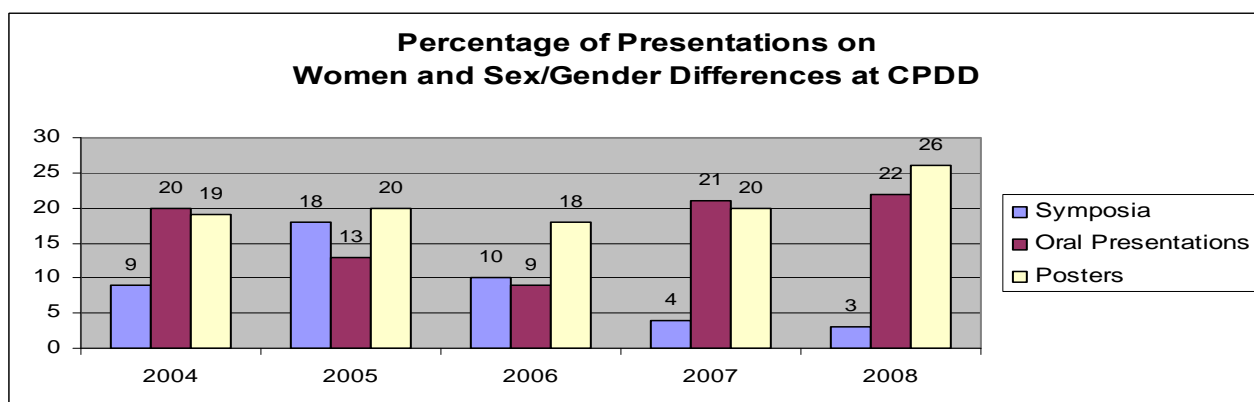
National Institutes of Health – U.S. Department of Health & Human Services

## PREFACE

Accumulating evidence suggests that the antecedents, consequences, and mechanisms of drug abuse and addiction are not always identical in males and females and that sex/gender is an important variable in treatment and prevention. To foster research on women and sex/gender differences in all areas of drug abuse research (both human and animal), since 1999 the National Institute on Drug Abuse (NIDA) has encouraged submission of abstracts on this topic for the annual meeting of the College on Problems of Drug Dependence (CPDD). The response has been very gratifying as evidenced by the numerous presentations on this topic in this year's CPDD program, as well as in previous years' programs.

NIDA is pleased to provide you with this special version of the CPDD program that highlights the program schedule for presentations related to women and sex/gender differences. Additionally, at the end of this "mini-program," we have provided the abstracts for those presentations. We hope that this mini-program will be useful for those of you who conduct research in this area. For those of you who do not conduct sex/gender-based research, we hope that this mini-program will suggest ways in which incorporating this perspective and methodology can inform and advance your research program. As evidenced by the content of many of the abstracts, many researchers are finding that when they analyze their data by sex/gender, they often find male-female differences. In some cases, they find that effects are observed in only males or females; and while infrequent, sometimes outcomes are opposite in males and females.

In an effort to determine the representation of research on women and sex/gender differences at recent CPDD meetings, for each of the years 2004-2008 we counted the number of symposia presentations, oral presentations, and poster presentations that focused on women and/or sex/gender differences and expressed those numbers as a percentage of the total number of presentations at the CPDD meetings in that year. As the graph below indicates, the percentage of posters with a focus on women and sex/gender differences is 26% this year, which is the highest in the 5-year period. For oral presentations, the percentage is 22% this year, also the highest in the 5-year period. The percentage of symposia presentations, however, is at its lowest this year. Therefore, for the 2008 CPDD, we strongly encourage your submission of symposia that include or focus on women and/or sex/gender differences. And, of course, we continue to encourage you to develop sex/gender-based hypotheses in your research.



To support junior investigators pursuing research careers studying women and sex/gender differences, special NIDA Travel Awards have been granted annually since 1999. Each year these competitive awards have been given to approximately 30 junior investigators (students and investigators who are less than five years past the doctoral degree or residency) who conduct research in this area and whose first-author CPDD abstract is accepted for either a poster, oral, or symposium session. NIDA congratulates this year's travel awardees. They are listed on the following pages along with the title of their presentation.

To those of you who are junior investigators and conduct research in the area of women and sex/gender differences, and are interested in pursuing research in this important area, NIDA will again sponsor the NIDA Women & Sex/Gender Junior Investigator Travel Awards for the 2009 CPDD meeting in Reno/Sparks, Nevada, June 20-25. We encourage you to apply. See the announcement with application procedures on page 118.

Finally, for those of you who are interested in exploring funding opportunities for research on women and sex/gender differences, on pages 119 and 120 we have listed information on funding opportunity announcements in this area.

For additional information on NIDA's Women and Sex/Gender Differences Research Program, contact Dr. Cora Lee Wetherington (telephone 301-435-1319; [wetherington@nih.gov](mailto:wetherington@nih.gov)) or Dr. Samia Noursi (telephone 301-594-5622; [snoursi@nih.gov](mailto:snoursi@nih.gov)).

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## **NIDA'S WOMEN & SEX/GENDER JUNIOR INVESTIGATOR TRAVEL AWARDEES FOR CPDD 2008**

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| <b>Alexis Ary</b><br>University of California,<br>Santa Barbara          | Sexual dimorphism in the effects of Homer1a deletion upon the behavioral response to acute, but not repeated, cocaine (Page 22)                              |
| <b>Jeffery C. Batis</b><br>Yale University School of<br>Medicine         | Imaging of GABA-A receptor availability in men and women smokers and nonsmokers: Relationship with subsyndromal symptoms of anxiety and depression (Page 22) |
| <b>Amy S. Buchanan</b><br>Johns Hopkins University                       | Gender differences in the social and support networks of inner-city current and former drug users (Page 32)  |
| <b>Ya-Fen Chan</b><br>Chestnut Health Systems                            | Gender differences in HIV risk behaviors among adolescents in substance abuse treatment (Page 19)  |
| <b>Hui Cheng</b><br>Michigan State University                            | Alcohol use and problems: A focus upon male-female differences for US-born versus immigrant Latinos and Asians in US households, 2002-2003 (Page 31)         |
| <b>Marc L. Copersino</b><br>McLean Hospital                              | Gender differences in progression to dependence in non-treatment-seeking adult cannabis users (Page 31)  |
| <b>Carla K. Danielson</b><br>Medical University of South<br>Carolina     | Gender differences in the association between victimization history and substance abuse with regard to prevalence and risk factors (Page 32)                 |
| <b>Amy C. Janes</b><br>McLean Hospital                                   | Women on nicotine replacement therapy show significant brain activity in response to smoking cues (Page 35)  |
| <b>Du Jiang</b><br>University of California,<br>Los Angeles              | Treatment outcomes for women and men offenders with comorbid mental disorders (Page 18)  |
| <b>Kerry A. Kerstetter</b><br>University of California,<br>Santa Barbara | Differential effect of estrous cycle on cocaine-primed reinstatement to food- and cocaine-seeking (Page 21)  |
| <b>Stephen J. Kohut</b><br>American University                           | Sex and rearing condition affect generalization to direct and indirect dopamine agonists in adult rats discriminating cocaine (Page 21)                      |
| <b>Tanja C. Link</b><br>University of Kentucky                           | Cross-cultural gender differences in adolescent substance abuse (Page 23)  |
| <b>Catalina Lopez</b><br>Hebrew University                               | Perceived harmfulness of drugs and its association with drug use: Young men and women in Bogotá, Colombia see and do things differently (Page 20)            |
| <b>Jamie E. Mangold</b><br>University of Virginia                        | Significant association of bitter taste receptor genes with nicotine dependence in African Americans (Page 28)   |

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| <b>Rebecca K. McHugh</b><br>Boston University                                       | Gender differences in coping motives and substance use disorder severity (Page 31)  |
| <b>Carrie B. Oser</b><br>University of Kentucky                                     | The impact of race and HIV/AIDS discussion strategies on unprotected sex among female drug abusing criminal offenders (Page 11)   |
| <b>Jennifer G. Plebani</b><br>University of Pennsylvania                            | Early and later abstinence in cocaine pharmacotherapy trials: Importance of gender in predicting treatment outcome (Page 21)      |
| <b>Mirjana Radovanovic</b><br>Michigan State University                             | Alcohol-associated social maladaptation, cannabis use, and male-female differences: A latent class analysis (Page 31)             |
| <b>Deborah J. Rinehart</b><br>University of Colorado at Denver; and Health Sciences | Gender and sexual relationship power among out-of-treatment methamphetamine users (Page 33)                                       |
| <b>Sarah C. Roberts</b><br>University of California, Berkeley                       | Public health system structure and activities as barriers to prenatal care for pregnant women who use drugs and alcohol (Page 26) |
| <b>Ty S. Schepis</b><br>Yale University School of Medicine                          | Marijuana use, impulsivity, copying and gender in adolescents (Page 23)   |
| <b>Anne E. Smith</b><br>Yale University School of Medicine                          | Adolescent coping and self-efficacy to resist marijuana use in the presence of negative emotion (Page 23)                         |
| <b>Courtney E. Smith</b><br>Virginia Commonwealth University                        | Licit substance use, depression and trauma in pregnant women at high and low risk for prenatal illicit drug use (Page 16)         |
| <b>Oriana Vesga-Lopez</b><br>Columbia University                                    | Twelve-month prevalence of substance use disorders in pregnant and postpartum women (Page 12)                                     |
| <b>Mary Waldron</b><br>Washington University School of Medicine                     | Cannabis and other illicit drug use predict delayed reproduction in men and women (Page 27)                                       |
| <b>Monique E. Wilson</b><br>Friends Research Institute, Inc.                        | Gender differences in HIV risk: Results from a randomized clinical trial (Page 32)  |
| <b>Peggilee Wupperman</b><br>Yale University School of Medicine                     | Prevalence of violence and substance use among female victims of intimate-partner violence (Page 10)                              |
| <b>Elena S. Zakharova</b><br>University of Miami Miller School of Medicine          | Age and sex alter sensitivity to cocaine conditioned reward in rats (Page 21)   |

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**Sunday, June 15, 2008**

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**SYMPOSIUM II**

**San Geronimo B  
2:30 - 4:30 PM**

**COCAINE DEPENDENCE AND SOCIAL DISADVANTAGE: EVIDENCE FROM THE LABORATORY, CLINIC, AND COMMUNITY**

Chair: Stephen T. Higgins

3:20 *Do gestational cocaine exposure and/or socioeconomic status affect child neurocognitive outcome?*

Hallam Hurt, The Children's Hospital of Philadelphia, Philadelphia, PA

**Oral Communications 1**

**San Geronimo C  
2:30 - 4:30 PM**

**HIV/HCV/STD**

Chairs: Gayle Baldwin and Leah Floyd

4:00 *Substance use and sex trade among South Africans*

L.J. Floyd, C. Salama, A. Lawson and W. Latimer, Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD

4:15 *Injecting equipment sharing among Russian drug-injecting dyads*

V. Gyarmathy<sup>1</sup>, N. Li<sup>1</sup>, K.E. Tobin<sup>1</sup>, I.F. Hoffman<sup>2</sup>, A.P. Kozlov<sup>3</sup>, H.D. Chilcoat<sup>4</sup> and C.A. Latkin<sup>1</sup>, <sup>1</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, <sup>2</sup>U. of North Carolina at Chapel Hill, and <sup>4</sup>GlaxoSmithKline, Research Triangle Park, NC <sup>3</sup>Biomedical Center, St. Petersburg State University, St. Petersburg, Russian Federation



**POSTER SESSION I (Breakfast)**

**Expo Center  
8:00 - 10:00 AM**

**Odd-numbered posters manned first hour;  
Even-numbered, second hour**

**Set-up time begins Sunday 1:00 PM  
Must be removed by Monday 12:00 NOON**

**OPIOIDS: ANIMAL STUDIES**

- 9 *Naloxone as a stimulus in drug discrimination learning*  
A.L. Riley<sup>1</sup>, G.W. Stevenson<sup>2</sup>, C.M. Davis<sup>1</sup>, F. Cañadas<sup>1</sup>, T. Ullrich<sup>3</sup> and K.C. Rice<sup>3</sup>, <sup>1</sup>Psychology, American University, Washington, DC, <sup>2</sup>Psychology, University of New England, Biddeford, ME and <sup>3</sup>Laboratory of Medicinal Chemistry, NIDDK, Bethesda, MD
- 17 *Effects of herkinorin, a salvinorin analog with  $\mu$ -opioid effects, in a neuroendocrine biomarker assay*  
E. Butelman<sup>1</sup>, S. Rus<sup>1</sup>, D.S. Simpson<sup>3</sup>, K. Tidgewell<sup>3</sup>, T.E. Prisinzano<sup>2,3</sup> and M.J. Kreek<sup>1</sup>, <sup>1</sup>The Rockefeller University, New York, NY, <sup>2</sup>Medicinal Chemistry, University of Kansas, Lawrence, KS and <sup>3</sup>University of Iowa Coll. of Pharmacy, Iowa City, IA
- 18 *The effect of estrogen on cytokine production during inflammatory pain in ovariectomized female rats*  
K.Y. Shivers<sup>1,2</sup>, N. J. Amador<sup>1,2</sup>, L. Abrams<sup>1,2</sup>, D. Hunter<sup>1,2</sup>, S. Jenab<sup>1,2</sup> and V. Quinones-Jenab<sup>1,2</sup>, <sup>1</sup>Psychology, The Graduate School and University Center, CUNY, New York, NY and <sup>2</sup>Biopsychology and Behavioral Neuroscience Subprogram, Hunter College, CUNY, New York, NY
- 19 *Inflammatory pain alters levels of prostaglandin E2 and D2 during the female reproductive cycle*  
N.J. Amador<sup>1,2</sup>, K.Y. Shivers<sup>1,2</sup>, D. Hunter<sup>1,2</sup>, V. Quinones-Jenab<sup>1,2</sup> and S. Jenab<sup>1,2</sup>, <sup>1</sup>BioPsychology, CUNY Graduate School and University Center, New York, NY and <sup>2</sup>Biopsychology, Hunter College, New York, NY

**HIV/HCV I**

- 25 *Effect of women's HIV safer sex skills groups on sex-with-drug occasions: NIDA Clinical Trials Network Trial results*  
S. Tross<sup>1,2</sup>, A. Campbell<sup>2</sup>, M. Pavlicova<sup>2</sup>, M. Hu<sup>1</sup>, L. Cohen<sup>2</sup>, G. Miele<sup>1,2</sup> and E. Nunes<sup>1,2</sup>, <sup>1</sup>HIV Center, NYS Psychiatric Institute, New York, NY and <sup>2</sup>Columbia University, NY.

- 32 *Effects of medical/psychiatric comorbidity on HCV treatment eligibility in methadone maintenance*  
S.L. Batki<sup>1,2,3</sup>, K.M. Canfield<sup>2</sup>, E. Smyth<sup>2</sup>, K. Amodio<sup>2</sup>, K. Manser<sup>2</sup> and R.A. Levine<sup>2</sup>, <sup>1</sup>Psychiatry, University of California, San Francisco, San Francisco, CA, <sup>2</sup>Psychiatry, SUNY Upstate Medical University, Syracuse, NY and <sup>3</sup>San Francisco VAMC, SF, CA
- 34 *Prevalence of chronic health conditions among drug users*  
M.E. Mino, S. Deren and S. Kang, Center for Drug Use and HIV Research, National Development and Research Institutes, New York, NY

**COCAINE: HUMAN STUDIES I**

- 44 *Internalizing and externalizing behavior of children of mothers who misuse drugs versus fathers who misuse drugs*  
M.L. Kelley<sup>1</sup>, K. Lam<sup>2</sup>, and W. Fals-Stewart<sup>2</sup>, <sup>1</sup>Department of Psychology, Old Dominion University, Norfolk, VA and <sup>2</sup>School of Nursing, University of Rochester, Rochester, NY

**MARIJUANA, CANNABINOIDS**

- 56 *Drug abuse and HIV risk among IDUs near downtown Kathmandu*  
M.B. Poudyal Chhetri, Planning, CIAA, Kathmandu, Nepal
- 58 *Within-session satisfaction and state motivation as predictors of marijuana use at follow-up: An illustrative analysis*  
E.R. Grekin<sup>2</sup> and S.J. Ondersma<sup>1</sup>, <sup>1</sup>Psychiatry and OB/GYN, and <sup>2</sup>Psychology, Wayne State University, Detroit, MI

**NICOTINE: ANIMAL STUDIES**

- 73 *Nicotine, but not varenicline, pretreatment synergistically enhanced amphetamine-stimulated locomotor activity in rats*  
M.E. Gnegy and E.M. Jutkiewicz, Pharmacology, University of Michigan, Ann Arbor, MI
- 82 *Acquisition and maintenance of nicotine self-administration in adolescent male and female rats*  
W.J. Lynch, Psychiatry and Neurobehavioral Sciences, University of VA, Charlottesville, VA

**POLYDRUG ABUSE**

- 113 *The association between executive functioning and readiness to change drug use behavior among injection and non-injection drug users in Baltimore, MD*  
S.G. Severtson, S. von Thomsen, S.L. Hedden and W.W. Latimer, Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
- 114 *Drug problems, sex trading, and sex-related attitudes among women entering substance abuse treatment*  
D.L. Homish, K.H. Dermen, J.R. Koutsky and D.K. Augustino, Research Institute on Addictions, The State University of New York at Buffalo, Buffalo, NY

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## Monday, June 16, 2008

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- 121 *Dual substance-abusing parents vs. mother-only substance-abusing parents in treatment: Behavioral functioning of children*  
W.K. Lam<sup>1</sup>, W. Fals-Stewart<sup>1</sup> and M.L. Kelley<sup>2</sup>, <sup>1</sup>School of Nursing, University of Rochester, Rochester, NY and <sup>2</sup>Old Dominion University, Norfolk, VA
- 122 *Parental substance abuse and long-term coping in a sample of adult domestic violence survivors*  
S. Griffing<sup>1</sup>, R.E. Sage<sup>2,1</sup>, T. Jospitre<sup>1</sup> and M. Chu<sup>2,1</sup>, <sup>1</sup>Urban Resource Institute, Brooklyn, NY and <sup>2</sup>Addiction Research and Treatment Corporation, Brooklyn, NY
- 126 *Deconstructing 12-step involvement as predictor of sustained abstinence from polydrug use*  
A.B. Laudet<sup>1</sup> and W.L. White<sup>2</sup>, <sup>1</sup>NDRI, NYC, NY and <sup>2</sup>Chestnut, Bloomington, IL
- 127 *Contextual differences in substance use among treatment-seeking women*  
L.M. Shannon, R. Walker, J.R. Havens, A. Mateyoke-Scriver and C. Leukefeld, Center on Drug and Alcohol Research, University of Kentucky, Lexington, KY
- 128 *Prevalence of violence and substance use among female victims of intimate-partner violence*  
P. Wupperman, P. Amble, S. Devine, H. Zonana, S. Ciskowski and C. Easton, Yale University School of Medicine, New Haven, CT
- 130 *Will I stay or will I go? Role of early treatment experiences in predicting attrition*  
V. Stanick<sup>1</sup>, A.B. Laudet<sup>1</sup> and B. Sands<sup>2</sup>, <sup>1</sup>NDRI, and <sup>2</sup>Woodhull Medical Center, New York City, NY
- 133 *Predictors of social stability among drug users and non-drug users in Baltimore City, Maryland*  
D. German and C.A. Latkin, Health, Behavior and Society, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
- 134 *Outcomes of substance abuse treatment from the California Outcomes Measurement System*  
R. Gonzales, M. Brecht, R. Rawson and J. Hunter, Integrated Substance Abuse Programs, University of California-Los Angeles, Los Angeles, CA
- 136 *Investigating the active ingredients of motivational interviewing*  
K.L. Venner<sup>1</sup>, S.J. Erickson<sup>2</sup>, M.P. Bogenschutz<sup>1</sup> and J.S. Tonigan<sup>1</sup>, <sup>1</sup>CASAA, University of New Mexico, Albuquerque, NM and <sup>2</sup>Psychology, University of New Mexico, Albuquerque, NM
- 139 *Clinician knowledge of Cognitive Behavioral Therapy strategies: Room for improvement*  
M. Larson<sup>1</sup>, M. Amodeo<sup>2</sup>, E. Gerstenberger<sup>1</sup> and J.S. LoCastro<sup>3,4</sup>, <sup>1</sup>New England Research Institutes, Watertown, MA, <sup>2</sup>School of Social Work, Boston University, Boston, MA, <sup>3</sup>School of Medicine, Boston University, Boston, MA and <sup>4</sup>VA Boston Healthcare, Boston, MA

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## Monday, June 16, 2008

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- 144 *Lifestyle mobility in a cohort of injection drug users*  
B. Pieper<sup>1</sup>, T.N. Templin<sup>1</sup>, R.S. Kirsner<sup>2</sup> and T.J. Birk<sup>1</sup>, <sup>1</sup>College of Nursing, Wayne State University, Detroit, MI and <sup>2</sup>Miller School of Medicine, University of Miami, Miami, FL
- 145 *Medical co-occurring disorders in a substance-abusing Medicaid population*  
D.A. Tompkins<sup>1</sup>, K. Stoller<sup>1</sup>, A. Schuster<sup>2,3</sup>, P. Fagan<sup>2,1</sup> and R. Brooner<sup>1</sup>, <sup>1</sup>Psychiatry, The Johns Hopkins University School of Medicine, Baltimore, MD, <sup>2</sup>Johns Hopkins Healthcare, LLC, Glen Burnie, and <sup>3</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
- 147 *Ethnic disparities in health and health-related behaviors among homeless women*  
L. Gelberg<sup>1</sup>, E. Austin<sup>3</sup> and R.M. Andersen<sup>2</sup>, <sup>1</sup>Family Medicine, David Geffen School of Medicine, UCLA and <sup>2</sup>Health Services, University of California-Los Angeles School of Public Health, Los Angeles, CA and <sup>3</sup>Sociology, University of Alabama at Birmingham, Birmingham, AL

### CRIMINAL JUSTICE

- 148 *A different kind of hustle: A qualitative study of the process of long-term abstinence from heroin use among female ex-offenders*  
N.J. Tiburcio, Institute for Treatment Services Research, National Development and Research Institutes, New York, NY
- 149 *Longitudinal changes in attachment, social support, parenting attitudes, and psychological functioning among women drug offenders*  
E. Hall, M. Prendergast and U. Warda, Psychiatry, University of California, Los Angeles, Los Angeles, CA
- 150 *Gender differences in chronic medical conditions, psychiatric disorders and substance dependence among U.S. jail inmates*  
I.A. Binswanger<sup>1</sup>, J.O. Merrill<sup>2</sup>, P.M. Krueger<sup>3</sup>, M.C. White<sup>4</sup>, R.E. Booth<sup>5</sup>, and J.G. Elmore<sup>2</sup>, <sup>1</sup>Medicine, Aurora, and <sup>5</sup>Psychiatry, University of Colorado Denver, Denver, CO, <sup>2</sup>Medicine, University of Washington, Seattle, WA, <sup>3</sup>Public Health, University of Texas, Houston, TX, <sup>4</sup>Community Health, University of California San Francisco, San Francisco, CA
- 151 *The impact of race and HIV/AIDS discussion strategies on unprotected sex among female drug-abusing criminal offenders*  
C.B. Oser, J. Havens, J. Mooney, M. Staton-Tindall, J. Duvall and C. Leukefeld, University of Kentucky, Lexington, KY
- 152 *Juvenile arrest as an indicator of HIV-related sexual risk behaviors and adult criminal involvement in a community sample of substance-using African American women*  
C. Welch, C.L. Callahan and L.B. Cottler, Psychiatry, Washington University in St. Louis, St. Louis, MO

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## Monday, June 16, 2008

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- 153 *Differences in rates and length of incarceration for minority vs. non-minority women: A drug diversion study*  
M.C. Scott, P. Wupperman and C.J. Easton, Psychiatry, School of Medicine, Yale University, New Haven, CT
- 154 *Differential success rates in racial groups: Results of a clinical trial of smoking cessation among female prisoners*  
K.L. Cropsey<sup>1</sup>, M.F. Weaver<sup>2</sup>, G.D. Eldridge<sup>5</sup>, G.C. Villalobos<sup>2</sup>, A.M. Best<sup>4</sup> and M.L. Stitzer<sup>3</sup>, <sup>1</sup>Psychiatry, University of Alabama at Birmingham, Birmingham, AL, <sup>2</sup>Internal Medicine, Virginia Commonwealth University, Richmond, VA, <sup>3</sup>Psychiatry, Johns Hopkins University, Baltimore, MD, <sup>4</sup>Biostatistics, Virginia Commonwealth University, Richmond, VA and <sup>5</sup>Psychology, University of Alaska, Anchorage, AK
- 163 *Racial differences in psychosocial functioning among youth in juvenile detention*  
C. Henderson<sup>1,2</sup>, G.A. Dakof<sup>2</sup>, C. Gillikin<sup>2</sup>, H. Li<sup>2</sup>, C.S. Lederman<sup>3</sup> and H.A. Liddle<sup>2</sup>, <sup>1</sup>Psychology, Sam Houston State University, Huntsville, TX, <sup>2</sup>Center for Treatment Research on Adolescent Drug Abuse, Miller School of Medicine at the University of Miami, and <sup>3</sup>Juvenile Division, 11th Judicial Court, Miami, FL
- 165 *Marijuana abuse in incarcerated adolescents*  
R. Lebeau, L. Stein and K. Quina, Cancer Prevention Research Center, URI, Kingston, RI
- 168 *Outcomes of a substance use and HIV prevention program for incarcerated adolescents*  
D.W. Watson<sup>1,5</sup>, W.J. McCuller<sup>1</sup>, F.G. Castro<sup>2</sup>, C. Reiber<sup>3</sup> and J. Herting<sup>4</sup>, <sup>1</sup>Friends Research Institute, Torrance, and <sup>5</sup>Integrated Substance Abuse Programs, University of California-Los Angeles, Los Angeles, CA, <sup>2</sup>Psychology, Arizona State University, Tempe, AZ, <sup>3</sup>Binghamton University, Binghamton, NY, <sup>4</sup>School of Nursing, University of Washington, Seattle, WA

### Oral Communications 4

**San Geronimo A**  
**10:00 AM - 12:00 PM**

#### TREATING FOR TWO: DRUGS AND PREGNANCY

Chairs: Oriana Vesga and Hendree Jones

- 10:00 *Twelve-month prevalence of substance use and substance use disorders in pregnant and postpartum women*  
O. Vesga<sup>1</sup>, C. Blanco<sup>2</sup>, K. Keyes<sup>3</sup>, M. Olfson<sup>2</sup>, B. Grant<sup>4</sup> and D. Hasin<sup>3,1</sup>, <sup>2</sup>Psychiatry, New York State Psychiatric Institute, College of Physicians and Surgeons, Columbia University, <sup>3</sup>Epidemiology, Mailman School of Public Health, Columbia University, NYC, NY and <sup>4</sup>Laboratory of Epidemiology and Biometry, NIAA, NIH, Bethesda, MD

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## Monday, June 16, 2008

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- 10:15 *Characterizing methadone dose during late pregnancy and postpartum*  
S.H. Heil<sup>1,2</sup>, T. Scott<sup>1</sup>, S. Sigmon<sup>1,2</sup> and S. Higgins<sup>1,2</sup>, <sup>1</sup>Psychiatry and  
<sup>2</sup>Psychology University of Vermont, Burlington, VT
- 10:30 *Methamphetamine use among white pregnant women*  
W. Tompkins and W. Clark, SAMHSA, Rockville, MD
- 10:45 *Pregnancy and race/ethnicity as predictors of readiness for drug treatment*  
M.M. Mitchell, S.G. Severtson, S.L. Hedden and W.W. Latimer, Mental  
Health, Johns Hopkins University, Baltimore, MD
- 11:00 *Binge drinking and not heavy regular drinking relates to pregnancy risk due to  
ineffective contraception*  
S. Fabbri, L. Farrell, T. Ly, C.D. Ceperich, J.K. Penberthy, J.E. Wartella and  
K.S. Ingersoll, Psychiatry and Neurobehavioral Sciences, University of  
Virginia, Charlottesville, VA
- 11:15 *Does tobacco use identify post-partum women at risk for alcohol problems and  
depression?*  
L. Islam<sup>1</sup>, L. Keyser-Marcus<sup>1</sup>, S. Ondersma<sup>2</sup> and D.S. Svikis<sup>1</sup>, <sup>1</sup>Psychology,  
Virginia Commonwealth University, Richmond, VA and <sup>2</sup>Wayne State  
University, Detroit, MI
- 11:30 *Smoking in pregnant patients screened for an agonist medication study:  
Comparisons to other pregnant and/or drug-dependent female patients*  
H.E. Jones<sup>1</sup>, K. O'Grady<sup>1</sup>, K. Kaltenbach<sup>2</sup>, G. Fischer<sup>3</sup>, S. Heil<sup>4</sup>, P. Martin<sup>5</sup>, S.  
Stine<sup>6</sup>, M. Coyle<sup>7</sup>, P. Selby<sup>1</sup> and A. Arria<sup>1</sup>, <sup>1</sup>Johns Hopkins U, Baltimore, MD,  
<sup>2</sup>Thomas Jefferson U, Philadelphia, PA, <sup>3</sup>Medical U Vienna, Vienna, Austria,  
<sup>4</sup>U of Vermont, Burlington, VT, <sup>5</sup>Vanderbilt U, Nashville, TN, <sup>6</sup>Wayne State  
U., Detroit, MI and <sup>7</sup>Brown U., Providence, RI
- 11:45 *Nicotine replacement treatment for pregnant smokers*  
C. Oncken<sup>1</sup>, E. Dornelas<sup>2,1</sup>, J. Greene<sup>2,1</sup>, H. Sankey<sup>3</sup>, A. Glasmann<sup>4</sup> and H. R.  
Kranzler<sup>1</sup>, <sup>1</sup>University of Connecticut School of Medicine, Farmington, CT,  
<sup>2</sup>Hartford Hospital, Hartford, CT, <sup>3</sup>Baystate Medical center, Baystate, MA and  
<sup>4</sup>Hospital of Central Connecticut, New Britain, CT

**POSTER SESSION II (Breakfast)**

**Expo Center  
8:00 - 10:00 AM**

**Odd-numbered posters manned first hour;  
Even-numbered, second hour**

**Set-up time begins Monday 1:00 PM  
Must be removed by Tuesday 12:00 NOON**

**SEDATIVE-HYPNOTICS, INHALANTS**

- 9 *Youth's inhalant drug use in Bogotá, Colombia*  
Y. Neumark and C. Lopez, School of Public Health, Hebrew University of Jerusalem, Jerusalem, Israel
- 11 *Factors predicting the onset and discontinuity of prescribed benzodiazepine long-term use*  
S. Fang<sup>1</sup>, C. Chen<sup>1</sup>, K. Lin<sup>1</sup>, I. Chang<sup>1</sup>, E. Wu<sup>2</sup> and C. Chang<sup>3</sup>, <sup>1</sup>National Health Research Institute, Taipei, Taiwan, <sup>2</sup>Koo Foundation Sun Yat-Sen Cancer Center, Taipei, Taiwan and <sup>3</sup>Chang Gung Memorial Hospital, Taoyuan County, Taiwan
- 17 *Alterations in skeletal development following gestational toluene exposure*  
A. Stefanski<sup>1</sup>, S. Irtenkauf<sup>1</sup>, J. Hannigan<sup>1,2</sup> and S. Bowen<sup>1,2</sup>, <sup>1</sup>Psychology, Wayne State University, Detroit, MI and <sup>2</sup>Obstetrics and Gynecology, Wayne State University, Detroit, MI

**PHARMACOKINETICS**

- 18 *Identification of the enzymes metabolizing buprenorphine in preterm human placentas*  
V. Fokina, O. Zharikova, T.N. Nanovskaya, G. Hankins and M.S. Ahmed, OB/GYN Maternal Fetal Medicine, University of Texas Medical Branch, Galveston, TX

**COCAINE: ANIMAL STUDIES**

- 37 *Chronic exercise decreases the reinforcing efficacy of cocaine*  
M.A. Smith, K.T. Schmidt, J.C. Iordanou and M.L. Mustroph, Psychology and Program in Neuroscience, Davidson College, Davidson, NC
- 38 *Estrogen interacts with mu opioid peptides to modulate behavioral sensitization to cocaine in female rats*  
A.C. Segarra<sup>1</sup>, G. Diaz<sup>1</sup>, P. Hernandez<sup>1</sup>, G. Santiago<sup>1</sup>, M. Febo<sup>2</sup> and C. Ferris<sup>2</sup>, <sup>1</sup>Physiology, University of Puerto Rico, San Juan, PR and <sup>2</sup>Psychology, Northeastern University, Boston, MA

- 39 *Progesterone attenuates acute locomotor responses but does not alter cocaine-induced behavioral sensitization in female rats*  
S.E. Diaz<sup>1,2</sup>, G. Seidman<sup>2</sup>, I. Tulloch<sup>1,2</sup>, S. Jenab<sup>2,1</sup> and V. Quinones-Jenab<sup>2,1</sup>,  
<sup>1</sup>Psychology, Graduate Center of New York, CUNY, New York, NY and  
<sup>2</sup>Psychology, Hunter College, New York, NY
- 40 *Progesterone treatment of the escalation of i.v. cocaine self-administration in rats differing invulnerability*  
J.L. Pawlik, J.J. Anker and M.E. Carroll, Psychiatry, University of Minnesota,  
Minneapolis, MN
- 43 *Prenatal and neonatal exposure to bisphenol-A affects the central dopaminergic systems in mice: Implications of the functional changes in dopamine D3 receptors*  
K. Mizuo<sup>1,2</sup>, M. Narita<sup>1</sup>, K. Miyagawa<sup>1</sup>, M. Miyatake<sup>1</sup>, Y. Tsurukawa<sup>1</sup>, K. Takeda<sup>2</sup>  
and T. Suzuki<sup>1</sup>, <sup>1</sup>Department of Toxicology, Hoshi University of Pharmacy and  
Pharmaceutical Sciences, Tokyo, Japan and <sup>2</sup>Research Center for Health Science  
of Nanoparticles, Tokyo University of Science, Chiba, Japan

#### **PERINATAL SUBSTANCE ABUSE**

- 44 *Prenatal cocaine exposure alters default mode and emotional network brain activity: Functional and resting state MRI evidence*  
P. Santhanam<sup>1</sup>, Z. Li<sup>1</sup>, X. Hu<sup>1</sup>, S. Hamann<sup>3</sup>, M.E. Lynch<sup>2</sup> and C.D. Coles<sup>2</sup>,  
<sup>1</sup>Biomedical Engineering, <sup>2</sup>Psychiatry and Behavioral Sciences, and <sup>3</sup>Psychology,  
Emory University, Atlanta, GA
- 45 *Prenatal cocaine exposure and infant stress reactivity*  
R.D. Eiden<sup>1</sup>, Y. Veira<sup>1</sup>, D. Granger<sup>2</sup> and P. Schuetze<sup>3</sup>, <sup>1</sup>Research Institute on  
Addictions, University at Buffalo, SUNY, Buffalo, NY, <sup>2</sup>Biobehavioral Health,  
Pennsylvania State University, University Park, PA and <sup>3</sup>Psychology, Buffalo  
State College, Buffalo, NY
- 46 *Effects of prenatal cocaine exposure on toddlers' emotional arousal and regulation: Implications for behavior problems across a three-year follow-up*  
T.M. Chaplin<sup>1</sup>, L.C. Mayes<sup>2</sup>, R. Sinha<sup>1</sup> and T. Fahy<sup>3</sup>, <sup>1</sup>Psychiatry, and <sup>2</sup>Yale Child  
Study Center, Yale University, and <sup>3</sup>Social Sciences, Gateway Community  
College, New Haven, CT
- 47 *The effects of prenatal cocaine exposure and lead on language at age 10*  
S. Minnes, B. Lewis, E. Short, S. Satayathum and L. Singer, Case Western  
Reserve University, Cleveland, OH
- 48 *Prenatal cocaine exposure, childhood maltreatment, and adolescent marijuana use*  
C. Larkby<sup>1</sup>, S.L. Leech<sup>2</sup>, M.D. Cornelius<sup>1</sup> and G.A. Richardson<sup>1</sup>, <sup>1</sup>Psychiatry,  
University of Pittsburgh School of Medicine, Pittsburgh, PA and <sup>2</sup>Western  
Psychiatric Institute and Clinic, University of Pittsburgh Medical Center,  
Pittsburgh, PA



- 49 *MET for pregnant substance-abusing women (NIDA CTN 0013): Does baseline motivation moderate efficacy?*  
S.J. Ondersma<sup>1</sup>, T. Winhusen<sup>2</sup> and Y. Wang<sup>3</sup>, <sup>1</sup>Psychiatry and Ob/Gyn, and <sup>3</sup>Family Medicine, Wayne State University, Detroit, MI, <sup>2</sup>Psychiatry, University of Cincinnati College of Medicine, Cincinnati, OH
- 50 *Therapist effects in the treatment of pregnant substance abusers: Clinical Trials Network #13*  
S.J. Erickson<sup>1</sup>, J.S. Tonigan<sup>2</sup> and M.P. Bogenschutz<sup>2</sup>, <sup>1</sup>Psychology, and <sup>2</sup>CASAA, University of New Mexico, Albuquerque, NM
- 51 *Technological innovations in adapting an evidenced-based HIV intervention for pregnant African American women in substance abuse treatment*  
W. Wechsberg, RTI International, Durham, NC and University of North Carolina School of Public Health, Chapel Hill, NC
- 52 *Licit substance use, depression and trauma in pregnant women at high and low risk for prenatal illicit drug*  
C. Smith, A. Alvanzo, K. Reid-Quinones, D. Langhorst and D. Svikis, Psychology, Virginia Commonwealth University, Richmond, VA
- 53 *Pregnant women in methadone maintenance: Treatment engagement and illicit drug use*  
L.M. Sander and L.H. Lundahl, Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI
- 54 *Characteristics of opioid-dependent pregnant women who accept or refuse participation in a clinical trial*  
S. Stine<sup>1</sup>, S. Heil<sup>2</sup>, A. Arria<sup>3</sup>, K. O'Grady<sup>3</sup>, K. Kaltenbach<sup>4</sup>, G. Fischer<sup>5</sup>, P. Martin<sup>6</sup>, M. Coyle<sup>7</sup>, P. Selby<sup>8</sup> and H. Jones<sup>3</sup>, <sup>1</sup>Wayne State U, Detroit, MI, <sup>2</sup>U of Vermont, Burlington, VT, <sup>3</sup>Johns Hopkins U, Baltimore, MD, <sup>4</sup>Thomas Jefferson U, Philadelphia, PA, <sup>5</sup>Medical U Vienna, Vienna, Austria, <sup>6</sup>Vanderbilt U, TN, <sup>7</sup>Brown U., RI, and <sup>8</sup>U of Toronto, Canada
- 55 *Infant mortality among drug-dependent women*  
L. Burns and R.P. Mattick, NDARC, UNSW, Sydney, NSW, Australia
- 56 *Maternal methadone dosing schedule and fetal neurobehavior*  
L.M. Jansson<sup>1</sup>, J.A. DiPietro<sup>2</sup>, M. Velez<sup>1</sup>, A. Elko<sup>1</sup>, H. Knauer<sup>1</sup> and K.T. Kivlighan<sup>2</sup>, <sup>1</sup>Pediatrics, Johns Hopkins School of Medicine, Baltimore, MD and <sup>2</sup>Population and Family Health Sciences, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
- 57 *Examination of withdrawal symptoms in methadone- or buprenorphine-exposed neonates*  
T. Linares Scott<sup>1</sup>, S.H. Heil<sup>1</sup>, S.T. Higgins<sup>1</sup>, S.C. Sigmon<sup>1</sup> and H.E. Jones<sup>2</sup>, <sup>1</sup>University of Vermont, Burlington, VT and <sup>2</sup>Johns Hopkins University, Baltimore, MD

- 58 *An examination of physiological regulation in cocaine-exposed infants across the first 7 months of life*  
P. Schuetze<sup>1,2,3</sup>, E.P. Edwards<sup>2</sup> and R.D. Eiden<sup>2,3</sup>, <sup>1</sup>Psychology, Buffalo State College, Buffalo, NY, <sup>2</sup>Research Institute on Addictions, University at Buffalo, Buffalo, NY and <sup>3</sup>Pediatrics, University at Buffalo, Buffalo, NY
- 59 *Brief, universal intervention for child maltreatment prevention among high-risk parents: Effects on substance use, mental health, and intimate partner violence*  
A. Loree<sup>2</sup>, S. J. Ondersma<sup>1</sup>, J.R. Beatty<sup>3</sup>, G. Tzilos<sup>3</sup>, S.K. Chase<sup>3</sup> and C.R. Schuster<sup>4</sup>, <sup>1</sup>Psychiatry and Ob/Gyn, Wayne State University, Detroit, MI, <sup>2</sup>Psychiatry, Wayne State University, Detroit, MI, <sup>3</sup>Psychology, Wayne State University, Detroit, MI and <sup>4</sup>Neuroscience Institute, Loyola University, Chicago, IL

### **OPIOIDS: HUMAN STUDIES I**

- 79 *Factors associated to buprenorphine treatment adoption by Puerto Rican physicians in private practice*  
G. Caraballo and C.E. Albizu, Graduate School of Public Health, University of Puerto Rico, San Juan, PR
- 83 *Predictors of successful treatment outcomes in a 30-day buprenorphine detoxification*  
S. King<sup>1</sup>, E.C. Katz<sup>2,1</sup>, B. Brown<sup>1,3</sup>, R. Schwartz<sup>1</sup>, D. Gandhi<sup>4</sup> and W. Barksdale<sup>4</sup>, <sup>1</sup>Friends Research Institute., Baltimore, MD, <sup>2</sup>Towson University., Towson, MD, <sup>3</sup>Univ. of N. Carolina, Wilmington, NC and <sup>4</sup>University of Maryland, Baltimore, MD

### **EPIDEMIOLOGY, ETHNIC DIFFERENCES**

- 91 *Substance use in patients with STDs: Results from a national survey*  
J.M. Tetrault, D.A. Fiellin and L.E. Sullivan, Yale University School of Medicine, New Haven, CT
- 94 *Correlates of substance use and related problems in Nigeria and Uganda: Findings from general population surveys*  
I.S. Obot, M.B. Hossain and K. Sydnor, Morgan State University, Baltimore, MD
- 95 *Characteristics of a sample female injection drug users in Malaysia*  
V.B. Kasinather<sup>1</sup>, M.C. Chawarski<sup>2</sup>, R.S. Schottenfeld<sup>2</sup> and M. Mazlan<sup>3</sup>, <sup>1</sup>Centre for Drug Research, University Sains Malaysia, Penang, and <sup>3</sup>SARC, Muar, Malaysia and <sup>2</sup>Yale University School of Medicine, New Haven, CT
- 97 *Psychosocial correlates of sex trade among drug-abusing women by race/ethnicity*  
A.L. Lawson, L.J. Floyd, C.H. Salama and W.W. Latimer, Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

- 101 *Describing differences between never smokers, current smokers, and former smokers in a low SES community sample*  
P. Sheikhattari<sup>1,2,3</sup>, H. Klein<sup>1,2</sup>, S. Zhu<sup>4</sup> and F.A. Wagner<sup>1,2,3</sup>, <sup>1</sup>Center for the Study and Prevention of Drug Use, Morgan State University, Baltimore, MD, <sup>2</sup>Center for Health Disparities Solutions, Morgan State University, Baltimore, MD, <sup>3</sup>School of Community Health and Policy, Morgan State University, Baltimore, MD and <sup>4</sup>School of Medicine, University of Maryland, Baltimore, MD
- 102 *Racial differences in the effect of family formation on smoking cessation by middle age among women*  
A. Thompson<sup>1,2</sup>, <sup>1</sup>Columbia University, and <sup>2</sup>National Development and Research Institute, New York, NY

### **PSYCHIATRIC COMORBIDITY I**

- 113 *Treatment outcomes for women and men offenders with comorbid mental disorders*  
D. Jiang<sup>1</sup>, Y.Y. Hser<sup>2</sup> and D. Huang<sup>2</sup>, <sup>1</sup>Shanghai Mental Health Center, Shanghai, China and <sup>2</sup>ISAP, Los Angeles, CA
- 114 *Social and mental health correlates of female inmates in the Puerto Rico prison system with lifetime drug use disorder and likely post traumatic stress disorder*  
A. Hernandez and C.E. Albizu-Garcia, Center for Evaluation and Sociomedical Research, UPR-Medical Sciences Campus, San Juan, PR
- 115 *Trauma, health problems and depression in drug-dependent women*  
S. Meshberg-Cohen, D. Nilson, C. Smith and D. Svikis, Psychology, Virginia Commonwealth University, Richmond, VA
- 116 *Co-morbid psychiatric and substance use disorders among African American women at high risk for HIV*  
H.L. Surratt and J.A. Inciardi, Center for Drug & Alcohol Studies, University of Delaware, Coral Gables, FL
- 117 *HIV risk behaviors and PTSD: Secondary findings from a NIDA Clinical Trials Network randomized controlled trial of women in community-based substance abuse treatment*  
D. Hien<sup>1</sup>, T. Killeen<sup>2</sup>, A. Campbell<sup>1</sup> and E. Nunes<sup>3</sup>, <sup>1</sup>Columbia University School of Social Work, Columbia University, New York, NY, <sup>2</sup>Psychiatry, Medical University of South Carolina, Charleston, SC and <sup>3</sup>Columbia University and New York State Psychiatry Institute, New York, NY

### **HIV/HCV II**

- 124 *Adherence during an HIV vaccine clinical trial: High risk drug-using women*  
J. Becher, S. Chhatre, M. Eisenberg, D. Fiore, D. Dunbar, I. Frank, G. Woody and D. Metzger, University of Pennsylvania, Philadelphia, PA

- 126 *Differential incidence of HIV and syphilis between male and female drug users in southwest China*  
C. Hao<sup>1, 2</sup>, G. M. Qin<sup>3</sup>, H.Z. Qian<sup>4</sup>, Y.H. Ruan<sup>1</sup>, J.L. Zhu<sup>1</sup>, L. Yin<sup>1</sup>, K.L. Chen<sup>5</sup>, S. Liang<sup>3</sup>, H. Xing<sup>1</sup>, K.X. Hong<sup>1</sup>, and Y.M. Shao<sup>1</sup>, <sup>1</sup>China CDC, Beijing, <sup>2</sup>The Chinese University of Hong Kong, Hong Kong, HKSAR, China, <sup>3</sup>Sichuan CDC, Chengdu, and <sup>5</sup>Xichang Center for STD and Leprosy Control, Xichang, China and <sup>4</sup>Vanderbilt University School of Medicine, Nashville, TN
- 136 *Developmental epidemiology and prevention of drug disorders and HIV sexual risk behavior*  
A.M. Windham<sup>1</sup>, S. Kellam<sup>1</sup>, J. Poduska<sup>1</sup>, C.H. Brown<sup>2</sup> and N. Ialongo<sup>3</sup>, <sup>1</sup>American Institutes for Research, Baltimore, MD, <sup>2</sup>University of South Florida, Tampa, FL and <sup>3</sup>Johns Hopkins University, Baltimore, MD
- 138 *Predictors of condom use among drug-abusing women involved in sex trade in Baltimore, MD*  
C.H. Salama, A. Nandi, A. Lawson, L. Floyd and W. Latimer, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
- 139 *Drug use, sex, and women's risky relationships*  
C.G. Leukefeld<sup>1</sup>, J. Havens<sup>1</sup>, C. Oser<sup>1</sup>, M. Staton-Tindall<sup>1</sup>, H. Knudsen<sup>1</sup>, J. Palmer<sup>1</sup>, J. Inciardi<sup>2</sup>, H. Surratt<sup>3</sup>, and L. Frisman<sup>4</sup>, <sup>1</sup>University of KY, Lexington, KY, <sup>2</sup>University of DE, Coral Gables, FL, <sup>3</sup>Brown University, Providence, RI and <sup>4</sup>University of Connecticut, Hartford, CT
- 142 *Alcohol and substance use among persons engaged in HIV prevention in a community mental health center*  
M.B. Blank, D.S. Metzger, S. Eachus, J. Tennille, T. Ten Have, P. Solomon and M.M. Eisenberg, Psychiatry, University of Pennsylvania, Philadelphia, PA
- 144 *Sexual risk factors: Rates and reliability among ecstasy users*  
E. Shacham and L.B. Cottler, Psychiatry, Washington University School of Medicine, St. Louis, MO
- 147 *Women who have sex with women: HIV risk behaviors and perceived HIV risk*  
J. Mooney<sup>1</sup>, J. Havens<sup>1</sup>, C. Oser<sup>1</sup>, J. Duvall<sup>1</sup>, M. Staton-Tindall<sup>1</sup>, C. Leukefeld<sup>1</sup>, J. Inciardi<sup>2</sup>, J. Clarke<sup>3</sup> and L. Frisman<sup>4</sup>, <sup>1</sup>University of Kentucky, Lexington, KY, <sup>2</sup>University of Delaware, Newark, DE, <sup>3</sup>Brown University, Providence, RI and <sup>4</sup>University of Connecticut, Storrs, CT

#### **SUBSTANCE ABUSE IN ADOLESCENTS I**

- 148 *Gender differences in HIV risk behaviors among adolescents in substance abuse treatment*  
Y. Chan<sup>1</sup>, L.L. Passetti<sup>1</sup>, J. Lloyd<sup>2</sup>, B.R. Garner<sup>1</sup> and M.L. Dennis<sup>1</sup>, <sup>1</sup>Chestnut Health Systems, Bloomington, IL and <sup>2</sup>School of Social Administration, Temple University, Philadelphia, PA
- 149 *Gender differences in risky behaviors among inpatient adolescents*  
A. Clark, N. Johnson, C. Merritt and D. Deas, Psychiatry, Medical University of South Carolina, Charleston, SC

- 150 *Perceived harmfulness of drugs and its association with drug use: Young men and women in Bogotá, Colombia see and do things differently*  
C. Lopez and Y. Neumark, School of Public Health, Hebrew University of Jerusalem, Jerusalem, Israel
- 155 *Prevalence of muscle-building substances among students*  
V. Agulló<sup>1</sup>, S. Tomás<sup>2</sup>, E. Gómez<sup>1</sup>, M.J. Torrijos<sup>2</sup>, A. Vidal<sup>2</sup>, C. Morales<sup>1</sup>, R. Aleixandre<sup>1</sup>, J.C. Valderrama<sup>1</sup> and J.C. Pérez de los Cobos<sup>3</sup>, <sup>1</sup>IHCD López Piñero, and <sup>2</sup>Fundació per a l'Estudi, Prevenció i Assistència Drogues, FEPAD, València, and <sup>3</sup>Hospital Santa Creu i Sant Pau, Barcelona, Spain
- 157 *Adolescent substance use and condom use in first and recent sexual encounters*  
B. Beadnell<sup>2</sup>, D.M. Morrison<sup>2</sup>, M. J. Hoppe<sup>2</sup> and B.C. Leigh<sup>1</sup>, <sup>1</sup>Alcohol and Drug Abuse Institute, University of Washington, Seattle, WA and <sup>2</sup>School of Social Work, University of Washington, Seattle, WA
- 161 *Sexual maturation, peer delinquency, and drug use in daughters of substance use disorder fathers from childhood to adolescence*  
A.C. Mezzich, L. Kirisci, M. Vanyukov, G. Kirillova and T. Ridenour, Pharmacy, University of Pittsburgh, Pittsburgh, PA
- 162 *Does childhood abuse history impact outcomes among homeless youth receiving substance abuse treatment?*  
N. Slesnick, S. Bartle-Haring, A. Khurana and D. Bantchevska, The Ohio State University, Columbus, OH
- 163 *Psychobiological correlates of childhood neglect and parental care perception in cocaine addicts*  
G. Gerra<sup>1,2,3</sup>, C. Leonardi<sup>2</sup>, M.A. Raggi<sup>2</sup>, A. Busse<sup>1</sup>, J. Tomás-Rosselló<sup>1</sup>, E. Saen-Miranda<sup>1</sup>, S. Berterame<sup>1</sup>, C. Donnini<sup>4</sup>, <sup>1</sup>Global Challenges Sect., UNODC, Vienna, Austria, <sup>2</sup>Dipendenze, ASL Roma C, Rome, <sup>3</sup>Scienze Farmaceutiche, U. degli Studi di Bologna, Rome, <sup>4</sup>GeneticaBiologia dei Microrganismi Antropologia Evoluzione, U. degli Studi di Parma, Parma, Italy
- 165 *Adolescent patients with serious substance and conduct problems and siblings: Directives for retained DNA*  
M.E. Coors<sup>1</sup>, K.M. Raymond<sup>2</sup>, S.K. Mikulich-Gilbertson<sup>2</sup>, S.K. Stover<sup>2</sup> and T.J. Crowley<sup>2</sup>, <sup>1</sup>Center for Bioethics, U CO Den School of Medicine, Denver, CO and <sup>2</sup>Division of Substance Dependence, Psychiatry, University of Colorado at Denver, Denver, CO

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**Tuesday, June 17, 2008**

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**ORAL COMMUNICATIONS 9**

**San Cristobal  
10:00 AM - 12:00 PM**

**SEX DIFFERENCES WITH COCAINE**

Chairs: Steve Kohut and Michael Mancino

- 10:00 *Sex and rearing condition affect generalization to direct and indirect dopamine agonists in adult rats discriminating cocaine*  
S.J. Kohut<sup>1</sup>, K.C. Rice<sup>2</sup> and A.L. Riley<sup>1</sup>, <sup>1</sup>American University, Washington, DC, and <sup>2</sup>NIDDK, Bethesda, MD
- 10:15 *Sex differences in non-reinforced responding for cocaine*  
T.A. Kosten and X.Y. Zhang, Psychiatry, Baylor College of Medicine, Houston, TX
- 10:30 *Age and sex alter sensitivity to cocaine-conditioned reward in rats*  
E. Zakharova, I. Kichko, G. Leoni and S. Izenwasser, Psychiatry, University of Miami Miller School of Medicine, Miami, FL
- 10:45 *Differential effect of estrous cycle on cocaine-primed reinstatement to food- and cocaine-seeking*  
K.A. Kerstetter, V.R. Aguilar, A.B. Parrish and T.E. Kippin, Psychology, UCSB, Goleta, CA
- 11:00 *Neural correlates of stress-induced and cue-induced craving: Effects of gender and cocaine dependence*  
M.N. Potenza<sup>1</sup>, K.A. Hong<sup>1</sup>, C.M. Lacadie<sup>2</sup>, R.K. Fulbright<sup>2</sup>, C.R. Li<sup>1</sup>, K.L. Bergquist<sup>1</sup> and R. Sinha<sup>1</sup>, <sup>1</sup>Psychiatry, Yale School of Medicine, New Haven, CT and <sup>2</sup>Diagnostic Radiology, Yale School of Medicine, New Haven, CT
- 11:15 *HPA axis responding in cocaine-dependent males and females*  
M. Moran-Santa Maria, A.L. McRae, S.E. Back, A.E. Waldrop, S.M. DeSantis, H.P. Upadhyaya, M.E. Saladin and K.T. Brady, Psychiatry and Behavioral Neurosciences, Medical University of South Carolina, Charleston, SC
- 11:30 *Early and later abstinence in cocaine pharmacotherapy trials: Importance of gender in predicting treatment outcome*  
J.G. Plebani, K.M. Kampman, K.G. Lynch, H.M. Pettinati and C.P. O'Brien, Psychiatry, University of Pennsylvania, Philadelphia, PA
- 11:45 *Gender differences in response to disulfiram treatment for cocaine dependence in methadone-stabilized opioid- and cocaine-dependent individuals*  
M.J. Mancino, Z. Feldman and A. Oliveto, Psychiatry, University of Arkansas for Medical Sciences, Little Rock, AR

**POSTER SESSION III**

**Expo Center  
8:00 - 10:00 AM**

**Odd-numbered posters manned first hour;  
Even-numbered, second hour**

**Set-up time begins Tuesday 1:00 PM  
Must be removed by Wednesday 12:00 NOON**

**GENETICS**

- 6 *Sexual dimorphism in the effects of Homer1a deletion upon the behavioral response to acute, but not repeated, cocaine*  
A.W. Ary<sup>1</sup>, M.C. Datko<sup>1</sup>, P.F. Worley<sup>2</sup> and K.K. Szumlinski<sup>1</sup>, <sup>1</sup>Psychology, University of California at Santa Barbara, Santa Barbara, CA and <sup>2</sup>Neurosciences, The Johns Hopkins University School of Medicine, Baltimore, MD

**IMAGING**

- 11 *Imaging of GABA-A benzodiazepine receptor availability in men and women smokers and nonsmokers: Relationship with subsyndromal anxiety and depression*  
J. Batis<sup>1</sup>, I. Esterlis<sup>1</sup>, K.P. Cosgrove<sup>1</sup>, F. Bois<sup>1</sup>, S. Stiklus<sup>1</sup>, T.A. Kloczynski<sup>1</sup>, E. Perry<sup>1</sup>, G.D. Tamagnan<sup>2</sup>, J.P. Seiby<sup>1,2</sup>, S. Krishnan-Sarin<sup>1</sup>, S. O'Malley<sup>1</sup> and J.K. Staley<sup>1</sup>, <sup>1</sup>Psychiatry, Yale School of Medicine, West Haven, CT and <sup>2</sup>Molecular Neuroimaging, New Haven, CT

**AMPHETAMINES: HUMAN STUDIES**

- 33 *An examination of drug craving over time in abstinent methamphetamine users*  
G. Galloway<sup>1</sup>, E.G. Singleton<sup>2</sup>, R.M. Dickerhoof<sup>1</sup>, M.J. Baggott<sup>1</sup> and J.E. Mendelson<sup>1</sup>, <sup>1</sup>Research Institute, California Pacific Medical Center, San Francisco, CA and <sup>2</sup>The MayaTech Corporation, Silver Spring, MD
- 40 *Assessing paranoia in methamphetamine users: The Methamphetamine Experience Questionnaire*  
M.H. Leamon<sup>1</sup>, K. Flower<sup>2</sup>, R.E. Salo<sup>1</sup>, T.E. Nordahl<sup>1</sup>, H.R. Kranzler<sup>3</sup> and G.P. Galloway<sup>2</sup>, <sup>1</sup>University of California, Davis, CA, <sup>2</sup>California Pacific Medical Center, San Francisco, CA and <sup>3</sup>University of Connecticut, Farmington, CT
- 41 *Women methamphetamine users' narratives of maternal blame*  
A.H. Brown and R.A. Rawson, Integrated Substance Abuse Programs, University of California, Los Angeles, Los Angeles, CA
- 42 *Sexual behaviors among female methamphetamine users*  
S.J. Cousins, A. Brown, J. Brummer, R. Gonzales, V. Pearce and R. Rawson, ISAP, University of California-Los Angeles, Los Angeles, CA

- 43 *Relationship between trauma histories and sexual behaviors among methamphetamine users*  
J. Brummer, A. Brown, S. Cousins, R. Gonzales, V. Pearce and R. Rawson, ISAP, University of California-Los Angeles, Los Angeles, CA

**SUBSTANCE ABUSE IN ADOLESCENTS II**

- 59 *Trends in adolescent substance use, abuse, dependence, and treatment need between 1998 and 2005 in Kentucky*  
M. Webster<sup>1,2</sup>, D.B. Clark<sup>2</sup> and T.F. Garrity<sup>1</sup>, <sup>1</sup>Behavioral Science, University of Kentucky, Lexington, KY and <sup>2</sup>Center on Drug and Alcohol Research, University of Kentucky, Lexington, KY
- 60 *Cross-cultural sex differences in adolescent substance use: Germany and the United States*  
T.C. Link, Sociology, University of Kentucky, Lexington, KY
- 61 *Examination of ethnicity differences in risk-taking behavior within a community sample of youth*  
E.K. Reynolds, F.L. Wang, L. MacPherson, M.S. Duplinsky and C.W. Lejuez, Center for Addictions, Personality, and Emotion Research, University of Maryland, College Park, MD
- 62 *Predicting sexual debut*  
P. Cavazos-Rehg, M. Krauss, E. Spitznagel, L. Cottler and L. Bierut, Washington University School of Medicine, St. Louis, MO
- 64 *Marijuana use, impulsivity, coping and gender in adolescents*  
T.S. Schepis, A.E. Smith, D.A. Cavallo, A. McFetridge, T. Liss and S. Krishnan-Sarin, Psychiatry, Yale University School of Medicine, New Haven, CT
- 65 *Adolescent coping and self-efficacy to resist marijuana use in the presence of negative emotion*  
A.E. Smith, D.A. Cavallo, T. Schepis, A. McFetridge, T. Liss and S. Krishnan-Sarin, Psychiatry, Yale University School of Medicine, New Haven, CT
- 67 *Nobody asked me: Substance use screening and HIV risk among high school students in Trinidad and Tobago*  
M. Pantin, School of Public Health, Columbia University/NDRI/MHRA, Brooklyn, NY
- 69 *Incidence and persistence of cannabis dependence among college students*  
A. Arria<sup>1</sup>, K.M. Caldeira<sup>1</sup>, K.B. Vincent<sup>1</sup>, K.E. O'Grady<sup>2</sup> and E.D. Wish<sup>1</sup>, <sup>1</sup>Center for Substance Abuse Research, University of Maryland, College Park, MD and <sup>2</sup>Department of Psychology, University of Maryland, College Park, MD
- 72 *Predictors of early marijuana use and sex in the offspring of teenage mothers*  
N.M. De Genna and M. Cornelius, Psychiatry, University of Pittsburgh, Pittsburgh, PA



- 75 *Trajectories of adolescent cannabis use to problematic use in young adulthood*  
W. Swift<sup>1</sup>, C. Coffey<sup>2</sup>, J.B. Carlin<sup>2</sup>, L. Degenhardt<sup>1</sup> and G.C. Patton<sup>2</sup>, <sup>1</sup>National Drug and Alcohol Research Centre, University of NSW, Sydney, NSW, Australia and <sup>2</sup>Murdoch Children's Research Institute, Melbourne, VIC, Australia
- 78 *Interest in marijuana quit programs among adolescents seeking tobacco cessation treatment: Gender and ethnic differences*  
E.T. Moolchan, C.C. Collins, C.S. Parzynski, S.J. Heishman and M.K. Leff, TTATRC, NIDA IRP, Baltimore, MD

## ALCOHOL

- 85 *Effects of naltrexone on the oral self-administration of ethanol + milk or milk alone in rats trained under a two-lever "choice" procedure*  
C.A. Paronis, J. Bergman and N.S. Shaller, McLean Hospital, Harvard Medical School, Belmont, MA
- 88 *Use of dietary supplements by regular and non-regular female users of tobacco, alcohol, and caffeine*  
L.B. Phipps, N. Karjane, L. Anderson, D. Stovall, D. Miles and D.S. Svikis, Institute for Women's Health, AWHARE Program, Virginia Commonwealth University, Richmond, VA
- 91 *Are samples of subjects in clinical trials of pharmacotherapies for alcohol dependence representative of the general population of alcohol-dependent individuals?*  
A.C. Andorn and H.D. Chilcoat, Research and Development, GlaxoSmithKline, Durham, NC
- 94 *SBIRT outcomes in Houston: Initial report on a hospital-district program*  
R.T. Spence<sup>1</sup>, T. Bohman<sup>1</sup>, K. Von Sternberg<sup>1</sup>, M.M. Velasquez<sup>1</sup>, V. Waters<sup>2</sup>, K. McQueen<sup>2</sup>, L. Wallisch<sup>1</sup>, A. Yeung<sup>1</sup>, A. Pittman<sup>1</sup> and M. Cook<sup>1</sup>, <sup>1</sup>University of Texas, Austin, TX and <sup>2</sup>Baylor College of Medicine, Houston, TX
- 96 *Early outcomes of a 1-session intervention to prevent alcohol-exposed pregnancy in preconception women*  
S. Ceperich, K. Ingersoll, M. Karakashian, J.K. Penberthy, L. Farrell, S. Fabbri, T. Ly, A. Kracen and C. Detrick, University of Virginia, Charlottesville, VA
- 97 *Mechanisms of a motivational interviewing intervention that reduced drinking and improved contraception*  
K.S. Ingersoll<sup>1</sup>, C.C. Wagner<sup>2</sup>, S.D. Ceperich<sup>1</sup>, K. von Sternberg<sup>4</sup>, M.B. Sobell<sup>3</sup>, M.M. Velasquez<sup>4</sup>, L.C. Sobell<sup>3</sup>, S. Agrawal<sup>1</sup> and A.C. Fansler<sup>1</sup>, <sup>1</sup>Psychiatry, University of Virginia, Charlottesville, VA, <sup>2</sup>Rehabilitation Counseling, Virginia Commonwealth University, Richmond, VA, <sup>3</sup>Psychology, Nova Southeastern University, Ft. Lauderdale, FL and <sup>4</sup>Social Work, U. of Texas, Austin, TX

- 98 *Treatment engagement as a mediator of outcome in the Women's Recovery Group Study*  
S.F. Greenfield<sup>1,2</sup>, M.F. Lincoln<sup>1</sup>, R. Popuch<sup>1</sup>, L. Kuper<sup>1</sup>, A. Cummings<sup>1</sup> and R. Gallop<sup>3</sup>, <sup>1</sup>Alcohol and Drug Abuse Treatment Program, McLean Hospital, Belmont, MA, <sup>2</sup>Dept of Psychiatry, Harvard Medical School, Boston, MA and <sup>3</sup>Dept of Mathematics, Applied Statistics Program, West Chester University, West Chester, PA
- 102 *Risk factors associated with drinking and driving in Brazil*  
F. Pechansky<sup>1</sup>, L. Von Diemen<sup>1</sup>, R. DeBoni<sup>1</sup>, D. Bumaguin<sup>1</sup>, I. Pinsky<sup>2</sup>, M. Zaleski<sup>3</sup>, R. Caetano<sup>4</sup> and R. Laranjeira<sup>2</sup>, <sup>1</sup>Psychiatry, Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul, Porto Alegre, Brazil, <sup>2</sup>Psychiatry, University of São Paulo, São Paulo, Brazil, <sup>3</sup>Psychiatry, University of Santa Catarina, Florianopolis, Brazil and <sup>4</sup>Epidemiology, University of Texas SPH, Dallas, TX
- 103 *Gender and the alcohol-violence association in two cities of Peru*  
M. Piazza, School of Public Health, Universidad Peruana Cayetano Heredia, Barranco, Peru
- 104 *Oppression among poor drug-using African American women in New York: Implications for practice and policy*  
E. Benoit, L. Windsor and E. Dunlap, Special Populations Office, National Development and Research Institutes, Inc., New York, NY

**NICOTINE: HUMAN STUDIES**

- 112 *Current tobacco use and other health risk behaviors in a primary care sample of women*  
A. Alvanzo, D. Langhorst and D. Svikis, Virginia Commonwealth University, Richmond, VA
- 114 *Standard versus stringent CO cutoffs: Implications for smoking cessation outcomes*  
D.O. Jackson<sup>1</sup>, K.L. Cropsey<sup>2</sup>, M.F. Weaver<sup>3</sup>, G.C. Villalobos<sup>3</sup> and M.L. Stitzer<sup>4</sup>, <sup>1</sup>Psychology, University of Alabama at Birmingham, Birmingham, AL, <sup>2</sup>Psychiatry, University of Alabama at Birmingham, Birmingham, AL, <sup>3</sup>Internal Medicine, Virginia Commonwealth University, Richmond, VA and <sup>4</sup>Psychiatry, Johns Hopkins University, Baltimore, MD
- 117 *A meta-analysis of the use of Motivational Interviewing for smoking cessation*  
C. Heckman, B.L. Egleston and M. Hofmann, Population Science, Fox Chase Cancer Center, Philadelphia, PA

**PRESCRIPTION DRUG ABUSE**

- 127 *Gender differences in prescription opioid use and misuse among chronic pain patients in an outpatient pain management clinic*  
R. Payne, Medical University of South Carolina, Charleston, SC

- 133 *Demographic variables associated with prescription opioid-abuse and diversion detected by the RADARS® System*  
A.E. Zosel<sup>1,2</sup>, E. Campagna<sup>1</sup>, J. Bailey<sup>1</sup> and R. Dart<sup>1,2</sup>, <sup>1</sup>Rocky Mountain Poison & Drug Center, Denver Health, Denver, CO and <sup>2</sup>University of Colorado Health Sciences Center, Denver, CO
- 137 *Drug abuse problems among medical and nonmedical users of prescription opioids*  
C.J. Boyd and S.E. McCabe, UM Substance Abuse Research Center, University of Michigan, Ann Arbor, MI

#### **LITERATURE REVIEW**

- 145 *Adult women's alcohol abuse: Barriers to detection in primary healthcare settings*  
V. Osborne, <sup>1</sup>Social Work, and <sup>2</sup>Psychiatric Epidemiology, Washington University in St. Louis, St. Louis, MO
- 147 *Drug use and syphilis in low- and middle-income countries: A systematic review*  
L.S. Coffin<sup>1</sup>, A. Newberry<sup>1</sup>, H. Hagan<sup>2</sup>, D.C. Des Jarlais<sup>1,2,3</sup>, and D. Perlman<sup>1,2,3</sup>,  
<sup>1</sup>Department of Medicine, Beth Israel Medical Center, New York, NY, <sup>2</sup>Baron Edmund de Rothschild Chemical Dependency Institute, Beth Israel Medical Center, New York, NY and <sup>3</sup>Center for Drug Use & HIV Research, NDRI, Inc, New York, NY
- 148 *The relationship between stress, coping, substance abuse and HIV-risk behaviors among African American women*  
L. Ruglass, Social Intervention Group, Columbia University, New York, NY

#### **THEORETICAL/COMMENTARY**

- 161 *Public health system structure and activities as barriers to prenatal care for pregnant women who use drugs and alcohol*  
S.C. Roberts<sup>1,2</sup>, <sup>1</sup>Dr. PH Program, University California, Berkeley School of Public Health, Berkeley, CA and <sup>2</sup>Alcohol Research Group, Emeryville, CA
- 171 *Using microsimulation modeling to capture heterogeneity in marijuana use*  
S. Paddock<sup>1</sup>, J. Arkes<sup>2</sup>, T. Bentley<sup>1</sup>, J. Caulkins<sup>3</sup>, C. Eibner<sup>1</sup>, B. Kilmer<sup>1</sup>, J. Ringel<sup>1</sup>, M. Suttrop<sup>1</sup> and R. Pacula<sup>1</sup>, <sup>1</sup>Drug Policy Research Center, RAND Corporation, Santa Monica, CA, <sup>2</sup>Naval Postgraduate School, Monterey, CA, and <sup>3</sup>Carnegie Mellon University, Pittsburgh, PA

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**Wednesday, June 18, 2008**

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**ORAL COMMUNICATIONS 12**

**San Geronimo A  
1:30 - 3:30 PM**

**ALL MIXED UP: POLYDRUG ABUSE**

Chairs: Kristen Anderson and Mary Waldron

- 1:30 *Polydrug use among club-going young adults*  
C Grov<sup>1,2</sup>, B.C. Kelly<sup>1,3</sup>, S.A. Golub<sup>4</sup> and J.T. Parsons<sup>1,5</sup>, <sup>1</sup>CHEST, New York, NY, <sup>2</sup>NDRI, New York, NY, <sup>3</sup>Purdue, West Lafayette, IN, <sup>4</sup>Queens College, New York, NY and <sup>5</sup>Hunter, West Lafayette, IN
- 1:45 *Treatment of attention-deficit hyperactivity disorder and subsequent cigarette smoking and substance use disorders in adolescent girls*  
T.E. Wilens<sup>1</sup>, J. Adamson<sup>1</sup>, M.C. Monuteaux<sup>1</sup>, S.V. Faraone<sup>2</sup>, M. Schillinger<sup>1</sup>, D. Westerberg<sup>1</sup> and J. Biederman<sup>1</sup>, <sup>1</sup>Pediatric Psychopharmacology Research, Massachusetts General Hospital, Boston, MA and <sup>2</sup>SUNY Upstate Medical University, Syracuse, NY
- 2:00 *Sexual risk behaviors and use of methamphetamines and other drugs among incarcerated female adolescents with an STD diagnosis*  
J. Steinberg<sup>1</sup>, M. Boudov<sup>1</sup>, P. Kerndt<sup>1</sup>, C. Grella<sup>2</sup> and C. Kadrnka<sup>3</sup>, <sup>1</sup>Sexually Transmitted Disease Program, Los Angeles County Department of Public Health, Los Angeles, CA, <sup>2</sup>Integrated Substance Abuse Programs, UCLA, Los Angeles, CA and <sup>3</sup>Juvenile Court Health Services, Los Angeles County Department of Health Services, Los Angeles, CA
- 2:30 *Cannabis and other illicit drug use predict delayed reproduction in men and women*  
M. Waldron<sup>1</sup>, A.C. Heath<sup>1</sup>, M.T. Lynskey<sup>1</sup>, K.K. Bucholz<sup>1</sup>, P. Madden<sup>1</sup> and N.G. Martin<sup>2</sup>, <sup>1</sup>Psychiatry, Washington University School of Medicine, St Louis, MO and <sup>2</sup>Genetic Epidemiology Unit, Queensland Institute of Medical Research, Brisbane, QLD, Australia

**ORAL COMMUNICATIONS 13**

**San Geronimo B  
1:30 - 3:30 PM**

**GETTING UP TO SPEED ON STIMULANT MECHANISMS**

Chairs: Rae Matsumoto and Amy Goodwin

- 1:30 *Lobeline attenuates METH-induced hyperactivity but does not alter METH-mediated contextual conditioning in male and female periadolescent rats*  
S. Harrod, I.D. Longacre and A.A. Basilakos, Psychology, University of South Carolina, Columbia, SC

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**Wednesday, June 18, 2008**

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- 2:45 *Ovarian hormones modulate the within-animal relationships between dopamine cell number, cocaine-stimulated behavior and dopamine release*  
Q.D. Walker, M.L. Johnson, J.M. Caster and C.M. Kuhn, Pharmacology, Duke Medical Center, Durham, NC

**ORAL COMMUNICATIONS 14**

**San Geronimo C  
1:30 - 3:30 PM**

**EXPRESSION SESSION: GENETICS OF DRUG ABUSE**

Chairs: Jamie Mangold and Teresa Franklin

- 2:30 *Significant association of bitter taste receptor genes with nicotine dependence in African Americans*  
J.E. Mangold<sup>1</sup>, Q. Xu<sup>1</sup>, G. Chen<sup>1</sup>, T.J. Payne<sup>2</sup> and M.D. Li<sup>1</sup>, <sup>1</sup>Department of Psychiatry and Neurobehavioral Sciences, University of Virginia, Charlottesville, VA and <sup>2</sup>Department of Otolaryngology, University of Mississippi, Jackson, MS

**ORAL COMMUNICATIONS 17**

**San Geronimo B  
3:45 - 4:45 PM**

**SMOKING IN FEMALES**

Chairs: Gabriele Fischer

- 3:45 *Impulsivity and cigarette smoking among pregnant women*  
R. Rogers, S.T. Higgins and C.S. Thomas, University of Vermont, Burlington, VT
- 4:00 *Neonatal tobacco exposure in opioid-maintained pregnant women — Impact and consequences*  
B. Winklbaaur<sup>1</sup>, A. Baewert<sup>1</sup>, R. Jagsch<sup>3</sup>, K. Rohrmeister<sup>2</sup>, C. Aschbach-Jachman<sup>1</sup>, K. Thau<sup>1</sup> and G. Fischer<sup>1</sup>, <sup>1</sup>Department of Psychiatry and Psychotherapy, Medical University of Vienna, Vienna, Austria, <sup>2</sup>Department of Neonatology, Medical University of Vienna, Vienna, Austria and <sup>3</sup>Department of Clinical, Biological and Differential Psychology, Faculty of Psychology, Vienna, Austria
- 4:15 *The relationship between cigarette use and maternal and neonatal outcomes among pregnant methadone-maintained patients*  
M. Chisolm<sup>1</sup>, M. Tuten<sup>2</sup>, E. Strain<sup>2</sup> and H. Jones<sup>2</sup>, <sup>1</sup>Johns Hopkins Bayview Medical Center, Baltimore, MD and <sup>2</sup>Johns Hopkins University School of Medicine, Baltimore, MD
- 4:30 *Acute effects of progesterone on nicotine self-administration by female nonhuman primates*  
N.K. Mello, J.L. Newman, I.M. Knudson, M. Kelly and P.A. Fivel, Alcohol and Drug Abuse Research Center, McLean Hospital-Harvard Medical School, Belmont, MA

**POSTER SESSION IV (Breakfast)**

**Expo Center  
8:00 - 10:00 AM**

**Odd-numbered posters manned first hour;  
Even-numbered, second hour**

**Set-up time begins Wednesday 1:00 PM  
Must be removed by Thursday 12:00 NOON**

**DRUG INTERACTIONS**

- 5 *Effects of norBNI on the self-administration of ethanol in cross- and in-fostered Lewis and Fischer female rats*  
J.A. Rinker<sup>1</sup>, K.M. Serafine<sup>1</sup>, P.G. Roma<sup>1</sup>, K. Cheng<sup>2</sup>, K.C. Rice<sup>2</sup> and A.L. Riley<sup>1</sup>,  
<sup>1</sup>Psychopharmacology Lab, Psychology Dept., American University, Washington, DC and <sup>2</sup>Laboratory of Medicinal Chemistry, NIDDK, Bethesda, MD
- 6 *Effects of norBNI on ethanol-induced conditioned taste aversions in both in- and cross-fostered Lewis and Fischer female rats*  
K.M. Serafine<sup>1</sup>, J.A. Rinker<sup>1</sup>, P.G. Roma<sup>1</sup>, K. Cheng<sup>2</sup>, K. C. Rice<sup>2</sup> and A. L. Riley<sup>1</sup>, <sup>1</sup>Psychology-Psychopharmacology Laboratory, American University, Washington, DC and <sup>2</sup>Laboratory of Medicinal Chemistry, NIDDK, Bethesda, MD

**CLUB DRUGS**

- 12 *The acute subjective effects of benzylpiperazine in healthy females*  
H. Lee<sup>1</sup>, J. Lin<sup>1</sup>, N. Bangs<sup>1</sup>, H. Hsiao<sup>1</sup>, J. Krstik<sup>1</sup>, I.J. Kirk<sup>2</sup> and B.R. Russell<sup>1</sup>,  
<sup>1</sup>School of Pharmacy, The University of Auckland, Auckland, New Zealand and  
<sup>2</sup>Research Centre for Cognitive Neuroscience, Psychology, The University of Auckland, Auckland, New Zealand

**BEHAVIOR**

- 21 *Periadolescent male, but not female rats, acquire METH-induced CTA when the CS-US trace interval is extended beyond two hours*  
R.T. Lacy, I.D. Longacre, L. Ballina and S. Harrod, Psychology, University of South Carolina, Columbia, SC
- 24 *Sex differences in the development of cocaine-induced stereotyped behavior*  
L. Zhou<sup>2,3</sup>, W.L. Sun<sup>1,3</sup>, J. Liu<sup>2</sup>, Y.X. Liang<sup>2</sup>, M. Timothy<sup>2</sup>, K. Weierstall<sup>1,3</sup>, A.C. Minerly<sup>1,3</sup>, S. Jenab<sup>1,3</sup> and V. Quinones-Jenab<sup>1,3</sup>, <sup>1</sup>Psychology, Hunter College, New York, NY, <sup>2</sup>Biology, Hunter College, New York, NY and <sup>3</sup>Graduate Center of The City University of New York, New York, NY
- 25 *Potentiation of cue-induced reinstatement of cocaine seeking in female rats by yohimbine*  
M.W. Feltenstein, M. J. Bongiovanni, A.R. Henderson, E.A. Byrd and R.E. See, Neurosciences, MUSC, Charleston, SC

- 32 *Impulsivity predicts the escalation of cocaine self-administration in female rats*  
J.J. Anker<sup>1</sup>, J.L. Perry<sup>2</sup>, J.L. Pawlik<sup>1</sup> and M.E. Carroll<sup>1</sup>, <sup>1</sup>University of Minnesota, St. Paul, MN and <sup>2</sup>University of Kentucky, Lexington, KY

### **SUBSTANCE ABUSE IN ADOLESCENTS III**

- 40 *Delay discounting in children of smokers and nonsmokers*  
C. Collins<sup>1,2</sup>, K. Leraas<sup>1,2</sup>, S. Melanko<sup>1,2</sup> and B. Reynolds<sup>1,2</sup>, <sup>1</sup>Pediatrics, Ohio State University, and <sup>2</sup>The Research Institute at Nationwide Children's Hospital, Columbus, OH
- 46 *Factors associated with tobacco smoking in Mexican high school students*  
O. Campollo<sup>1,2</sup>, C. Alvarez-Gonzalez<sup>1</sup>, M. Bustos Gamiño<sup>1</sup>, H. Sanchez<sup>1</sup> and J. Toro Guerrero<sup>1</sup>, <sup>1</sup>Center of studies on alcohol and addictions, Universidad de Guadalajara, Guadalajara, Jalisco, Jalisco, Mexico and <sup>2</sup>Clinica para dejar de fumar, Antiguo Hospital Civil de Guadalajara, Guadalajara, Mexico

### **PSYCHIATRIC COMORBIDITY II**

- 54 *Contrasting models of genetic comorbidity for childhood conduct disorder and cannabis involvement*  
M. Lynskey<sup>1</sup>, A. Agrawal<sup>1</sup>, K.K. Bucholz<sup>1</sup>, P.A. Madden<sup>1</sup>, A.C. Heath<sup>1</sup> and N.G. Martin<sup>2</sup>, <sup>1</sup>Washington University School of Medicine, St. Louis, MO and <sup>2</sup>Queensland Institute of Medical Research, Brisbane, QLD, Australia
- 56 *The role of anxiety in the treatment of marijuana dependence*  
J.D. Buckner and K. Carroll, Yale University School of Medicine, New Haven, CT

### **COCAINE: HUMAN STUDIES II**

- 73 *The validity of measures for monitoring cocaine use in outpatient clinical trials*  
W.V. Lechner<sup>1</sup>, S.L. Hedden<sup>2</sup>, R.J. Malcolm<sup>1</sup> and K. Hartwell<sup>1</sup>, <sup>1</sup>Center for Drug and Alcohol Programs, Medical University of South Carolina, Charleston, SC and <sup>2</sup>Mental Health, Johns Hopkins Bloomberg School of Medicine, Baltimore, MD
- 76 *Reactive aggression and proactive aggression in suicidal ideation and attempts*  
K.R. Conner<sup>1,2</sup>, R.J. Houston<sup>3</sup> and M.T. Swogger<sup>1</sup>, <sup>1</sup>Psychiatry, University of Rochester Medical Center, Rochester, NY, <sup>2</sup>VA Center of Excellence, Canandaigua, NY and <sup>3</sup>Research Institute on Addictions, Buffalo, NY
- 80 *Randomized clinical trial of contingency management among parenting cocaine-dependent African American female recovery house residents*  
L.E. Durant<sup>1</sup>, J.L. Rounds-Bryant<sup>2</sup> and J. Dutta<sup>1</sup>, <sup>1</sup>Duke University Medical Center, Durham, NC and <sup>2</sup>Mental Health Solutions, Durham, NC

### **OPIOIDS: HUMAN STUDIES II**

- 93 *A therapeutic workplace for the long-term treatment of drug addiction in methadone patients: Eight-year outcomes*  
W. M. Aklin<sup>1</sup>, C.J. Wong<sup>2</sup>, D. Svikis<sup>3</sup>, M.L. Stitzer<sup>1</sup>, G.E. Bigelow<sup>1</sup> and K. Silverman<sup>1</sup>, <sup>1</sup>Psychiatry, Johns Hopkins School of Medicine, Baltimore, MD, <sup>2</sup>Psychiatry, University of Kentucky College of Medicine, Lexington, KY and <sup>3</sup>Psychology, Virginia Commonwealth University, Richmond, VA

**GENDER DIFFERENCES**

- 109 *Gender differences in mortality among heroin, cocaine and methamphetamine users*  
L. Liang<sup>1</sup>, M. Brecht<sup>2</sup> and Y. Hser<sup>2</sup>, <sup>1</sup>Medicine, UCLA, Los Angeles, CA and <sup>2</sup>Integrated Substance Abuse Programs, University of California-Los Angeles, Los Angeles, CA
- 110 *Gender differences in problem gambling and comorbid substance use behaviors in the Canadian general population*  
L.A. Ghandour, S. Martins and C. Storr, Mental Health, Johns Hopkins University, Baltimore, MD
- 111 *Gender differences in cortisol reactivity among African American polysubstance users*  
R.M. Schuster<sup>1</sup>, S. Daughters<sup>1</sup>, M. Sargeant<sup>1</sup>, C. Forst<sup>1</sup>, C. Lejuez<sup>1</sup> and R. Sinha<sup>2</sup>, <sup>1</sup>Psychology, University of Maryland, College Park, MD and <sup>2</sup>Psychiatry, Yale University, New Haven, CT
- 113 *Gender differences in stress and cue-related adrenergic response in cocaine-dependent patients compared with social-drinking controls*  
K. Hong, H. Fox, G. Anderson and R. Sinha, Psychiatry, Yale University, New Haven, CT
- 114 *Alcohol use and problems: A focus upon sex-associated variation for US-born versus immigrant Latinos and Asians in US households, 2002-2003*  
H. Cheng and J.C. Anthony, Michigan State University, East Lansing, MI
- 115 *Alcohol-associated social maladaptation, cannabis use, and male-female differences: A latent class analysis*  
M. Radovanovic<sup>1</sup>, J. Posada-Villa<sup>3</sup>, J.C. Anthony<sup>1</sup>, M.E. Medina-Mora<sup>2</sup> and World Mental Health Surveys Consortium<sup>4</sup>, <sup>1</sup>Epidemiology, Michigan State University, East Lansing, MI, <sup>2</sup>Institute of Psychiatry, Ciudad de Mexico, Mexico, <sup>3</sup>Saldarriaga Concha Foundation, Bogota, Colombia and <sup>4</sup>WMHS Consortium, Boston, MA
- 116 *Gender differences in subjective and physiological response to oral THC in cannabis-dependent humans*  
L.H. Lundahl<sup>1</sup>, H. Lockhart<sup>1</sup>, M.E. Tancer<sup>1</sup>, and C.E. Johanson<sup>2</sup>, <sup>1</sup>Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI and <sup>2</sup>Loyola University, Chicago, IL
- 117 *Gender differences in progression to dependence in non-treatment-seeking adult cannabis users*  
M.L. Copersino<sup>1,2</sup>, K.H. Levin<sup>2</sup>, S.J. Heishman<sup>2</sup>, and D.A. Gorelick<sup>2</sup>, <sup>1</sup>McLean Hospital/Harvard Medical School, Belmont, MA and <sup>2</sup>IRP NIDA/NIH/DHHS, Baltimore, MD
- 118 *Gender moderates stereotype threat in cannabis users*  
A. Looby and M. Earleywine, Psychology, University at Albany, SUNY, Albany, NY
- 119 *Gender differences in coping motives and substance use disorder severity*  
R. McHugh, H.W. Murray, E.M. Pratt, J.B. Hogan, T.C. Rowley and M.W. Otto, Psychology, Boston University, Boston, MA



- 120 *Substance use disorder treatment is associated with lower incidence of traumatic events for women*  
J. Peirce, W.M. Aklin, K.B. Stoller, M.S. Kidorf and R.K. Brooner, Johns Hopkins University School of Medicine, Baltimore, MD
- 121 *Gender differences in lifetime experiences of intimate partner violence among heroin users in a-25-year follow-up*  
L. Rodriguez and C. Grella, Integrated Substance Abuse Programs, University of California-Los Angeles, Los Angeles, CA
- 122 *Gender differences in the association between victimization history and substance abuse with regard to prevalence and risk factors*  
C.K. Danielson<sup>1</sup>, A. Amstadter<sup>1</sup>, C.W. Lejuez<sup>2</sup>, H. Resnick<sup>1</sup>, B. Saunders<sup>1</sup>, and D. Kilpatrick<sup>1</sup>, <sup>1</sup>MUSC, Charleston, SC and <sup>2</sup>University of MD, College Park, MD
- 123 *Gender differences in the social and support networks of inner-city current and former drug users*  
A.S. Buchanan and C.A. Latkin, Johns Hopkins University, Bloomberg School of Public Health, Baltimore, MD
- 124 *Gender differences in HIV risk: Results from a randomized clinical trial*  
M. Wilson<sup>1</sup>, R.P. Schwartz<sup>1</sup>, K.E. O'Grady<sup>2</sup>, D. Highfield<sup>1</sup> and J.H. Jaffe<sup>1</sup>, <sup>1</sup>Friends Research Institute, Baltimore, MD and <sup>2</sup>University of Maryland, College Park, MD
- 125 *Children as motivation to reduce HIV risk: Gender differences among IDUs in treatment*  
M. Copenhaver<sup>1</sup>, A. Merz<sup>2</sup> and I. Lee<sup>3</sup>, <sup>1</sup>Dept of Allied Health Sciences & Dept of Psychology, University of Connecticut, Storrs, CT, <sup>2</sup>Public Health, University of Connecticut, Farmington, CT and <sup>3</sup>Psychology, National Chengchi University, Taipei, Taiwan
- 126 *Inclusion of women and minorities in clinical trials of FDA-approved pharmacotherapy for smoking cessation*  
D.L. Dickerson<sup>1</sup>, R.F. Leeman<sup>2</sup>, C.M. Mazure<sup>2</sup> and S.S. O'Malley<sup>2</sup>, <sup>1</sup>ISAP, University of California-Los Angeles, Long Beach, CA and <sup>2</sup>Yale University, New Haven, CT
- 127 *Male-female differences in tobacco dependence: Colombia, 2003*  
J.E. Salinas<sup>1</sup>, J. Posada-Villa<sup>2</sup>, H. Cheng<sup>1</sup> and J.C. Anthony<sup>1</sup> & World Mental Health Survey Consortium<sup>3</sup>, <sup>1</sup>Epidemiology, MSU, East Lansing, MI, <sup>2</sup>Saldarriaga Concha Foundation, Bogota, Colombia and <sup>3</sup>WMHS Consortium, Boston, MA
- 128 *Male-female differences in tobacco dependence: Mexico, 2001-2002*  
M.M. Catacora<sup>1</sup>, M.E. Medina-Mora<sup>2</sup>, G. Borges<sup>2</sup>, H. Cheng<sup>1</sup> and J.C. Anthony<sup>1</sup>, & World Mental Health Survey Consortium<sup>3</sup>, <sup>1</sup>Epidemiology, Michigan State University, East Lansing, MI, <sup>2</sup>National Institute of Psychiatry and Metropolitan Autonomous University, Mexico F.D., Mexico and <sup>3</sup>WMHS Consortium, Boston, MA

- 129 *Gender differences in prevalence, risk and clinical correlates of smoking comorbidity in schizophrenia in a Chinese population*  
X.Y. Zhang<sup>1,2</sup>, D.F. Zhou<sup>2</sup>, G.Y. Wu<sup>1</sup>, T.A. Kosten<sup>1</sup> and T.R. Kosten<sup>1</sup>,  
<sup>1</sup>Psychiatry, Baylor College of Medicine, Houston, TX and <sup>2</sup>Psychiatry, Peking University, Beijing, China
- 130 *Evaluation of gender differences in subjective craving and stress reactions to smoking and stress cues in nicotine-dependent individuals*  
M.E. Saladin, H. Upadhyaya, M. Carpenter, S. LaRowe, S. DeSantis and K. Brady, Medical University of South Carolina, Charleston, SC
- 131 *Individual differences in stimulant-induced increases in cigarette smoking*  
M.M. Poole<sup>1</sup>, A.R. Vansickel<sup>1,2</sup>, W.W. Stoops<sup>2</sup> and C.R. Rush<sup>1,2,3</sup>, <sup>1</sup>Psychology, University of Kentucky, Lexington, KY, <sup>2</sup>Behavioral Science, University of Kentucky, Lexington, KY, and <sup>3</sup>Psychiatry University of Kentucky, Lexington, KY
- 133 *Gender and sexual relationship power among out-of-treatment methamphetamine users*  
D.J. Rinehart, K.F. Corsi and R.E. Booth, University of Colorado at Denver and Health Sciences, Denver, CO
- 134 *d-Amphetamine self-administration in women and men*  
F. Wagner<sup>1</sup>, A.R. Vansickel<sup>1,2</sup>, W.W. Stoops<sup>1</sup> and C.R. Rush<sup>1,2,3</sup>, <sup>1</sup>Behavioral Science, <sup>2</sup>Psychology, and <sup>3</sup>Psychiatry, University of Kentucky, Lexington, KY

## **POLICY**

- 135 *Drug-endangered children: Parental methamphetamine use and manufacture*  
N.P. Messina, R. Rawson and P. Marinelli-Casey, Integrated Substance Abuse Programs, University of California-Los Angeles, Los Angeles, CA
- 138 *Readiness to change as a predictor of drug-related behaviors in a sample of rural felony probationers*  
J.L. Duvall, C.B. Oser and C.G. Leukefeld, University of Kentucky, Lexington, KY
- 145 *Access to substance abuse treatment for people from historically disadvantaged South African communities*  
B. Myers, Alcohol and Drug Abuse Research Unit, South African Medical Research Council, Tygerberg, South Africa
- 146 *Work- and health-related disparities for low-income working adults with mental health and/or substance misuse disorders*  
T.M. Bohman<sup>1</sup>, L. Wallisch<sup>1</sup>, E. Nwokeji<sup>1</sup>, A. Pittman<sup>1</sup>, R.T. Spence<sup>1</sup>, B. Ostermeyer<sup>2</sup> and B. Reed<sup>2</sup>, <sup>1</sup>University of Texas, Austin, and <sup>2</sup>Baylor College of Medicine, Houston, TX

## **PROGRAM DESCRIPTION II**

- 152 *Developing models for community-based research: Lessons learned from NIDA studies*  
L.B. Cottler, C. Striley and C. Callahan, Psychiatry, Washington University School of Medicine, St. Louis, MO

- 155 *National multidisciplinary French training program to improve the quality of treatment for opiate addiction patients and to make a professional's care easier: Objectives and outcome*  
D.P. Touzeau<sup>1</sup>, C. Bronner<sup>2</sup>, S. Personnic<sup>2</sup> and B. Mouret<sup>3</sup>, <sup>1</sup>Clinique Liberté, Bagneux, France, <sup>2</sup>IRMG, Paris, France and <sup>3</sup>Sante et Public, Paris, France
- 157 *Evaluation of a drug treatment program for families engaged in the child welfare system*  
M.S. Shafer, B. Arthur, M. Mellacheruvu and L. Crone-Koshel, College of Human Services, Arizona State University, Phoenix, AZ

**ORAL COMMUNICATIONS 19**

**San Geronimo C  
10:00 AM - 12:00 PM**

**DEVIATING FROM THE SCRIPT: EPIDEMIOLOGY OF Rx DRUG ABUSE**

Chairs: Sean McCabe and Jennifer Havens

- 10:00 *Trends in recent-onset extramedical opioid analgesic use in the US from 1990 to 2005*  
S.S. Martins<sup>1</sup>, C.L. Storr<sup>1</sup>, H. Zhou<sup>1</sup> and H.D. Chilcoat<sup>1,2</sup>, <sup>1</sup>Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD and <sup>2</sup>GlaxoSmithKline Worldwide Epidemiology, GlaxoSmithKline, Research Triangle Park, NC
- 10:30 *Nonmedical use of prescription opioids and other drug use: What comes first?*  
S.E. McCabe, B.T. West, J.A. Cranford and C.J. Boyd, University of Michigan, Ann Arbor, MI
- 10:45 *Incidence and persistence of nonmedical use of prescription analgesics among college students*  
K. Caldeira<sup>1</sup>, A. Arria<sup>1</sup>, K. Vincent<sup>1</sup>, K. O'Grady<sup>2</sup> and E. Wish<sup>1</sup>, <sup>1</sup>Center for Substance Abuse Research, University of Maryland, College Park, MD and <sup>2</sup>Department of Psychology, University of Maryland, College Park, MD
- 11:15 *A latent class analysis of prescription opioid abuse in the National Addictions Vigilance Intervention and Prevention Program*  
T.G. Green<sup>2</sup> and S.F. Butler<sup>1</sup>, <sup>1</sup>Inflexxion, Inc, Newton, MA and <sup>2</sup>School of Public Health, Yale University, New Haven, CT A. Spaeth<sup>1</sup>, J.E. Bailey<sup>1</sup> and R.C. Dart<sup>1,2</sup>, <sup>1</sup>Research, Rocky Mountain Poison and Drug Center, and <sup>2</sup>University of Colorado Health Sciences Center, Denver, CO

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**Thursday, June 19, 2008**

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**ORAL COMMUNICATIONS 20**

**San Cristobal  
10:00 AM - 12:00 PM**

**IMAGING: VIEW FROM THE TOP**

Chairs: Edythe London and Mark Greenwald

10:45 *Women on nicotine replacement therapy show significant brain activity in response to smoking cues*

A.C. Janes<sup>1</sup>, B.B. Frederick<sup>1</sup>, C. Burbridge<sup>1</sup>, S. Richardt<sup>1</sup>, A.E. Evins<sup>2</sup>, M. Fava<sup>3</sup>, P.F. Renshaw<sup>1</sup> and M.J. Kaufman<sup>1</sup>, <sup>1</sup>Brain Imaging Center, McLean Hospital, Belmont, MA, <sup>2</sup>Center for Addiction Medicine, Massachusetts General Hospital, Boston, MA and <sup>3</sup>Depression Clinical and Research Program, Massachusetts General Hospital, Boston, MA

**ORAL COMMUNICATIONS 22**

**San Geronimo C  
1:30 - 3:30 PM**

**IMPULSIVITY—WHAT'S THE RUSH?**

Chairs: Marilyn E. Carroll and Jennifer Perry

2:15 *Substance abuser impulsivity decreases with a 9-month stay in a therapeutic community*

S.M. Bankston<sup>1</sup>, F.G. Moeller<sup>2</sup>, J. Schmitz<sup>2</sup>, S. Cron<sup>1</sup>, L.K. Granmayeh<sup>1</sup>, D.D. Carroll<sup>1</sup> and M.T. Marcus<sup>1</sup>, <sup>1</sup>University of Texas Health Science Center at Houston School of Nursing, and <sup>2</sup>University of Texas Health Science Center at Houston Medical School, Houston, TX



*HAVE A SAFE TRIP HOME  
SEE YOU IN RENO, NEVADA, JUNE 20-25, 2009*

## ABSTRACTS

### PREVALENCE OF MUSCLE-BUILDING SUBSTANCES AMONG STUDENTS

V. Agulló<sup>1</sup>, S. Tomás<sup>2</sup>, E. Gómez<sup>1</sup>, M.J. Torrijos<sup>2</sup>, A. Vidal<sup>2</sup>, C. Morales<sup>1</sup>, R. Aleixandre<sup>1</sup>, J.C. Valderrama<sup>1</sup> and J.C. Pérez de los Cobos<sup>3</sup>, <sup>1</sup>IHCD López Piñero, and <sup>2</sup>Fundació per a l'Estudi, Prevenció i Assistència Drogues, FEPAD, València, and <sup>3</sup>Hospital Santa Creu i Sant Pau, Barcelona, Spain

**Aims:** To determine the muscle-building substances consumption amongst a sample of students in the Valencian Region (Spain). **Methods:** 11,239 students aged 14-18 years, 47.6% males and 52.4% females and attending public and private schools, were the target population. The sample was stratified according to their educational level, by whether or not the school was public or private and finally by gender. The study was carried between March and May 2006. Ethics approval was obtained. The questionnaire included information regarding sociodemographic data, family relationships, educational background and patterns of muscle-building substances and drug use. The statistical analysis was performed using SPSS version 14.0. **Results:** 3.5% of surveyed students reported that they have consumed muscle-building substances. Males reported to take more than females (6.5% of males, 0.9% of females;  $X^2=223.804$ ,  $p<0.001$ ). The older they are, the more frequent the reporting of consumption we found -increasing from 2.5% in those aged 14 years, to 4.3% in those aged 18- ( $X^2= 10.935$ ,  $p<0.001$ ). Among users of muscle-building substances it exists a higher prevalence consumption of cannabis 64.2% ( $X^2=49.71$ ,  $p<0.001$ ), cocaine 23.8% ( $X^2=66.27$   $p<0.001$ ), hypnotics 22.9% ( $X^2=11.79$ ,  $p<0.001$ ), ecstasy 16.8% ( $X^2=75.24$   $p<0.001$ ), LSD 14% ( $X^2=79.55$ ,  $p<0.001$ ) or heroine 4.1% ( $X^2=57.57$ ,  $p<0.001$ ), compare to nonusers. Nevertheless, the prevalence is lower in tobacco and alcohol consumption. It can also be stated that secondary school pupils report a consumption of 3.1% while medium degree or technical education students report 4.6% ( $X^2=13.82$ ,  $p<0.001$ ). **Conclusions:** There is a clear association between muscle-building substances use and polyconsumption. This relation should be studied in depth to design prevention campaigns specially designed for teenagers. **Support:** Fundación para el Estudio, Prevención y Asistencia a las Drogodependencias. Generalitat Valenciana.

### A THERAPEUTIC WORKPLACE FOR THE LONG-TERM TREATMENT OF DRUG ADDICTION IN METHADONE PATIENTS: EIGHT-YEAR OUTCOMES

W. M. Aklin<sup>1</sup>, C.J. Wong<sup>2</sup>, D. Svikis<sup>3</sup>, M.L. Stitzer<sup>1</sup>, G.E. Bigelow<sup>1</sup> and K. Silverman<sup>1</sup>, <sup>1</sup>Psychiatry, Johns Hopkins School of Medicine, Baltimore, MD, <sup>2</sup>Psychiatry, University of Kentucky College of Medicine, Lexington, KY and <sup>3</sup>Psychology, Virginia Commonwealth University, Richmond, VA

**Aims:** This study evaluated the effectiveness of a therapeutic workplace in promoting long-term abstinence and employment in methadone patients. **Methods:** Patients enrolled in methadone treatment for pregnant women were randomly assigned to a Therapeutic Workplace (TW;  $n=20$ ) or a usual care control (UCC;  $n=20$ ) group. TW participants were hired to work in the workplace every weekday for over 4 years. To promote abstinence, participants were required to provide drug-free urine samples to maintain daily workplace access. Initially, participants underwent job skills training, and were paid in monetary vouchers. Participants who became skilled and abstinent were hired as TW employees and paid in bi-weekly paychecks. Both groups were monitored for 8 years. **Results:** Prior reports showed that TW participants provided significantly more drug-free urine samples than UCCs during the first 3 years. Monthly assessments conducted during the fourth year when participants could work in the data entry business showed that relative to the UCC, TW participants had more urine samples negative for cocaine (57% vs 23%;  $p=.01$ ), opiates (63% vs 30%;  $p=.01$ ); more days employed per month (means of 10.0 days 2.4;  $p<.001$ ), higher monthly employment income (\$483 vs \$62;  $p<.001$ ), higher total monthly income (\$852 vs \$539;  $p=.01$ ), and less money spent on drugs (\$127 vs \$318;  $p=.02$ ). During the 3 years after the business closed, relative to the UCC, TW participants reported higher monthly employment income (means of \$359 vs \$150;  $p=.06$ ), and higher total monthly income (\$1114 vs \$625;  $p=.001$ ). **Conclusions:** These data show that TW can maintain abstinence and employment in poor and unemployed substance abusers. The intervention may have lasting beneficial effects after the intervention is discontinued, although longer-term maintenance may be required to sustain all beneficial effects. **Support:** Supported by NIDA grants R01DA13107 and T32DA07209.

### CURRENT TOBACCO USE AND OTHER HEALTH RISK BEHAVIORS IN A PRIMARY CARE SAMPLE OF WOMEN

A. Alvanzo, D. Langhorst and D. Svikis, Virginia Commonwealth University, Richmond, VA

**Aims:** In addition to the increased morbidity and mortality directly related to tobacco use, smoking has been linked to other health behaviors associated with poor health outcomes. The aim of the current study was to determine if women in a primary care setting, who reported current smoking, were more likely to report the presence of other health risk behaviors, including alcohol misuse, drug use, violence exposure, and unhealthy eating. **Methods:**  $N = 140$  women

presenting to an urban, hospital-affiliated gynecology clinic were surveyed using a battery of self-report questionnaires. Measures included the Patient Health Questionnaire (PHQ), Violence Exposure Questionnaire (VEQ), and the Lifestyle Assessment of Women (LAW), which included demographic questions, substance use questions, and the CAGE administered separately for alcohol and other drugs. Fifty-two women (37%) reported smoking their last cigarette within 1 month of the survey and were classified as current smokers. Results: Demographically, women were in their early 30's (mean age 33, SD 9.7), predominantly Black (60%), and single (55%). The only demographic difference between current smokers (CS) and nonsmokers (NS) was mean years of education (12.2 and 13.8 years, respectively ( $p = .001$ )). CS women were significantly more likely to report ever consuming 6 drinks at one time (57% vs. 30%), ever using marijuana (67% vs. 33%), ever using crack/cocaine (33% vs. 4%), and ever using heroin/narcotics (18% vs. 4%). CS women were also significantly more likely to have + Alcohol CAGE (23% vs. 4%) and Drug CAGE scores (28% vs. 10%) than NS women ( $.0001 < p < .009$ ). No group differences existed in prevalence of either lifetime physical or sexual abuse. However, CS women were more likely than NS women to report a history of both physical and sexual abuse (28% vs. 13%,  $p = 0.042$ ). There were no group differences in eating behaviors. Conclusions: Women who smoke are more likely to report other risky health behaviors and clinicians should recognize smoking as a potential marker for non-tobacco related health outcomes. Support: Supported by NIH grants NIDA R01 DA11476 and NIAAA AA 11802.

### **INFLAMMATORY PAIN ALTERS LEVELS OF PROSTAGLANDIN E2 AND D2 DURING THE FEMALE REPRODUCTIVE CYCLE**

N.J. Amador<sup>1,2</sup>, K.Y. Shivers<sup>1,2</sup>, D. Hunter<sup>1,2</sup>, V. Quinones-Jenab<sup>1,2</sup> and S. Jenab<sup>1,2</sup>, <sup>1</sup>BioPsychology, CUNY Graduate School and University Center, New York, NY and <sup>2</sup>Biopsychology, Hunter College, New York, NY

Aims: The complexity of the female endocrinological cycle is likely to have an influence on differences observed in nociceptive responses; where intrinsic hormonal changes during the female reproductive cycle (i.e. peri-adolescent, puberty, menstruation, pregnancy, and menopause) may alter the perception of pain and induction of inflammatory responses. The aim of this study was to determine whether the female reproductive cycle affects inflammatory mediated intracellular responses to chronic inflammatory pain. Methods: For the developmental study, female Sprague-Dawley rats were used at 3 weeks (peri-adolescent), 6 weeks (adolescent), 8 weeks (adult), and 52 weeks of age. For the estrous cycle study, the rats were staged according to the cell type in the vaginal epithelium. Sixty minutes after a subcutaneous injection of 5% formalin (50ul), trunk blood was collected. Serum levels of prostaglandin E2 (PGE2) and prostaglandin D2 (PGD2), important mediators in inflammatory responses, were examined using the enzyme immunoassays. Results: While after formalin administration, the stage of the estrous cycle had no effect on PGE2 serum levels, females in proestrus had significantly higher PGD2 serum levels than females in either metestrus or diestrus. PGE2 serum levels in periadolescent and adolescent rats were significantly higher than levels in the 52 week aged group. On the other hand, peri-adolescent rats had significantly higher PGD2 levels than adult and aged groups. Conclusions: Taken together, our results suggest that the female reproductive cycle influences the physiological responses associated with inflammation and chronic pain. Support: Supported by: SCORE 506-GM60654, MBRS-RISE GM60665, DA00325 and SNRP NS41073.

### **ARE SAMPLES OF SUBJECTS IN CLINICAL TRIALS OF PHARMACOTHERAPIES FOR ALCOHOL DEPENDENCE REPRESENTATIVE OF THE GENERAL POPULATION OF ALCOHOL-DEPENDENT INDIVIDUALS?**

A.C. Andorn and H.D. Chilcoat, Research and Development, GlaxoSmithKline, Durham, NC

Aims: To determine whether subjects enrolled in clinical trials (CT) to study the efficacy of pharmacotherapies for alcohol dependence are representative of those with alcohol dependence in the general population. Methods: We first compared demographic characteristics and patterns of alcohol use for subjects in several recently published clinical trials to population-based samples of those with alcohol dependence using epidemiologic data from the 2006 National Survey of Drug Use and Health (NSDUH) and the 2005 Treatment Episode Data Set (TEDS). Results: Among subjects in recent CT, average age was typically in the mid-forties, with two to three times as many males as females, and had an employment rate of around 60%. This profile of demographic characteristics is similar to that found for treatment seekers in the NHSDUH for gender (2.3 times more males than females), and employment (59.3% currently employed full or part time), but those seeking treatment in the NSDUH tended to be younger than those in clinical trials with more than half (55%) under 35 years old. Those with untreated alcohol dependence in the NSDUH compare to those treated were more likely to be employed (74.5% employed full or part-time), and female (1.7 times more males than females), but similar with respect to age. Those receiving treatment in the TEDS sample were less likely to be employed (36.1%), predominantly male (three times more males than females) than CT and NSDUH samples, and similar in age range to CT but older than NSDUH samples. Conclusions: These findings suggest that samples of subjects in pharmacotherapy trials may be slightly older than treated and untreated alcohol dependent samples in the general population, more often previously treated, and have a higher percentage of employment than the general population of alcohol dependent individuals. This is particularly true with regard to employment in comparing the CT sample with the TEDS state

supported treatment population who are much less likely to be employed. Support: This was supported by GlaxoSmithKline.

### **IMPULSIVITY PREDICTS THE ESCALATION OF COCAINE SELF ADMINISTRATION IN FEMALE RATS**

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**Aims:** Preclinical research indicates that impulsivity predates drug addiction and confers susceptibility to the initiation and persistence of drug taking. For example, impulsivity, as measured by the delay-discounting task, predicts the acquisition, extinction, and reinstatement of cocaine-seeking in rats. The purpose of the present study was to extend these results to the escalation of cocaine self-administration. **Methods:** Female rats were initially screened for high (HiI) and low (LoI) impulsivity using a delay-discounting procedure. Rats were then implanted with iv catheters and trained to lever press for 0.4 mg/kg cocaine infusions under an FR 1 schedule during short-access (ShA), 2- hr sessions. Once cocaine intake stabilized, responding was assessed under 2 daily progressive ratio (PR) sessions (9-11 am and 1-3 pm) for each of 3 randomly selected doses of cocaine (0.2, 0.8, and 3.2 mg/kg). Following PR testing, the cocaine dose was changed to 0.4 mg/kg and the session length was extended to 6-hr for 21-days. After the 21-day escalation phase, responses and infusions under the ShA FR 1 and PR-dose response conditions were reassessed. **Results:** Initial results indicate that HiI rats escalated their cocaine intake during long access (LgA), while LoI rats did not. In addition, HiI but not LoI rats, significantly increased their ShA cocaine intake following LgA. When comparing pre- and post-LgA infusions under a PR schedule, LoI rats exhibited a rightward shift in their dose response curve following LgA, while HiI rats showed no change. The results from the present study indicate that HiI rats showed enhanced responding for cocaine during the ShA and LgA conditions, while LoI rats increased their cocaine intake under a PR schedule following LgA to cocaine. **Conclusions:** This study provides evidence that impulsivity predicts excessive drug-taking, and it suggests that impulsive behavior may be a useful target for the treatment of cocaine abuse. **Support:** Supported by R01 DA003240-23, K05 DA015267-06 (MEC), F31 DA020237 -01 (JLP), and F31-DA023301-01 (JJA).

### **INCIDENCE AND PERSISTENCE OF CANNABIS DEPENDENCE AMONG COLLEGE STUDENTS**

A. Arria<sup>1</sup>, K.M. Caldeira<sup>1</sup>, K.B. Vincent<sup>1</sup>, K.E. O'Grady<sup>2</sup> and E.D. Wish<sup>1</sup>, <sup>1</sup>Center for Substance Abuse Research, University of Maryland, College Park, MD and <sup>2</sup>Department of Psychology, University of Maryland, College Park, MD **Aims:** Prior studies have documented the extent of cannabis dependence among college students, as defined by DSM-IV criteria, but prospective data on the incidence or persistence of cannabis dependence in this population are lacking. The present study uses longitudinal data from the College Life Study to: 1) examine the patterns of change in diagnostic status among past-year cannabis users with respect to cannabis dependence during the first three years of college; and, 2) identify correlates of changes in cannabis dependence. **Methods:** At study outset, participants were 1,253 students, ages 17 to 19, attending a large public university in the mid-Atlantic region of the U.S. Participants were assessed for cannabis use, abuse and dependence in three annual personal interviews; 85% participated in all three assessments. Additional information was gathered on demographics, psychological functioning, and other domains. **Results:** Among 58 cannabis-dependent first year students, 57% remained dependent in the second year, and 33% were persistently dependent all three years. Among 557 first-year students classified as non-dependent past-year cannabis users, incident cannabis dependence was observed in 8% by the second year and 13% by the third year. Incident dependence was similar across race and gender, but was independently associated with elevated depression scores (as measured by the CES-D) in the first year ( $t(2,df)=4.8(1)$ ;  $p<.05$ ), holding constant cannabis use frequency and other factors. Not surprisingly, first-year students who met DSM-IV criteria for cannabis abuse were at particularly high risk for subsequent incident dependence (AOR=3.2, 95% CI=1.8-5.7,  $p=.0001$ ). **Conclusions:** Future research should investigate the long-term social, psychological, and academic consequences associated with different cannabis dependence trajectories among college students. **Support:** NIDA R01DA14845, A. Arria, PI

### **SEXUAL DIMORPHISM IN THE EFFECTS OF HOMER1A DELETION UPON THE BEHAVIORAL RESPONSE TO ACUTE, BUT NOT REPEATED, COCAINE**

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responsiveness to cocaine as indicated by a shift downward in the dose-response function for both acute cocaine-induced locomotion and locomotor sensitization, as well as by a shift to the right in the dose-response function for a cocaine-conditioned place preference. While the effects of Homer1a deletion upon locomotor sensitization and place-preference did not depend upon sex, the genotypic differences in the acute cocaine-induced locomotion were sex-dependent and only observed in female subjects. Conclusions: These data indicate that (1) the induction of Homer1a appears to be necessary for the full expression of the psychomotor-activating and rewarding properties of repeated cocaine and (2) a sexual dimorphism may exist in the glutamatergic mechanisms mediating cocaine addiction-related behaviors. Support: Supported by a NARSAD Young Investigator Award to KKS and NIDA grants DA-11742 and DA -10309 to PFW.

### **SUBSTANCE ABUSER IMPULSIVITY DECREASES WITH A 9-MONTH STAY IN A THERAPEUTIC COMMUNITY**

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Aims: Substance abuse continues to be a major public health problem. Keeping substance abusers in treatment is a challenge and researchers continue to investigate ways to increase retention. The aim of this study was to investigate the relationship between impulsivity in substance abusers and length of stay in the context of therapeutic community.

Methods: The sample consisted of 138 individuals who were the historical controls for an experimental study on a mindfulness-based intervention to decrease stress and improve retention of substance abusers seeking treatment in a TC.

The Barratt Impulsiveness Scale - 11 (BIS-11) was used to assess impulsivity at admission and at nine months in a therapeutic community. Weeks retained in treatment was the outcome measure. Time to dropout was examined using Kaplan Meier survival curves and the log-rank test. The T test for paired comparison was used to examine differences between baseline impulsivity and impulsivity at nine months, as well as baseline impulsivity and gender. Results: On admission, female participants were on average more impulsive than their male counterparts. Impulsivity significantly decreased in subjects who completed nine months in the therapeutic community. Legal stipulation increased length of stay, on average, by three months. Conclusions: The results of this study suggest that treatment in a TC may act to promote coping skills that attenuate impulsivity and thus the negative consequences of impulsive actions. These findings are tentative due to the small sample size, but represent a preliminary step in determining how impulsivity impacts treatment in a TC. Future investigations should examine how the TC acts to temper impulsivity and how interventions might be tailored to positively influence impulsivity in substance abuse recovery. Support: This research was funded by NIH/NIDA R01 DA017719, awarded to Dr. Marianne Marcus.

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### **IMAGING OF GABA-A BENZODIAZEPINE RECEPTOR AVAILABILITY IN MEN AND WOMEN SMOKERS AND NONSMOKERS: RELATIONSHIP WITH SUBSYNDROMAL ANXIETY AND DEPRESSION**

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Aims: Women smokers often report that smoking temporarily relieves symptoms of anxiety and depression. The GABAA benzodiazepine receptor (GABAA-BZR) is a common site of action for medications to treat mood symptoms and thus may be a critical neural substrate underlying anxiety and depression. We hypothesized that there were sex-specific differences in cortical GABAA-BZR availability that contribute to the differential expression of subsyndromal anxiety and depressive symptoms in men and women. Methods: To date, 14 women (7 smokers, 7 nonsmokers) and 17 men (9 smokers, 8 nonsmokers) have been imaged using [123-I] Iomazenil and single photon emission computed tomography. Fifteen smokers (8 men; 7 women; age = 37.8 ± 13.8 and 38.3 ± 12.7, (mean ± SD) respectively) and 15 age and sex-matched healthy nonsmokers (men mean age = 36.5 ± 13.1; women mean age = 41.0 ± 3.1) were included in these analyses. All smokers were imaged ~7 h after last cigarette. Results: Preliminary analyses show higher [123-I]Iomazenil uptake in women nonsmokers (compared to men nonsmokers) in parietal cortex (29%), frontal cortex (18%) and temporal cortex (16%; all p < 0.05). Similar trends were observed in women smokers compared to men smokers. In women nonsmokers, but not women smokers, self-reported depressive symptoms, as measured by the CES-D, were correlated with GABAA-BZR availability in frontal, temporal, parietal and occipital cortex (all  $\rho$  ! -0.8, p<0.05). No correlations were evident in men (all p>0.16). There appear to be no sex differences in the correlations between state anxiety and GABAA-BZR availability. Conclusions: There is higher GABAA-BZR availability in women versus men regardless of smoking status, although smoking mitigates the expression of subsyndromal depressive symptoms in women only. Women with lower receptor availability appear to be more vulnerable to subsyndromal depression. Support: 9 P50 AA15632



## **EFFECTS OF MEDICAL/PSYCHIATRIC COMORBIDITY ON HCV TREATMENT ELIGIBILITY IN METHADONE MAINTENANCE**

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**Aims:** To describe medical/psychiatric comorbidity and eligibility for hepatitis C (HCV) treatment in methadone maintenance (MM) patients. Medical and psychiatric comorbidity is common in MM patients and may limit eligibility for HCV treatment. Yet little is known regarding the effects of comorbidity on HCV treatment eligibility. **Methods:** Medical and psychiatric diagnoses and other clinical data were obtained for the first 109 MM patients with chronic HCV entering a NIDA-funded trial offering on-site HCV treatment. **Results:** Mean age was 43; 60% were male. 83% had Genotype 1. HCV RNA was >2 million IU/ml in 46%. Median ALT was 52 (nl 152) for women and 60 (nl 169) for men. 5% had HIV infection. Liver biopsy was obtained in 17%; mean grade and stage were 1.6 and 1.9 respectively. 86% had comorbid chronic medical conditions; most commonly musculoskeletal (34%), cardiovascular (33%), endocrine/metabolic (31%), and gastrointestinal (30%). Subjects had an average of 3.7 comorbid medical conditions. Hypertension (24%) was the single most common diagnosis. 65% were taking non-psychiatric medications, most often non-opioid analgesics (30%) and gastrointestinal (29%) and cardiovascular (28%) agents. 57% had current psychiatric diagnoses and 68% were taking psychiatric medication, most commonly antidepressants (56%). 57% met past year criteria for substance abuse/dependence. Assessment for HCV treatment eligibility cleared 89% of participants psychiatrically, but cleared only 56% medically. Of the 44% not cleared medically, only 7% had contraindications to HCV treatment while 30% failed to complete the medical evaluation necessary for clearance (6% are pending). **Conclusions:** MMT patients seeking HCV treatment have multiple comorbid medical/psychiatric disorders. While the majority was cleared for HCV treatment, a significant minority (44%) was not cleared medically, mainly due to failure to complete the required assessment process rather than due to known contraindications. **Support:** NIDA R01 DA016764

## **ADOLESCENT SUBSTANCE USE AND CONDOM USE IN FIRST AND RECENT SEXUAL ENCOUNTERS**

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**Aims:** To examine the association between alcohol or drug use and condom use in two specific sexual encounters (first intercourse and most recent intercourse) in a large sample of adolescents. **Methods:** Data came from Waves 1 and 2 of the National Longitudinal Study of Adolescent Health (Add Health), a large, nationally representative study of adolescents in grades 7 to 12. The interview included questions about the first time and the most recent time the respondent had sex; the analysis included only respondents with data from both sexual events (n=3,632). Using multilevel logistic regression with the two sexual events nested within participants, we predicted condom use at the event from type of event (first, recent), alcohol use at the event (none, drank but not drunk, drunk), marijuana use at the event, and other contraception. **Results:** At first sex, 62% of respondents used condoms, 10% drank, and 3% used marijuana; these percentages for most recent sex were 58%, 11%, and 7%. Among females (n=1,883), condom use was less likely in most recent events compared to first events (OR=.49, 95% CI .40, .61), more likely with use of other contraception (OR=.2.84, CI 2.31, 3.49), and less likely when the participant felt drunk (compared to the other two drinking categories; OR=.56, CI=.37, .84). Type of event modified the drinking/condom association: feeling drunk was related to decreased condom use only in the first sex event. Among males (n=1,749), condom use was more likely when other contraception was used (OR=5.09, CI=2.86, 4.77), with no alcohol effect. Marijuana use at the event was not significantly related to condom use in males or females. **Conclusions:** These findings support the suggestion that drinking is associated with nonuse of condoms at first intercourse and not in other kinds of sexual encounters. Moreover, we found this association was limited to females who had drunk sufficient quantities to feel drunk. **Support:** Analysis supported by R21AA015040 (NIAAA); Add Health data collection supported by P01-HD31921 (NICHD)

## **ADHERENCE DURING AN HIV VACCINE CLINICAL TRIAL: HIGH RISK DRUG-USING WOMEN**

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**Aims:** Historically, high-risk, drug using women have been underrepresented in HIV vaccine trials. As HIV infections increasingly affect minority women, their participation in clinical trials of behavioral and biomedical prevention interventions becomes more important. We aim to identify factors associated with late or missed vaccinations and study retention during the course of an HIV vaccine trial. **Methods:** The data reported here were derived from participants at the Philadelphia site for the HIV Vaccine Trials Network (HVTN) 502 study testing the Merck Adenovirus 5 based HIV vaccine. The research group enrolled 124 women reporting regular use of crack cocaine and frequent unprotected sex. Analyses were conducted to identify variables that may be associated with study adherence and retention. **Results:** Study participants had a mean age of 37 years and 91% were African-American. Overall study retention was 90%. With regard to study adherence, 65% of the women presented for each of the three vaccinations on time; 28% completed at least one vaccination visit late; and 7% missed at least one vaccination visit. Analyses found no associations with increased drug

use and poorer rates of adherence, in fact, participants reporting crack cocaine use at baseline were more likely to complete their scheduled injection visits on time. Baseline measures of age, race, current and past injection drug use, frequency of noninjection drug and alcohol use, number of sex partners, frequency of vaginal sex, and distance between home and office (at each visit), were all unrelated to timeliness of completion. Conclusions: These findings suggest that women who practice high-risk behaviors are able to participate meaningfully in clinical trials of experimental vaccines. Support: HIV Vaccine Trials Network (HVTN)

### **OPPRESSION AMONG POOR DRUG-USING AFRICAN AMERICAN WOMEN IN NEW YORK: IMPLICATIONS FOR PRACTICE AND POLICY**

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Aims: This study used grounded theory to identify dimensions of oppression experienced by poor Black women who use drugs. Oppression is a system of power imbalance and exploitation maintained by unrealistic social norms and expectations that makes it impossible for certain groups of people to achieve those standards. Dimensions constitute ways in which oppression is manifested within the settings. Methods: Three case studies were randomly selected from an ongoing longitudinal ethnographic study entitled "Transient Domesticity & Violence in Distressed Households" (R01 DA009056-09). The original sample consisted of 124 adults recruited from poor neighborhoods in New York. All participants completed lengthy, in-depth interviews including questions about family structure; household dynamics, experiences growing up, violence, drug use, experiences with governmental institutions, and future aspirations. Interviews and field notes stored in FileMaker Pro were used in the analysis of oppressive events extracted from participants' experiences. Results: All three participants had young children, received welfare, and lived in public housing. None of participants graduated from High School nor were ever able to maintain a regular job. All participants reported using alcohol and marijuana on a regular basis. Analysis revealed five dimensions of oppression occurring within eight distinct settings. Dimensions of oppression included classism, sexism, familism, racism, and drugism. Settings included the school system; correction system; welfare system; housing and neighborhood; relationship with men; family; experiences with drug use; and employment. Findings demonstrate how dimensions of oppression have contributed to participants' inability to excel or achieve self-sufficiency in contemporary American society. Conclusions: The present study provides important insights regarding the specific challenges poor African American women face. Findings allow researchers, practitioners, and policy makers to design better treatment programs that target this population. Support: NIDA

### **GENDER DIFFERENCES IN CHRONIC MEDICAL CONDITIONS, PSYCHIATRIC DISORDERS AND SUBSTANCE DEPENDENCE AMONG U.S. JAIL INMATES**

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Aims: The number of women in jail is growing faster than the number of men but little is known about their health. We hypothesized that women in jail have a higher prevalence of chronic medical and psychiatric disorders than men in jail, in part due to higher levels of drug dependence. We sought to compare the prevalence of chronic disorders by gender, and determine if differences were mediated by substance dependence. Methods: Data were analyzed from a nationally representative, US Department of Justice survey of 6,982 jail inmates from 418 jails. Weighted estimates of self-reported disease prevalence were calculated by gender, and logistic regression was used to adjust for sociodemographic factors (age, race, length of incarceration, education, homelessness, employment, and marital status) and drug and alcohol dependence (using DSM criteria). Results: Compared to men, women had a significantly higher prevalence of most chronic medical and psychiatric disorders and drug dependence and a lower prevalence of alcohol dependence. Adjustment for socio-demographic factors and drug and alcohol dependence attenuated but did not eliminate gender differences in most conditions (e.g. diabetes adjusted odds ratio [AOR] 2.07, 95% confidence interval [CI] 1.56, 2.75; hypertension AOR 1.24, 95% CI 1.05, 1.46; depression AOR 2.20, 95% CI 1.89, 2.57; bipolar AOR 2.38, 95% CI 1.94, 2.90). Conclusions: Women in US jails reported chronic medical and psychiatric disorders more often than men, mediated in part by substance dependence. Targeted attention to the medical, psychiatric and drug treatment needs of women in jail is warranted to reduce gender disparities. Support: Supported by the Division of General Internal Medicine at the University of Colorado Denver, Department of Veterans Affairs, and the Robert Wood Johnson Clinical Scholars Program.

## **ALCOHOL AND SUBSTANCE USE AMONG PERSONS ENGAGED IN HIV PREVENTION IN A COMMUNITY MENTAL HEALTH CENTER**

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**Aims:** We examine associations among mental health diagnoses, gender, and mental health program participation with reported alcohol and substance use for persons enrolled in HIV prevention programming in a Community Mental Health Center. **Methods:** The Addiction Severity Index (ASI) was used to assess reported alcohol and substance use for 280 case managed persons enrolled in a randomized experiment examining the impact of HIV prevention on risk behaviors among persons with serious mental illness. **Results:** Consistent with extant literature, results indicated substantial alcohol and substance use among these participants. Consistent with extant literature, results indicated substantial alcohol and substance use among these participants. Substance use was strongly associated with HIV risk. Chi square analyses indicated that those engaged in the Access program for persons who had experienced homelessness, and those in Intensive Case Management reported higher levels of alcohol ( $X^2$  ( $df = 2$ ) = 6.33,  $p = .042$ ) and substance use ( $X^2$  ( $df = 2$ ) = 6.87,  $p = .032$ ) than those receiving Resource Coordination. Men reported greater levels of substance use ( $X^2$  ( $df = 1$ ) = 5.58,  $p = .018$ ) than did women but not greater alcohol use ( $X^2$  ( $df = 1$ ) = 2.77,  $p = .096$ ). There were no differences among racial and ethnic groups in alcohol use ( $X^2$  ( $df = 1$ ) = 1.09,  $p = .30$ ). Whites were more likely than those of other races to report substance use ( $X^2$  ( $df = 1$ ) = 5.76,  $p = .016$ ). **Conclusions:** Alcohol and substance use are related to HIV risk behaviors among persons with serious mental illness. Persons with more serious illness and histories of homelessness were more likely to report alcohol and other substance use. HIV prevention among persons with mental illness needs to take substance use and severity of illness into account for the purposes of program planning. **Support:** This work was supported by the National Institute on Drug Abuse (R01 DA015627), Michael B. Blank, PhD, Principal Investigator.

## **WORK-AND HEALTH-RELATED DISPARITIES FOR LOW-INCOME WORKING ADULTS WITH MENTAL HEALTH AND/OR SUBSTANCE MISUSE DISORDERS**

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**Aims:** This study examines whether work and health disparities exist for low income working individuals with different mental health and substance use diagnoses. **Methods:** Based on ICD-9 diagnoses, 445 participants in the Texas Demonstration to Maintain Independence and Employment were classified into five groups: severe mental illness (SMI), SMI with co-occurring substance misuse, other behavioral health diagnosis (BH), BH with substance misuse, and substance misuse alone. Participants were patients in the Harris County Hospital District, working at least part time, and had additional physical impairments. Data were from a telephone survey. **Results:** Groups differed on educational levels, gender and ethnic background. For work related disparities, results showed no significant differences among groups. Across groups, the average work motivation score was 2.8 on a scale of 1-4, 72% had not changed jobs in the past year, 86% expected to still be employed in 3 years, and the average number of hours worked in the past month was 121. For health-related disparities, perceived mental health and ability to perform instrumental activities of daily living were significantly higher among the BH-only and substance-only groups. All groups were equally satisfied with the past-year health care they had received, involved with family and community, got needed care including emergency care, and were similar in perceived physical health. **Conclusions:** Low-income working individuals with behavioral and/or substance use disorders typically have high work motivation and intend to continue work over the next several years regardless of diagnostic status. Findings suggest that low-income working individuals can access and benefit from public health care despite their behavioral health problems. **Support:** The DMIE project is supported by a grant from the Centers for Medicare and Medicaid Services through the Texas Department of State Health Services.

## **DRUG ABUSE PROBLEMS AMONG MEDICAL AND NONMEDICAL USERS OF PRESCRIPTION OPIOIDS**

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**Aims:** This study aimed to assess the prevalence of drug abuse among four mutually exclusive groups of lifetime medical and nonmedical users of prescription pain medications (i.e., Vicodin®, OxyContin®, Tylenol®; 3, Percocet®, Darvocet®, morphine, hydrocodone, oxycodone): 1) non-users ( $n = 1622$ ), 2) medical users only ( $n = 1422$ ), 3) medical and nonmedical users ( $n = 407$ ), and 4) nonmedical users only ( $n = 104$ ). **Methods:** A Web survey was self-administered in 2005 by a probability-based sample of 3,639 full-time undergraduate students (68% response rate) at a large public, Midwestern, 4- year university in the United States. The survey consisted of measures to assess prescribed use and nonmedical abuse of opioid analgesics. A modified version of the Drug Abuse Screening Test, Short Form (DAST-10) was also administered. **Results:** The prevalence of a positive screen for drug abuse, using a 3+ cutoff on the DAST-10, was lower among non-users (5.1%) and medical users only (6.5%) than among medical and nonmedical users (30.3%) and nonmedical users only (41.3%). Further, there were no gender differences among any of the four groups. Logistic regression analysis indicated non-users and medical users had significantly lower odds of a positive DAST-10 score than

either nonmedical users only ( $p < 0.001$ ) and medical and nonmedical users ( $p < 0.001$ ). Most medical users reported no history of nonmedical use and were not at increased risk for reported drug abuse problems (as measured by DAST-10). In contrast, medical users of prescription opioids who also engaged in nonmedical use were at substantially increased risk for drug abuse problems. Conclusions: These data suggest that there is a significant amount of nonmedical use of opioid analgesics among college students and that nonmedical users are at increased risk for substance abuse problems. In contrast, if the analgesic is used as prescribed, there appears no increased risk as measured by the DAST-10. Support: This study was supported by NIDA grants: DA0187272; DA018239; and DA020899.

### **WOMEN METHAMPHETAMINE USERS' NARRATIVES OF MATERNAL BLAME**

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Aims: Women methamphetamine (MA) users' narratives of maternal blame are examined in the context of their life histories. Methods: Thirty women in residential treatment completed in-depth interviews. Participants were aged 18 -45 years (mean age, 28.5 years). Approximately half (56%) are Latina, 30% Caucasian, 7% Native American, and 7% mixed. Over half (57%) had not completed high school. Almost all (97%) were unemployed and receiving public assistance. Almost all (97%) have children. Results: With regard to family histories, eleven out of the 30 women had at least one parent who was drug-dependent. Twelve women described early childhood abuse/molestation. Participants were an average age of 15 when they started using MA. Most were introduced to MA by friends or family members, including mothers. A predominant theme in the interviews was the perceived impact of the women's mothers on the women's current life circumstances. Five dominant "mother narratives" emerged: "My mom did not pay any attention to me as a child."; "My mom did not protect me from abuse."; "I used with my mom."; "I experienced 'maternal neglect.'"; and, "I never had a real mother/daughter relationship with my mother, and that's why I can't have one with my children." One participant conveyed this overarching sentiment of maternal blame: "We know that all my issues stem from my mother." These "issues" that are attributed to mothers range from the women's perceived (in)ability to be mothers to problems with intimate relationships. Participants who used MA with their mothers had especially emotional narratives; one participant stated that smoking with her mother was "another level [of] absolute shame and guilt and disgust." Conclusions: Further investigation is necessary to understand why these maternal blame narratives are prominent (e.g., the extent to which treatment programs promulgate a trope of maternal blame) and to untangle the ways in which these experiential constructions affect women's recovery processes and relationships with their own children. Support: Supported by NIH/NIDA 1 K01 DA017647-01A2.

### **RELATIONSHIP BETWEEN TRAUMA HISTORIES AND SEXUAL BEHAVIORS AMONG METHAMPHETAMINE USERS**

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Aims: We explored the relationship between trauma histories and self-reported sexual behaviors among methamphetamine (MA)-dependent individuals. Methods: A self-reported pilot survey about drugs and sexual behaviors was completed by MA dependent individuals ( $N=250$ ; 62.4% males; 61.9% Caucasian; mean age 33.9 years; and 12.2 mean years education) in outpatient drug treatment. Most (88.4%) were heterosexual. Average length of MA use was 11.9 years, with smoking the most common route (70.4%), followed by nasal (16%) and injection (11.6%). Of the sample, 17.2% were sexually abused as a child, 20% were raped or sexually assaulted, and 8% had been in treatment for trauma. More women than men reported experiencing childhood sexual abuse (62.8% vs. 32.4%,  $p < .001$ ) and sexual assault/rape (78% vs. 27.5%,  $p < .001$ ). Results: Having experienced childhood abuse or sexual assault/rape was significantly associated with becoming involved in unusual sex acts while under the influence of MA (48.8% vs. 27.5%,  $p < .05$ ; 44% vs. 28%,  $p < .05$ ). Those who reported childhood sexual abuse or sexual assault/rape were more likely to question their sexual orientation while under the influence of MA (34.9% vs. 5.8%,  $p < .001$ ; 30% vs. 6%,  $p < .001$ ). Those who reported sexual assault/rape were more likely to report having a problem with sexual preoccupation/obsession before getting involved with MA (24% vs. 13%,  $p < .05$ ). Difficulty in stopping inappropriate or dangerous behavior while using MA was more likely to be reported among MA users with childhood sexual abuse than those without abuse histories (30.2% vs. 15.5%,  $p < .05$ ). Substantially more MA users with childhood sexual abuse or sexual assault/rape reported that sexual behavior under the influence of MA caused feelings of depression (34.9% vs. 18.6%,  $p = .06$ ; 32% vs. 18.8%,  $p < .05$ ). Conclusions: Substance abuse treatment clinicians should be sensitive to MA users with trauma histories and appropriate intervention strategies should be tailored to attend to the possible connections between trauma histories, MA use, sexual behaviors, and mental health. Support: Women, Methamphetamine, and Sex NIH/NIDA 1 K01 DA017647-01A2 PI:A. Brown

## **GENDER DIFFERENCES IN THE SOCIAL AND SUPPORT NETWORKS OF INNER-CITY CURRENT AND FORMER DRUG USERS**

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**Aims:** The aim of the present study was to describe gender differences in the social and support networks of current/former drug users. The composition and function of support networks have been found to relate to drug treatment outcomes, HIV risk behavior, depression, and health care utilization. It is hypothesized that females have larger networks, provide more support, and receive more material aid. **Methods:** Participants were current/former drug users recruited from areas with high levels of drug use ( $n=1604$ , 61.4% male) and were given a network inventory. Gender differences on network characteristics were tested using  $t$  and  $\chi^2$  tests, then tested by gender in bivariate and multivariate regression models to determine which characteristics are associated with current (vs. former) drug use. **Results:** Men had significantly greater overall support and more non-kin (both drug users and non-users) in their support network. Women reported larger social networks, more female kin in their support network, more individuals in their network who they give support, a greater degree of closeness to their network, more dense social networks, and are more likely to report a sexual partner in their social network. There were no differences in the size of the support network. In multivariate models, number of non-kin in the support network, number who could provide material support, and number of professionals were associated with no current drug use for men, while only number of network members who could provide material support maintained significance for women. **Conclusions:** Results indicate some gender differences in the social and support networks of current/former drug users. This may indicate differences in social capital to facilitate drug cessation. Material support seemed to have the most robust (negative) association with drug use. This relationship may be bidirectional, as current drug users may have exhausted the material resources available to them, and their lack of material resources may have increased their likelihood of drug use. **Support:** Supported by NIDA grants 5T32DA007292 and R01DA13142

## **THE ROLE OF ANXIETY IN THE TREATMENT OF MARIJUANA DEPENDENCE**

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**Aims:** Despite high rates of anxiety among marijuana users, the role of anxiety on the treatment of marijuana dependence remains unclear. Yet, pre-treatment anxiety may be linked to greater impairment that interferes with treatment. Also, because anxiety is related to relapse risk factors (withdrawal, craving) and marijuana users report using to manage anxiety, anxiety may increase relapse among marijuana treatment responders. Thus, anxiety may be an important target for marijuana treatment. Motivation-enhancement therapy (MET) and cognitive-behavior therapy (CBT) are efficacious treatments for marijuana dependence, yet it is unknown if they decrease anxiety. There is no known evidence that MET decreases anxiety; yet CBT teaches skills to cope with negative affect. **Hypotheses:** First, it was predicted that baseline anxiety would be related to greater psychiatric impairment. Second, it was expected that baseline anxiety would be related to poorer treatment outcome. Third, CBT was predicted to lower post-treatment anxiety relative to MET. **Methods:** The sample consisted of 450 (32% female) patients in the Marijuana Treatment Project randomly assigned to MET alone, MET plus CBT (METCBT), or a control. **Results:** At baseline, anxiety was related to greater depression ( $r=.66$ ,  $p<.002$ ), DSM-IV marijuana abuse ( $r=.17$ ,  $p<.002$ ) and dependence symptoms ( $r=.16$ ,  $p<.002$ ), marijuana problems ( $r=.39$ ,  $p<.002$ ), other drug use ( $r=.13$ ,  $p<.01$ ), and less education ( $r=-1.4$ ,  $p<.01$ ). Baseline anxiety was related to greater post-treatment marijuana problems ( $\beta=.22$ ,  $p=.02$ ) and attending fewer therapy sessions ( $\beta=-.12$ ,  $p=.07$ ) among females (not males). A random effects regression showed a significant Time X Treatment interaction,  $F(1, 792) = 4.41$ ,  $p = .04$ . Specifically, MET-CBT showed less anxiety than MET at 4-month (MCBT=33.2 vs MMET=37.0) and 9-month (CBT:  $M=32.5$  vs MET:  $M=37.5$ ) follow-ups ( $p$ 's $<.05$ ). **Conclusions:** Results suggest baseline anxiety is related to greater impairment that may affect treatment outcome (especially among women). CBT appears to be superior for decreasing anxiety among these patients. **Support:** National Research Service Award from the National Institute of Drug Abuse (F31DA021457).

## **INFANT MORTALITY AMONG DRUG-DEPENDENT WOMEN**

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**Aims:** Infants born to women who are dependent on illicit drugs are at increased risk of early death. The aim of this paper is to present preliminary results from the first population level study in the international literature to compare infant mortality rates and reasons for death among infants born to drug (the drug group) and non-drug (the non-drug group) dependent women. **Methods:** Data from three administrative databases: the NSW Pharmaceutical Drugs of Addiction System; the NSW Midwives Data Collection; and, the Registry of Births Deaths and Marriages were linked for the period 1998-2002 using probabilistic linkage methods. **Results:** Preliminary results found 42 deaths of infants born to women in the drug group ( $n=3044$ ) and 2698 infant deaths to women in the non-drug group ( $n=674427$ ). This represents an IMR of 13.5 per 1,000 live births in the drug group and an IMR of 4.0 per 1,000 live births in the non-drug group, a relative risk of 3.5 (95%;CI:2.6,4.7) for infant death in the drug group. Whereas 68% of deaths occurred in the neonatal period in the non-drug group, deaths were equally likely to occur in the neonatal and late infant period in the drug group. Infant death in the drug group was significantly associated with; unbooked deliveries, low birth weight,

prematurity, admission to neonatal intensive care and special care nursery. Infants in the drug group were more likely to die from; Sudden Infant Death Syndrome, poor growth and maternal drug use. Conclusions: Maternal drug use is associated with late infant death, particularly with Sudden Infant Death Syndrome. Infants with high risk indicators require close supervision. The development of innovative campaigns to reduce SIDS in this cohort should be a major priority for drug researchers. Support: Support for this project is through HERON (Health Evaluation and Research Outcomes Network), through the National Health and Medical Research Council 262121. We would like to thank staff of the NSW Department of Health Centre for Epidemiology and Research who maintain the Health Outcomes Information Statistical Toolkit (HOIST) - a SAS based data warehouse on which the source and linked datasets were held.

### **EFFECTS OF HERKINORIN, A SALVINORIN ANALOG WITH $\mu$ -OPIOID EFFECTS, IN A NEUROENDOCRINE BIOMARKER ASSAY**

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**Aims:** The aim of these studies was to determine the in vivo effects of herkinorin, a salvinorin analog with  $\mu$ -opioid effects in vitro. These studies used a neuroendocrine biomarker assay for the in vivo pharmacodynamics of  $\mu$  and  $\delta$  opioids. This assay is also responsive to opioids with limited ability to cross the blood-brain barrier. **Methods:** Herkinorin (0.01-0.32 mg/kg, i.v.) was studied in gonadally intact male and female rhesus macaques (n=3-4 each). Serum prolactin levels were quantified with an immunoradiometric assay. Studies had either a time course design (5-120 min after administration), or a cumulative dose-effect curve design. Prolactin levels were analyzed as "ng/ml levels (i.e., by subtraction of individual pre-injection baseline). In pretreatment studies, a single dose of antagonist (either nalmefene or quaternary naloxone) was administered before re-determination of herkinorin (0.32 mg/kg) time course. **Results:** In males, herkinorin caused only marginal increases in prolactin levels (e.g., mean of 19 "ng/ml), up to the largest dose that could be studied. By contrast, in females, herkinorin caused more robust prolactin increases (e.g., mean of 324 "ng/ml at the maximal dose). Herkinorin (0.32 mg/kg) displayed a fast onset and short duration of action. In antagonist pretreatment studies, nalmefene (0.01 or 0.1 mg/kg) caused dose-dependent and complete prevention of herkinorin's effect in females. Pretreatment with the peripherally selective antagonist, quaternary naloxone (3.2 mg/kg) produced a near-complete prevention of the effects of herkinorin in females. **Conclusions:** Herkinorin produced robust neuroendocrine effects in females but not in males. Antagonist studies with nalmefene suggest that both  $\mu$  and  $\delta$  receptors mediate this effect. Furthermore, herkinorin may produce this effect by acting primarily outside the blood-brain barrier in vivo in non-human primates. **Support:** Work supported by NIH-NIDA Grants DA017369 (ERB), DA05130 and DA00049 (MJK) and DA018151 (TEP)

### **INCIDENCE AND PERSISTENCE OF NONMEDICAL USE OF PRESCRIPTION ANALGESICS AMONG COLLEGE STUDENTS**

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**Aims:** Recent studies have documented the extent of nonmedical use of prescription analgesics (NPA) by college students, but no investigations have examined how this behavior changes over time. Using three years of prospective data from the College Life Study, we: 1) Describe the patterns of change in NPA with respect to incidence, persistence, and cessation of use; and 2) Examine the patterns of change in frequency of NPA. **Methods:** At study outset, participants were 1,253 freshman students ages 17 to 19 attending a large public university in the mid-Atlantic region of the U.S. In annual personal interviews, participants were assessed for NPA; 85% participated in all three annual assessments. **Results:** Among 158 lifetime NPA cases at baseline, 29% persistently continued NPA all three years; 59% ceased NPA by year three; the remaining 12% used intermittently. Among the 45 persistent users, 56% increased their frequency of use over time, with average frequency of use increasing from 8.7 (SD=9.6) days in their lifetime at baseline, to 23.2 (SD=76.1) days in the past year by year three. Interestingly, the increase in frequency of NPA use was more dramatic from baseline to year two than from year two to three. Among 895 individuals who had never used analgesics nonmedically at baseline, "new" or incident NPA was observed in 9% by year two and 13% by year three. The risk for incident NPA was similar across race, gender, and sorority/fraternity affiliation, but was significantly higher for students living off campus ( $X^2(df)=14.1(1)$ ,  $p<.0001$ ). **Conclusions:** Prescription analgesics have substantial abuse potential for college students. For many students, NPA is a persistent behavior, rather than an isolated episode of experimentation. **Implications for prevention and early intervention** are discussed. **Support:** NIDA R01DA14845, A. Arria, PI

## **FACTORS ASSOCIATED WITH TOBACCO SMOKING IN MEXICAN HIGH SCHOOL STUDENTS**

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**Aims:** In this study we investigated factors associated with tobacco smoking among high school students from the Mexican west-central state of Jalisco. **Methods:** We used the abbreviated version of Drug use screening inventory (DUSI-R) which has been validated in several Latinoamerican countries including Mexico. It was applied to a random, multistaged, clustered sample of students from 25 schools in 10 geo-political areas of the Jalisco State high school system (U de G) over a 6 month period. Students participated voluntarily. **Results:** We evaluated 2842 students (51.8 % female, 48.2 % male) age range from 14 to 22 years; 31 % had a part time job. General smoking prevalence was 19.7 % (n=559), (11.3 % male, 8.4 % female). Most smoked from 1-5 cigarettes a day (86.5%) and 13.2 % more than that. 72.4 % referred to have good or excellent health. 87.6 % of smokers also accepted drinking alcohol while only 1.2% and 1.4% accepted using cocaine or cannabis. The overall problem density score for smokers was higher (3.3, moderate) than in non-smokers (2.5, low). The factors with higher severity indices were behaviour patterns, emotional disorders and leisure scores (all at moderate level). **Conclusions:** Most of the smokers seem to have a low nicotine dependence (less than 5 cigarettes a day). Nevertheless, students who smoke present differences in psychosocial factors compared with non-smokers thus prevention programs should be aimed at modifying or reducing those risks factors identified and enhance protective factors. **Support:** We received support from Consejo Nacional de Ciencia y tecnología (CONACYT) through its Consejo regional and from the Universidad de Guadalajara.

## **FACTORS ASSOCIATED TO BUPRENORPHINE TREATMENT ADOPTION BY PUERTO RICAN PHYSICIANS IN PRIVATE PRACTICE**

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**Aims:** In Puerto Rico (PR), drug treatment is available for 8% of the population with assessed need. Expansion of buprenorphine treatment is essential to close this gap. In 2004, only 25 of 65 certified physicians were prescribing buprenorphine. Using a technology transfer model and data from a cross-sectional study we identify factors associated with decision to prescribe buprenorphine by certified providers in PR. **Methods:** 112 providers were listed in SAMHSA's physician locator for PR in January, 2006. 105 were eligible (4 not residing in PR, 1 retired, 1 passed away, and 1 part of the study staff) and invited to respond to a 58 item mail survey with variables related to: physicians', practice and treatment characteristics. Providers failing to reply after 3 follow-up contacts were considered non-responders (response rate 46%). Non-parametric statistical analysis were conducted to determine the strength of association of each of the variables with physicians' report of whether they had engaged patients in treatment ( $p < 0.10$ ). Sample size limited use of multivariate analysis. **Results:** 31 of 48 participants were prescribing at time of survey. 69% males vs. 31% females with a mean age of 50 years (SD = 10). 77% have treated patients infected with HIV, HCV+ and/or drug dependence. Treatment was perceived as beneficial by 96% while 65% perceived that treatment is expensive. Factors associated with treatment adoption were sex, demand for the service and perception of treatment cost. Barriers for treatment implementation associated with adoption were concerns about medication safety and about how comfortable other patients will feel in the presence of buprenorphine patients. **Conclusions:** PR providers adopting buprenorphine treatment have prior experience servicing HIV+ patients and drug users. Buprenorphine is providing an opportunity to treat this needy population. Buprenorphine training should emphasize medication safety and stigma. Data from studies on providers and patients should help identify the specific concerns regarding cost that may be hindering expansion. **Support:** Reckitt Beckinser Pharmaceuticals.

## **MALE-FEMALE DIFFERENCES IN TOBACCO DEPENDENCE: MEXICO, 2001-2002**

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**Aims:** Our research group is probing into male-female (M-F) differences in manifestations of tobacco dependence (TD) among smokers found within community probability sample surveys completed as part of the WHO World Mental Health Surveys Initiative. In this report, we focus upon epidemiological data from Mexico. **Methods:** Data are from an epidemiological survey completed in Mexico in 2001-2 (n=5782), with a diagnostic assessment based on 7 items designed to tap DSM-IV nicotine dependence constructs. An 'analyze, then summarize' approach was taken such that M-F differences are disclosed with respect to TD's individual clinical features. **Results:** Estimated occurrence of tobacco dependence was numerically smaller among active male smokers (7%) as compared to female smokers (8%), but  $p > 0.4$ . Profiles of individual TD clinical features showed very little evidence of M-F differences; one noteworthy tendency involved the occurrence of a withdrawal syndrome, which occurred slightly more often among female smokers than among male smokers ( $p=0.06$ ). **Conclusions:** In Mexico, the evidence indicates M-F parity in the occurrence of tobacco dependence, as well as clinical features of TD, among recent smokers. The tendency for more frequent withdrawal

syndromes in female smokers might be due to variation in smoking topology, which will be explored in future analyses. Support: NIDA Awards R01DA016558, K05DA015799, & see WMH web site.

### **PREDICTING SEXUAL DEBUT**

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**Aims:** To examine the association between age of first alcoholic drink and sexual debut. **Methods:** We used 1999-2005 data from the Youth Risk Behavior Surveillance System (YRBSS), a cross-sectional, nationally representative survey of students in grades 9-12 established by the Centers for Disease Control and Prevention. All analyses were performed using SAS callable SUDAAN version 9.0.1. An extended Cox proportional hazards model was used to model time until becoming sexually active (i.e., age at first sexual intercourse), with drinking alcohol (a time-dependent variable based on age at first drink) as the primary predictor of interest, adjusting for gender and race. **Results:** The 58,081 participants evaluated in this study included similar numbers of males and females in grades 9-12. Onset of first alcoholic drink (adjusted hazard ratio [aHR], 3.3; 95% confidence interval [CI] 3.1-3.5) was associated with an increased risk of becoming sexually active when compared with participants who had not yet had their first drink of alcohol. Being male (aHR, 1.1; 95% CI, 1.1-1.2) was also associated with an increased risk of becoming sexually active when compared with females. African Americans (aHR, 2.4; 95% CI, 2.2-2.6), Hispanics (aHR, 1.3; 95% CI, 1.2-1.4), and other races (aHR, 1.3; 95% CI 1.1-1.4) were also at an increased risk of becoming sexually active when compared with Caucasians. Asians (aHR, 0.6; 95% CI 0.5-0.7) were at lower risk when compared with Caucasians. The overall Cox regression model was significant ( $\chi^2$  6 df = 2294.55). **Conclusions:** These results provide evidence for the important role of first drink of alcohol, gender, and race in predicting sexual debut. Moreover, our results underscore the public health relevance of delaying first alcohol use to help postpone adolescents' first sexual intercourse. **Support:** K12 Multidisciplinary Clinical Research Career Development Program. **PI:** Victoria Fraser; National Institutes of Health Sept 2007 - Sept 2009; **Role:** Scholar.

### **EARLY OUTCOMES OF A 1-SESSION INTERVENTION TO PREVENT ALCOHOL-EXPOSED PREGNANCY IN PRECONCEPTION WOMEN**

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**Aims:** To test a one-session MI-based intervention to prevent alcohol-exposed pregnancy (AEP) in child-bearing age women who drink at risky levels and use ineffective contraception. **Methods:** A three-armed, RCT of 258 women to test a 50-minute counseling intervention against informational video and assessment only groups is a shorter adaptation of the efficacious Projects CHOICES and BALANCE interventions aimed to prevent brain damage and other permanent problems in offspring of women who drink while pregnant. The intervention targets preconception women and their readiness to change drinking and/or contraception behaviors. All participants receive an hour-long assessment and are followed at 3- and 6-months. **Results:** Preliminary analysis of 70 participants shows they are on average 27.9 yo, mostly single or cohabitating (78.3%), with 1.5 sex partners in the past 90 days. 40% are employed and 31.9% attend school, with 13.9 years of education. Most are Black (47.8%) or White (40.6%) and drink an average of 8.3 drinks/wk with 35.7% binge drinking (4 or more drinks per occasion) weekly or more. First intercourse was at age 16.3, first use of contraception at age 16.7, and most (72.9%) had a pap smear in the past year. About half (47.1%) report never using marijuana, 85.7% report never using cocaine, with only a handful reporting any use of other illicit drugs. Nearly half (44.3%) smoke. Out of 100, participants rated readiness to change their use of alcohol a 48 and readiness to use effective contraception a 70. 16 women have attended the first follow-up. By June, group differences on the first 100 women enrolled will be available. **Conclusions:** Participants do not report risky lifestyles except binge drinking and most do not consider their drinking a problem or something they are ready to change. However, their drinking and contraception behavior puts them unknowingly at high risk for AEP. Three month results of changes in drinking, contraception and AEP risk by group assignment will be provided. **Support:** R01 AA14356-0142

### **GENDER DIFFERENCES IN HIV RISK BEHAVIORS AMONG ADOLESCENTS IN SUBSTANCE ABUSE TREATMENT**

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**Aims:** Adolescent HIV infection has drawn public concern. Sexual behavior and injection drug use are the main sources of transmission for HIV infection among adolescents. The present study estimated the prevalence of HIV risk behaviors across a spectrum of risky sexual and injection drug use behaviors among adolescents admitted to substance abuse treatment. **Methods:** The study sample of 6821 boys and 2698 girls, aged 12-18, was pooled from 86 sites funded for substance abuse treatment studies. Rates of different risky sexual and injection drug use behaviors were estimated by gender at treatment intake. **Results:** Study results revealed that relative to boys, girls had greater rates of engaging in sex while high on alcohol or drugs (44.8% vs. 35.2%,  $p < 0.001$ ), having sex with an injection drug user (5.2% vs. 0.9,



$p < 0.001$ ), trading sex for money (3.4% vs. 0.7%,  $p < 0.001$ ), and having unprotected sex (44.3% vs. 33.3%,  $p < 0.001$ ). In contrast, boys were more likely to have engaged in anal intercourse (7.1% vs. 5.4%,  $p = 0.004$ ), used drugs, gifts or money to purchase sex (0.9% vs. 0.4%,  $p = 0.009$ ) and been involved with multiple sexual partners (41.0% vs. 34.9%,  $p < 0.001$ ). Both males and females were equally likely to use alcohol or drugs to make sex last longer or hurt less (7.0% vs. 6.5%,  $p = 0.39$ ). With respect to injection drug use, females reported higher rates of engaging in such risk behaviors as using a needle to shoot up drugs; sharing needles, rinse water, cookers, and cotton; and re-using a needle without cleaning it. Conclusions: Study findings suggested that there are gender differences in the engagement of HIV risk behaviors among adolescents in treatment and it is important for substance abuse treatment settings to provide HIV prevention programs. Support: Supported by Center for Substance Abuse Treatment (CSAT), Substance Abuse and Mental Health Services Administration (SAMHSA) contract 270-2003-00006 and 86 grantees.

### **EFFECTS OF PRENATAL COCAINE EXPOSURE ON TODDLERS' EMOTIONAL AROUSAL AND REGULATION: IMPLICATIONS FOR BEHAVIOR PROBLEMS ACROSS A THREE-YEAR FOLLOW-UP**

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Aims: Prenatal cocaine exposure (PCE) impacts children's developing emotional arousal and regulation systems. We examined emotional responses to a frustrating task and subsequent behavior problems in 225 toddlers aged 2 ½ years (129 Prenatally Cocaine Exposed [PCE], 30 Other Drug Exposed [ODE], 66 Non Drug Exposed [NDE]). We hypothesized that PCE toddlers will show greater agitated emotional arousal and difficulty with self-regulation than NDE toddlers, particularly PCE boys. Further, we predicted that greater agitated arousal and difficulty with regulation in toddlerhood (age 2 ½) would predict increases in externalizing symptoms through preschool age (age 5 ½). Methods: Children participated in a toy wait task at age 2 1/2. For the task, the child is shown an attractive new toy and then it is taken away and placed on a counter out of the child's reach. The child is instructed to wait 6 minutes for the toy. Children's behaviors were later coded for emotional arousal and regulation behaviors. Results: ANCOVAs, covarying race and maternal education level, indicated that PCE toddlers made more references to their caregivers in the task than NDE toddlers, particularly for boys ( $F(2, 216) = 3.48, p < .05$ ). Further, PCE toddlers tended to show greater agitated arousal than ODE and NDE toddlers ( $F(1, 189) = 2.74, p < .10$ ). HLM analyses showed that higher agitated arousal was related to decreases in externalizing behaviors across three years (Estimate =  $-.31$  (SE =  $.12$ ),  $F(1, 194.04) = 6.86, p < .05$ ). Conclusions: Findings suggest a link between cocaine exposure and emotional arousal and regulation and highlight the need to understand complex relations between emotion and risk for psychopathology in exposed youth. Support: (Supported by NIH grants: R01-DA-06025 and P50-DA-16556).

### **ALCOHOL USE AND PROBLEMS: A FOCUS UPON SEX-ASSOCIATED VARIATION FOR US-BORN VERSUS IMMIGRANT LATINOS AND ASIANS IN US HOUSEHOLDS, 2002-2003**

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Aims: 'Convergence' theory and recent evidence from cross-national surveys prompt us to hypothesize that male-female (MF) associations with drinking and drink-related problems will be weaker for US-born Latino- and Asian- Americans, stronger for immigrants (i.e., current US residents not born in the US). That is, MF associations tend to be stronger overseas than in the US. Methods: This hypothesis can be tested with data from the 2002-3 National Latino and Asian American Study (NLAAS), a probability sample survey of 4649 household-dwelling adult residents in the US, which included standardized diagnostic assessments of DSM-IV alcohol use disorders (AUD). Estimation takes into account sampling weights and survey design effects. Results: Estimates for subgroup variation in cumulative incidence of alcohol consumption and AUD show that almost 100% of Latino males have consumed alcohol and 1 in 5-6 drinkers developed AUD (94%, 18%, respectively). Corresponding estimates for Latino females highlight the overall MF differences: 74% and 6%; for Asian males: 86%, 7%; for Asian females: 66%, 2%. As hypothesized, with or without covariate adjustment for age, MFAUD associations among drinkers were weaker for US-born adults (Latino MF Odds Ratio, OR = 3; Asian OR = 3), stronger for immigrants (Latino OR = 16; Asian OR = 16). Conclusions: This evidence tends to support 'convergence' theory such that epidemiological patterns for immigrants to the US resemble patterns observed in the home countries, and that patterns for the US-born more resemble US patterns. More probing is needed (e.g., relative to elapsed time since immigration; developmental stage). Support: NIDA Awards K05DA015799, R01DA016558.

### **THE RELATIONSHIP BETWEEN CIGARETTE USE AND MATERNAL AND NEONATAL OUTCOMES AMONG PREGNANT METHADONE-MAINTAINED PATIENTS**

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Aims: To investigate the relationship between cigarette use and maternal treatment and neonatal outcomes among pregnant methadone-maintained patients. Methods: Pregnant methadone-maintained women (N=122) completed the Addiction Severity Index and Structured Interview for the DSM-IV Axis I disorders and were then followed prospectively until delivery in comprehensive care treatment. Participants were categorized into three groups based on

past 30-day cigarette use at treatment entry: no smoking (0 cigarettes/day; n=15), light (1-10 cigarettes/day; n=55), and heavy (11 +cigarettes/day; n=52) smokers. Sub-samples of each group for which maternal and neonatal outcomes were available (n=81) were compared. Results: : There were no statistically significant differences among groups on demographic variables, estimated gestational age at treatment entry or delivery, or Apgar scores. Approximately 79% of the total sample provided drug negative urine samples at delivery. The no smoking group had significantly higher birth weights compared to the light and heavy smoking groups (3335.71 grams [716.2]; 2534.30 grams [866.3], and 2669.65 grams [566.3], respectively; p=.034). Of the infants in the non-smoking group, 0% experienced neonatal abstinence syndrome (NAS) compared to 62.5% of the light and 52.6% in the heavy smoking groups (p=.030). Cigarette smoking at any level was associated with lower birth weight and increased incidence of NAS. Conclusions: Results suggest an association between any cigarette use and compromised neonatal outcomes among pregnant methadone-maintained women. Support: Supported by NIDA R01 DA12403, K24 DA-023186

### **GENDER DIFFERENCES IN RISKY BEHAVIORS AMONG INPATIENT ADOLESCENTS**

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Aims: To assess frequency of risky behaviors in an adolescent inpatient psychiatric sample and explore gender differences. Methods: 105 adolescents aged 12-18 admitted to an inpatient psychiatric unit completed the Youth Risk Behavior Survey (YRBS) modified-version. The frequency of risky behaviors related to violence, substance use, and sexual activity were assessed. Chisquare analysis determined gender differences among risky behaviors. Results: Self-report of adolescents in our inpatient psychiatric sample to the YRBS modified-version indicated during the 30 days preceding the survey that 22% carried some weapon with 10% carrying a gun. In the past year, 40% seriously considered suicide, while 27% attempted. Regarding sexual risky behaviors, 20% had sexual intercourse by age 12, 24% had four or more lifetime sexual partners, and 24% had not worn a condom at last intercourse. For substance use behaviors by age 12: 39% smoked cigarettes, 29% drank alcohol, and 29% smoked marijuana. Significant gender differences indicated males were more likely to carry a gun in the last 30 days, fight on school property in the past 12 months, and smoke a cigar in the past 30 days. Females were more likely to seriously consider attempting suicide in the past 12 months. Females were also more likely to have lifetime alcohol and inhalant use. There were no gender differences for sexual risky behaviors. Conclusions: Risky behaviors in the area of violence, sexual activity, and substance use are frequent among adolescence in an inpatient psychiatric sample. These behaviors may increase morbidity and mortality in an already vulnerable population. Gender differences were found for violence and substance use risky behaviors, but not for sexual risky behaviors. Further studies to explore whether these differences are similar in other populations of youth are warranted. Support: NIDA training grant T-32DA020537

### **DRUG USE AND SYPHILIS IN LOW- AND MIDDLE-INCOME COUNTRIES: A SYSTEMATIC REVIEW**

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Aim: Genital ulcer disease (GUD), including syphilis, is an important cause of morbidity in low and middle income countries (LMIC), and treatment and prevention of GUD is integral to the prevention of HIV transmission. We conducted a literature review summarizing syphilis prevalence and associated factors among drug users in LMIC to characterize syphilis prevalence and risk factors in these populations. Methods: We searched a PubMed portal on NCBI Entrez Databases supplemented by manual searches of footnotes, conference abstracts, relevant journals and supplements. Results: Results: 29 published papers consisting of 32 studies met criteria for analysis. The majority of studies were from Southeast Asia, studies were also identified from Latin America, Eastern Europe, Central and East Asia, North Africa and the Middle East but data from some regions (eg., Sub-Saharan Africa) are scant. The studies consisted of a both IDU and non-injection drug users. The prevalence of overall lifetime syphilis ranged from 0.3% to 60.3% in studies from 14 LMIC. The pooled prevalence of lifetime syphilis was 11.7%. The prevalence of active syphilis ranged from 0.0% to 15.3% with a pooled prevalence of 2.1% in the 11 studies reporting active cases. The pooled prevalence of HIV was 4.8% in thirty-one studies reporting HIV prevalence. Women drug users in general and female sex workers had higher rates of syphilis. Conclusions: Drug users have a high prevalence of syphilis, but data for several regions are lacking. Further studies evaluating GUD in drug users worldwide are needed. Interventions that promote safer sex should be integrated in harm reduction programs to prevent new syphilis infections and reduce HIV transmission among drug users and their contacts. Support: Supported by grants R01-DA020841, P30 DA 011041 and R01 DA -03574 from NIDA

### **DELAY DISCOUNTING IN CHILDREN OF SMOKERS AND NONSMOKERS**

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Aims: Delay discounting is an index of impulsive choice (Reynolds, 2006). Several studies have shown that both adult and adolescent cigarette smokers discount more by delay (i.e., perform more impulsively) than their nonsmoking

counterparts (Bickel et al., 1999; Reynolds et al., 2007). However, it is not yet known if the more extreme delay discounting seen in smokers predates their cigarette smoking. Alternatively, cigarette smoking may itself increase delay discounting. Of relevance to this question is research indicating that children of parents who smoke are at increased risk of initiating smoking during adolescence and that this relationship between parent and adolescent smoking is largely genetic in basis (Maes et al., 2006). Methods: The current study compared delay discounting in the biological children of mothers who smoke (n=19; 10 females) to matched children of mothers who had never smoked (n=12, 6 females). Children were 12 or 13 years of age. Delay discounting was also assessed in the mothers. Results: Mothers who smoked had significantly higher cotinine levels (a metabolite of nicotine) than the three other groups (including their own children), which did not differ in level of cotinine. The mothers who smoked also discounted significantly more than the mothers who did not smoke [U(30) = 38.0,  $p < .001$ , one-tail test]. Similarly, the children of mothers who smoked discounted significantly more than the children of nonsmoking mothers [U(30) = 63.5,  $p < .05$ , one-tail test]. Furthermore, delay discounting was modestly correlated between the mothers and their children [rs(30) = .25,  $p < .10$ , one-tail test]. Conclusions: These findings indicate that the children of smokers discount more by delay than the children of nonsmokers, suggesting delay discounting may be an early risk factor for smoking during adolescence. Future prospective research to more specifically explore the relationship between delay discounting and the initiation of smoking is needed to determine the actual risk liability of delay discounting for cigarette smoking during adolescence. Support: None

### **REACTIVE AGGRESSION AND PROACTIVE AGGRESSION IN SUICIDAL IDEATION AND ATTEMPTS**

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Aims: We tested the hypothesis that reactive aggression (RA), but not proactive aggression (PA), confers risk for suicidal behavior. We are aware of no studies of suicidality in substance abusers that directly compared specific measures of RA and PA. Methods: Subjects (n=799) were recruited from residential substance abuse treatment programs. Mean age is 38.4 (+10.2) yrs with 569 (71.2%) men and 230 (28.8%) women, 458 (57.3%) white and 341 (42.7%) black subjects, and 216 (27.0%) with <12 yrs educ. and 583 (73.0%) with at least 12 yrs educ. Primary substance of use is cocaine (338, 42.3%), alcohol (287, 35.9%), and other drug (174, 21.8%). Using suicide questions from the NCS, we created 3 mutually exclusive groups: history of suicide attempt (SA, n=201, 25.2%), history of serious suicidal ideation but no attempt (SI, n=170, 21.3%), and no such history, considered non-suicidal (NS, n=428, 53.6%). The Impulsive-Premeditated Aggression Scale (IPAS) provided continuous self-report scores on RA and PA. Multivariate, multinomial logistic analysis was used to compare the SI and SA groups to NS. Interactions of RA and PA with sex, age, and race were also tested. Covariates were primary substance of use, breadth of drug use, alcoholism severity, depression, sex, age, race, and educ. Results: RA was associated with SI (OR=1.04, 95% CI=1.01-1.08) but not SA. PA was associated with SI (1.14, 1.02-1.26) and SA (1.24, 1.11-1.37), and the interaction of PA and sex in SA was also significant, such that PA was more strongly associated with SA in women. Conclusions: PA may play a role in SA among treated substance abusers, especially among women, for example through its association with reduced sentimentality and/or fear. Because it is less common in women, PA could also serve as a better marker for psychopathology relevant to suicidal behavior. Limitations include the cross-sectional research design and recruitment from a small number of clinical venues. Support: The research was supported by NIAAA (R01 AA016149, Conner).

### **ADOLESCENT PATIENTS WITH SERIOUS SUBSTANCE AND CONDUCT PROBLEMS AND SIBLINGS: DIRECTIVES FOR RETAINED DNA**

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Aims: There is evidence in the general population that race/ethnicity impact directives for future use of retained DNA. There is little information regarding such directives for patients in treatment for substance and conduct problems (SCP) and their siblings in behavioral genetic research. We examined the directives in this sample regarding use of retained DNA and traits that may impact those choices. Methods: 349 SCP patients (age 14-18) and 383 patient siblings (age 14-33) enrolled in a genetic study. In the consent form, participants were given three options for use of retained DNA: 1) only for this specific study, 2) only for genetic studies of substance abuse or related medical problems, or 3) any genetic study. Various demographic factors and other traits were examined in relation to directives. Results: The three response options were combined into two categories: 1) use for any genetic study, or 2) limited use. More patients (57.0%) and siblings (59.8%) selected use for any genetic study. Females were more likely to choose any use ( $p < .02$ ). African-Americans and Hispanics were more likely to choose limited use ( $p < .003$ ). Mean count of across-drug total dependence symptoms were: patients 14.0 and siblings 7.5. Other aspects of substance use will be examined, i.e., onset of regular substance use with and without tobacco, and use of tobacco and other substances. Additional analyses investigating the effect of adjusting for the relationship between siblings and analyses assessing potential combined effects of significant variables will be conducted. Conclusions: These data replicate previous findings that limit the use of retained DNA in

racial and ethnic minorities and extend those findings to this population of SCP patients and their siblings. Other traits analyzed demonstrate that patients in treatment for SCP and their siblings are likely to allow their retained DNA to be used for any study. Support: Support NIDA DA 011015 and DA 012845

### **CHILDREN AS MOTIVATION TO REDUCE HIV RISK: GENDER DIFFERENCES AMONG IDUS IN TREATMENT**

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**Aims:** Studies that examine data from drug-abusing parents typically investigate the impact of parental behavior on their children's well-being (e.g., Suchman, et al, 2007) and focus almost exclusively on the impact of mothers. Other approaches have examined the level of parental involvement among parents in drug treatment and find that a higher level of parental involvement is related to lower levels of addiction severity (Collins, et al., 2003). Recent studies have emphasized the unique role of fathers (e.g., McMahon, et al., 2007) and suggest that the promotion of responsible fathering may serve as a motivational influence for fathers participating in drug treatment. Our aim was to investigate gender differences in HIV risk reduction outcomes among IDUs in treatment. **Methods:** Subjects were 151 IDUs who reported being parents and were enrolled in methadone maintenance. While in treatment, subjects participated in the Community-friendly Health Recovery Program (CHRP; Copenhaver et al., 2007) which is a brief theory-driven behavioral HIV risk reduction intervention tailored for IDUs in treatment. A short HIV risk assessment battery was administered pre- and post-intervention. **Results:** A Time x Gender interaction effect was found for sex-related HIV risk reduction outcomes at post-intervention. Fathers currently living with their children showed significantly greater improvement in social motivation to reduce risk,  $F(1,146) = 6.53, p < .05$ , and marginally greater improvement in personal motivation to reduce risk,  $F(1,146) = 3.49, p = .064$ , and self-efficacy to reduce risk,  $F(1,146) = 3.46, p = .065$ , compared with fathers who were not living with their children while the opposite pattern was revealed for mothers. **Conclusions:** Results suggest that living with children may differentially motivate IDU parents to reduce sex-related HIV risk. Implications of results are explored. Support: Grant support was provided to Michael Copenhaver by Connecticut DPH (DPH Log #2004-154) and NIDA (K23-DA017015).

### **GENDER DIFFERENCES IN PROGRESSION TO DEPENDENCE IN NONTREATMENT-SEEKING ADULT CANNABIS USERS**

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**Aims:** To examine the effect of gender on progression to cannabis dependence and patterns of use. **Methods:** Self-reported, retrospective data on cannabis use patterns were collected by computerized questionnaire from 198 female and 273 male, non-treatment-seeking, adult (>18 years old) cannabis smokers who had made at least one "serious" (self-defined) attempt to quit cannabis use. Gender differences were assessed using chi-square and t tests. **Results:** Men and women were similar in race/ethnicity (80% African-American, 15% white), and age (mean [SD] 31.1 [10.3] years) and reported similar cannabis use characteristics. They used cannabis as marijuana cigarettes (88.7%) and blunts (82%); 71.2% reported lifetime cannabis use > 1000 times; 90.2% met DSM-IV criteria for cannabis dependence (of whom 89.9% met criteria for physiological dependence). Men reported a younger age of first cannabis use (14.2 [2.7] years) than women (15.6 [3.7] years,  $p < .001$ ); initiation of regular use (> weekly) (15.9 [2.9] years) than women (17.5 [4.5] years,  $p < .001$ ); and first cannabis-related problem (18.7 [4.5] years) than women 20.0 [6.1] years;  $p < .05$ ). Though cannabis use milestones occurred at an older age in women, the progression through the milestones was similar for men and women: interval between first and regular use (1.7 [1.9] years vs. 1.9 [2.9] years) and between regular and problem use (2.9 [3.5] years vs. 2.4 [4.2] years). **Conclusions:** These findings suggest important gender differences in the progression of cannabis use milestones that may have implications for prevention and treatment of cannabis dependence. Support: Supported by the Intramural Research Program, NIH, National Institute on Drug Abuse.

### **DEVELOPING MODELS FOR COMMUNITY-BASED RESEARCH: LESSONS LEARNED FROM NIDA STUDIES**

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**Aims:** Community Engagement is a core required component of the new NIH Roadmap Clinical and Translational Science Awards (CTSA). The CTSA aims to transform business as usual at Medical Schools in the US to translate scientific results from the lab to the bedside and ultimately the curbside. However, community engagement is not natural to many investigators, since "community" includes drug abusers, heavy drinkers, criminal offenders, and persons living with HIV/AIDS -- populations many exclude from studies because they are assumed to be difficult to recruit and retain. This presentation describes the CTSA Community Recruitment being initiated at Washington University School of Medicine based on the NIDA Community Outreach Model which Dr. Cottler's group at the EPRG have used since 1989.

How to achieve high rates, as well as high recruitment yield, enrollment yield, and precision, will be discussed, as well as how to customize the model for other community based research initiatives such as the CTSA, and other NIH initiatives. Methods: The community outreach model used CHOWS to recruit respondents from City venues such as Laundromats, beauty salons, grocery stores and the streets. Once recruited, CHOWS linked community members to our NIDA-funded HIV prevention studies. Results: In our most recent study, Women Teaching Women, 5,551 women were recruited for possible enrollment over a 2 year period. Flyers accounted for 6% of recruitment efforts, with street outreach accounting for 85%. Among those initially screened with various efforts, 18% were found to be ineligible upon further screening. Among the 1123 potential eligible's, 983 were screened eligible; however, at the end of recruitment period, 168 could no longer be located, 192 "no showed", 83 were uninterested in participating and 39 began the interview but stopped before it was over. The completed sample was 501 women. Response rates at the 4 and 12 months were over 90%. Conclusions: Efforts are clearly needed for community based recruitment. The NIDA outreach model is one successful approach that can be translated to other fields. Support: NIDA 11622

### **SEXUAL BEHAVIORS AMONG FEMALE METHAMPHETAMINE USERS**

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Aims: The effects of methamphetamine (MA) on women users' sexual behaviors and experiences are examined.

Methods: Using a pilot survey, self-reported sexual behaviors of women MA users who received outpatient treatment were assessed by demographic and drug use factors (N =94; 60.9% Caucasian, 27.2% Hispanic, mean age 32.9 years; 11.9 mean years education; 83% heterosexual, 1.1% homosexual, and 16% bisexual). Average length of MA use was 11.7 years (71.3% smoke, 14.9% inject, 10.6% nasal). Most women (87.2%) reported daily use of MA and prior treatment (60%). Results: Women engaged in sex more frequently when using MA (56.4%). MA use was associated with increased sexual drive (56.4%), sexual performance (50%), and sexual pleasure (55.3%). About 33% indicated participating in unusual sex acts and tended to be preoccupied with sexual thoughts (38%) while using MA. Lesbians and bisexual women had significantly more sex partners in the past 6 months compared to heterosexuals (mean =2.1 vs. 1.3,  $p < .01$ ). Older women (>30) were more likely than younger women to report that MA use enhanced sexual pleasure (61.1% vs. 46.2%,  $p < .05$ ) and their preoccupation with sexual thoughts (34% vs. 17.9%,  $p < .05$ ). Injecting women were different from non-injectors: they had significantly longer histories of MA use (mean =17.4 vs. 10.7 years,  $p < .01$ ) and more previous treatments (mean =3.3 vs. 1.0,  $p < .001$ ); they tended to practice "riskier sex" (57.1% vs. 28.8%,  $p < .10$ ) and be more preoccupied with sexual thoughts (57.1% vs. 22.8%,  $p < .05$ ) while under the influence of MA; they were more likely to report that their sexual thoughts/feelings and behaviors were associated with MA use (57.1% vs. 27.5%,  $p < .05$ ); have more sexual fantasies that triggered MA use (50% vs. 20%,  $p < .05$ ); and have more difficulty with stopping inappropriate or dangerous sexual behavior (35.7% vs. 11.3%,  $p < .05$ ). Conclusions: MA seems associated with sexual behaviors among women MA users. Injecting women in particular are a notable subgroup that may need specialized intervention strategies. Support: Women, Methamphetamine, and Sex NIH/NIDA 1 K01 DA017647-01A2 PI: A. Brown

### **DIFFERENTIAL SUCCESS RATES IN RACIAL GROUPS: RESULTS OF A CLINICAL TRIAL OF SMOKING CESSATION AMONG FEMALE PRISONERS**

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Aims: Non-white smokers have lower smoking cessation rates compared to white smokers and smoking mentholated cigarettes has been suggested as a possible reason for lower success. This study examined smoking cessation rates between white and non-white smokers during a randomized clinical trial and investigated the role of mentholated smoking in cessation. Methods: 250 female prisoners participated in a randomized controlled smoking cessation trial of 10-week group psychotherapy and nicotine replacement. General Estimating Equations (GEE) were used to model smoking cessation across the 12-month follow-up and examined the impact of smoking mentholated cigarettes on quit rates. Results: White smokers had significantly higher smoking cessation rates across time compared to non-white smokers. The interaction between race and smoking menthol cigarettes was not significant, nor was there a main effect for smoking menthol cigarettes, even when controlling for age and baseline smoking rate. When examining the estimated marginal means of smoking cessation across the four groups (white, menthol smokers (n=41); white, non-menthol smokers (n=69); non-white menthol smokers (n=101); and non-white, non-menthol smokers (n=39)) the highest quit rates continued to be observed in the white smokers, regardless of menthol smoking. Conclusions: These results suggest that other smoking behaviors may be important factors in the racial differences observed in this study. Alternatively, more culturally sensitive interventions may be needed that take into account different smoking behaviors of non-white smokers to increase smoking cessation rates in this group. Support: K23DA15774 and product support provided by GlaxoSmithKline.

## **GENDER DIFFERENCES IN THE ASSOCIATION BETWEEN VICTIMIZATION HISTORY AND SUBSTANCE ABUSE WITH REGARD TO PREVALENCE AND RISK FACTORS**

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**Aims:** Differences between men and women in prevalence rates of drug and alcohol abuse have been reported among young adults. Further, significant gender-related differences in the prevalence rates of victimization have been reported. Given the high rate of overlap between substance abuse and interpersonal violence, additional research is warranted to better understand this relation. The current study compared differences between male and female young adults in the prevalence rates of substance abuse and victimization history. In addition, multiple risk factors for substance abuse, including trauma-related factors, are investigated in this large national sample of young adults. **Methods:** The sample consisted of men and women (N=1,750) who participated in the 8-year follow-up of the National Survey of Adolescents, a large epidemiological study initially conducted in 1995. Participants ranged in age between 18-26 (M=22) and 51% were men. Data was collected via structured telephone interviews using Computer Assisted Telephone Interviewing and included assessment of lifetime history of interpersonal violence and past year substance abuse. **Results:** There was a significant difference in the percentage of men and women who met criteria for past year drug abuse (16.5% vs. 5.8%) and alcohol abuse (31% vs. 19%). In general, higher prevalence rates of substance abuse were found among those with victimization histories, with a few exceptions. Significant gender differences in risk factors for drug abuse also were found. Specifically, hierarchical logistic regressions revealed that sexual assault history and age were significant risk factors for women and physical assault history, lifetime PTSD, and age were for men. **Conclusions:** Results suggest that the relation between substance abuse and victimization may differ between men and women and support pursuing more gender-specific approaches to substance abuse prevention and treatment among victims of interpersonal violence. **Support:** CDC and a NIDA Career Development Award

## **PREDICTORS OF EARLY MARIJUANA USE AND SEX IN THE OFFSPRING OF TEENAGE MOTHERS**

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**Aims:** Previous research has shown that a mother's background and the home environment may attenuate the effects of teenage pregnancy on child outcomes. However, no studies have specifically examined the role of drug use on early sexual intercourse in this vulnerable group. Early and current maternal and child substance use were expected to predict marijuana use and early sexual intercourse in 14-year-old offspring of teenage mothers. **Methods:** Mothers were recruited as pregnant teenagers (n= 416; age range= 12-18 yrs; 68% African-American) from an outpatient prenatal clinic and interviewed about pre-pregnancy tobacco (58%), alcohol (82%) and marijuana (39%). Data collection at the 14-year phase is ongoing (n = 187 tested to date). Mothers reported on current substance use (55% smokers, 13% heavy drinkers, 21% marijuana users) and adolescents provided their history of substance use (30% ever smokers, 18% ever drinkers, 20% marijuana users) and sexual activity (16% had sex by age 13). Logistic regression analysis was used to predict ever marijuana use and early sexual intercourse. **Results:** Boys, ever tobacco users, and more aggressive adolescents were significantly more likely to have used marijuana by age 14. Neither early maternal nor current maternal substance use significantly predicted an increased likelihood of marijuana use in adolescent offspring. Sex by age 13 was significantly predicted by child tobacco and marijuana use. Other significant predictors of early sex were: African-American race, lower family income, and lower maternal age at first sex. **Conclusions:** It is important to determine why some offspring of teenage mothers are resilient, whereas others are at greater risk for early drug use and sexual behavior than children of adult mothers. In the current study, there was evidence that early tobacco use may be a marker of future risk for drug use and sexual risk-taking. The results of the regression model on sex suggest that factors from the mother's background and home environment are also important in identifying children at risk for early sexual intercourse. **Support:** NIDA 09275 - PI: MC; NIAAA T32 07453 - PI: MC; University of Pittsburgh

## **PROGESTERONE ATTENUATES ACUTE LOCOMOTOR RESPONSES BUT DOES NOT ALTER COCAINE-INDUCED BEHAVIORAL SENSITIZATION IN FEMALE RATS**

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**Aims:** In clinical and pre-clinical studies, progesterone has been shown to attenuate cocaine-induced subjective and reward effects and cocaine-induced locomotor responses. This study aimed to determine if chronic and acute progesterone administration reduces cocaine induced motor sensitization in intact male and female rats. **Methods:** To this end, Fischer rats (8 weeks, N = 217) were divided into two experimental conditions. For acute progesterone treatments, rats received 13 days of saline and hormone vehicle and on day 14 a single dose of progesterone (500ug; s.c.) or vehicle (sesame oil) four hours before saline or cocaine (20 mg/kg; i.p.) administration. For chronic progesterone treatment, rats received 14 days of progesterone (500 ug; s.c. four hours before drug treatment) and saline or cocaine (20 mg/kg; i.p.). Psychomotor responses were recorded using an automated computerized apparatus for 1 hour post drug treatment. **Results:** Overall, in both males and females, cocaine increased psychomotor activation. Acute progesterone

administration significantly reduced total locomotor counts in female rats receiving acute cocaine [F (6, 73) = 6.8493, p= 0.0362] but had no effects on respective behaviors under a chronic cocaine administration schedule. In male rats, progesterone administration had no effect on total locomotor behaviors after either chronic or acute cocaine administration. Conclusions: These findings are in accord with previous findings that cocaine-induced behaviors are attenuated by progesterone in female rats. These results further suggest that, unlike female rats, progesterone plays a limited role in the cocaine induced psychomotor responses of male rats. Support: Supported by: SCORE 506-GM60654, MBRS-RISE GM60665, DA00325 and SNRP

### **INCLUSION OF WOMEN AND MINORITIES IN CLINICAL TRIALS OF FDA-APPROVED PHARMACOTHERAPY FOR SMOKING CESSATION**

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Aims: Our goal was to determine whether changes occurred in the literature on FDA-approved pharmacotherapies for smoking cessation following passage of the 1993 NIH Revitalization Act, which required the inclusion of women and minorities in NIH-funded clinical research. Methods: Reports were searched for the gender and racial/ethnic breakdown of their samples and for subgroup analyses. We examined 3 dependent variables: 1) inclusion or non-inclusion of gender or ethnic/racial background; 2) inclusion or non-inclusion of gender or ethnic/racial subgroup analyses and 3) the percentage of females and minorities enrolled. Three main comparisons were of interest: 1) between trials beginning recruitment before 1994 and from 1994-on, 2) by funding source (NIH vs. pharmaceutical) and 3) by drug type (nicotine replacement vs. bupropion). Univariate analyses were conducted comparison-by-comparison, followed by multiple regressions, which included all variables. Results: Forty five of 78 trials (57.7%) reported ethnic/racial breakdown. Significant improvement was observed in the percentage of minorities in trials beginning enrollment from 1994-on (M = 16.1%) compared to trials beginning earlier (M = 10%). The proportion of minorities in NIH-sponsored trials (M = 16.8%) was significantly higher than in pharmaceutical trials (M = 8.1%). The mean proportion of female participants declined from 1994-on (47.2%) compared to earlier (53.9%). Few studies reported racial subgroup analyses. Gender analyses were more common. Conclusions: Although an improvement with regards to inclusion of ethnic minorities was observed after the 1994 NIH mandate, ethnic minority inclusion remained low. Further improvements may be realized if journals required manuscript authors to provide gender and minority subgroup analyses and by enhancing minority recruitment strategies. Support: Supported by NIH grants K05-AA014715, P50-AA15632, T32- DA007238 and T32-AA-01549602. NIH had no role in the design or conduct of the study. The views expressed are solely those of the authors and do not necessarily represent the views of NIH.

### **RANDOMIZED CLINICAL TRIAL OF CONTINGENCY MANAGEMENT AMONG PARENTING COCAINE-DEPENDENT AFRICAN AMERICAN FEMALE RECOVERY HOUSE RESIDENTS**

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Aims: This study assessed the feasibility of implementing contingency management within a self-run, self-supported recovery house program for women. Contingency management was operationalized using rent vouchers in conjunction with treatment as usual in the recovery houses. Hypothesis: A greater proportion of subjects randomized to the treatment group than those randomized to the control group will submit at least 27 cocaine-metabolite negative urine samples during the 12-week study period. Methods: Subjects were 50 human African-American cocaine-dependent postpartum and parenting women recruited from nine recovery houses in North Carolina. They were in the after-care phase of the recovery process. Twenty-six of the women were randomly assigned to the control group, and 24 were randomly assigned to the treatment group. Written informed consent was obtained and an initial interview was conducted by a graduate research assistant. In addition to exposure to the usual recovery house protocol for 12 weeks, subjects' urine was tested for cocaine metabolites three times per week for 12 weeks. The control group was given a \$5.00 gift card per urine sample submitted, regardless of test outcome. The treatment group was credited \$35.00 towards their weekly rent per cocaine-metabolite-negative urine sample submitted. Results: All urine samples tested negative for cocaine metabolites. Chi-square and Fisher's Exact tests indicated that women in the treatment group were significantly more likely than women in the control group to submit at least 27 cocaine-metabolite-negative urine samples during the 12 weeks of the study (83% and 54%, respectively; p<.05). Conclusions: The results supported the hypothesis of the study and the applicability of contingency management to maintaining abstinence in the aftercare phase of the recovery process among a hard-to-reach and hard-to-treat population of substance abusers: cocaine dependent African American postpartum and parenting women living in community-based recovery houses. Support: 5K23DA16638-5.

## **READINESS TO CHANGE AS A PREDICTOR OF DRUG-RELATED BEHAVIORS IN A SAMPLE OF RURAL FELONY PROBATIONERS**

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**Aims:** Although research on the application of the transtheoretical model (Prochaska & DiClemente, 1984) has been met with generally favorable results, relatively little attention has been paid to the influence of pre-existing characteristics, such as cultural background and criminal justice experience, on readiness and change across time. The goal of the current study is to apply the more general transtheoretical framework to the examination of common drug-related behaviors among rural substance-using probationers in the state of Kentucky. **Methods:** Two waves of data were gathered across a 3-month interval. For both waves, data regarding demographic characteristics, previous substance abuse treatment, readiness to change, substance use frequency, and criminal behavior was collected using face-to-face interviews. **Results:** Regression analyses showed that increases in individuals' readiness to change from baseline to 3-month follow-up were accompanied by reductions in marijuana use ( $\beta = -.13$ , S.E. = .01,  $p < .01$ ), possession of drug related paraphernalia ( $\beta = -.10$ , S.E. = .34,  $p < .05$ ), and driving under the influence of drugs or alcohol ( $\beta = -.14$ , S.E. = .07,  $p < .01$ ) across that same period. Importantly, these effects were also independent of the influence of demographic characteristics such as age, gender, race, marital status, number of children, type of probation offense, and treatment history. **Conclusions:** Rural drug users' readiness to change predicts positive outcomes with regard to commonly committed drug-related offenses. However, because of geographical limitations and other associated factors (e.g., transportation, cultural norms), rural drug abusers may experience more difficulty maintaining the recovery process once it is initiated. To offset these complexities, public policy makers and treatment providers must take a more structured and consistent approach toward increasing the availability of health related services and anti-drug messages in rural areas. **Support:** This research was supported by grant #R01DA11580 from the National Institute on Drug Abuse. The opinions expressed are those of the authors.

## **PRENATAL COCAINE EXPOSURE AND INFANT STRESS REACTIVITY**

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**Aims:** This study examined the association between prenatal cocaine and other substance exposure on infant stress reactivity at 7 months of age. A related goal was to examine if child gender, parenting, or care giving instability moderated this association. **Methods:** Participants consisted of 168 mother/infant dyads participating in an ongoing longitudinal study of prenatal cocaine exposure (87 cocaine exposed, 81 non-cocaine exposed). Prenatal substance exposure was ascertained by a combination of self-report, hair, and urine toxicology assessments at delivery. Infant saliva samples were collected at 4 time points during lab assessments at 7 months before and after affect eliciting procedures. Cortisol reactivity was calculated by taking the difference between the peak response and baseline. **Results:** Results indicated that cocaine exposed infants had significantly higher cortisol values at time 3 (20 minutes after anger/frustration episode), and marginally higher cortisol values at time 4 (40 minutes after anger/frustration episode) compared to those in the control group. Child gender and care giving instability moderated the association between cocaine exposure and cortisol reactivity. Boys exposed to cocaine had significantly higher levels of cortisol reactivity compared to boys not exposed to cocaine. There was no association between cocaine exposure and cortisol reactivity among girls. There was no association between prenatal substance exposure (dummy coded variable of no substance exposure vs. any substance exposure) and cortisol reactivity at lower levels of care giving instability. However, at higher levels of care giving instability, infants with prenatal exposure had higher levels of cortisol reactivity. **Conclusions:** Results indicate specific effects of prenatal substance exposure, including cocaine, on infant stress reactivity, and highlight the role of infant gender and care giving instability in moderating these associations. **Support:** National Institute on Drug Abuse grant # 1R01 DA13190

## **THERAPIST EFFECTS IN THE TREATMENT OF PREGNANT SUBSTANCE ABUSERS: CLINICAL TRIALS NETWORK #13**

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**Aims:** Two robust findings in substance abuse research are that evidenced-based treatments produce relatively positive outcomes and, even in manual-guided therapies, therapist effects are generally large (e.g., PMRG, 1998). In the absence of treatment main effects (Winhusen, et al., in press), this study investigated whether treatment outcomes (TAU versus MET) among pregnant substance abusers could be attributed to therapist effects. **Methods:** 200 outpatient pregnant substance abusers were randomized to TAU or MET for pregnant substance users (MET-PS) The active treatment phase of the study lasted 4-weeks (n = 162 completed), and assessments were conducted at baseline, 4 weeks, 1 month follow-up (FU), and 3 months FU. Seven therapists (4 TAU, 3 MET-PS) had 10 or more clients assigned to them, a minimum number of clients deemed essential for deriving stable estimates of therapist effects. **Results:** Controlling for baseline substance use frequency, a repeated measures MANOVA including all 7 therapists indicated that at the end of treatment and at 1 and 3 month FU, client substance use was not associated with therapist



assignment. Within therapy group analyses produced similar null findings. HLM analyses were then conducted on the full sample to determine if the substance use reduction rate over FU was homogeneous, both by individual and therapist. Overall, in the unconditional model the rate of decline in days substance use was strong ( $b = -.85, p < .001$ ), but such declines did not follow a common trajectory ( $P(2(146) = 620.49, p < .001)$ ). Inclusion of therapist assignment as a level-2 variable in the conditional model was not significant. Conclusions: Findings are atypical in that we did not observe large differences in the effectiveness of therapists. Perhaps this finding may be partially explained by the nature of this population: pregnant substance abusing women may be particularly motivated to change their substance use because of their pregnancy status. Support: Supported by NIDA Clinical Trials Network

### **BINGE DRINKING AND NOT HEAVY REGULAR DRINKING RELATES TO PREGNANCY RISK DUE TO INEFFECTIVE CONTRACEPTION**

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Aims: In order to prevent alcohol-exposed pregnancy (AEP) and associated neurodevelopmental deficits, we must better understand behaviors and characteristics that put women at risk, and the specific patterns of drinking that relate to ineffective contraception. Previous studies showed that many women are unaware they are at risk for AEP. Methods: 70 women of childbearing age (18-44 years) at risk for AEP volunteered for an intervention study. AEP risk was defined as risky drinking (consuming 4 or more standard drinks in one occasion or an average of 8 or more drinks per week) and being at risk for pregnancy due to recent sexual intercourse without effective contraception. Women provided a 90 day Time Line Follow Back on drinking and sexual activity and completed an interview about sexual history, drinking and drug use. Fisher's exact test compared differences between groups on nominal variables and t-tests and ANOVAs were used on continuous variables. Results: A statistically significant difference ( $p=0.043$ ) was found in contraception effectiveness between Frequent Bingers (FBs) and Non Frequent Bingers (NFBs). A FB binges on at least 60 percent of drinking days. FBs used contraception ineffectively for 70% of intercourse episodes compared to 59% for NFBs. FBs drink 298 drinks compared to 90 for NFBs over 90 days ( $p=0.000$ ). A statistically significant difference ( $p=0.000$ ) was found in drinking levels (light, moderate or heavy) between FBs and NFBs. FBs are mainly heavy drinkers (66%) where NFBs are mainly light drinkers (59%). However, bingeing, but not drinking levels related to contraception effectiveness. Conclusions: The frequency with which a woman binge drinks is more related to contraception effectiveness rather than is her total alcohol consumption even among heavy drinkers. Women who binge drink may be a hidden population at risk for AEP. Support: NIH R01 AA014356

### **FACTORS PREDICTING THE ONSET AND DISCONTINUITY OF PRESCRIBED BENZODIAZEPINE LONG-TERM USE**

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Aims: Correlates of long-term BZD use have been explored in several studies, but few have examined the process prospectively. In this study, we extend this focus to incident BZD users, and to examine individual, pharmacological, and service provider's factors predicting the onset and discontinuity of long-term use (LTU). Methods: Using a random sample of 187,413 National Health Insurance Program enrollees on January 1st 2000, we retrieved data of ambulatory and pharmacological services utilized between 2000 and 2002. Annual LTU was defined by 180 or more prescription days of BZDs within any given year. The onset of BZD LTU in 2001 was identified only among those who had no BZD prescriptions in prior year; and the discontinuity of BZD LTU was defined by no or short-term use of BZDs after two consecutive years LTU. Logistic regression analyses were performed to estimate the strength of association. Results: Individual factors such as male gender, older age, and having physical or mental disorders significantly predicts the onset of prescribed BZD LTU. People who received medical services in the department of psychiatry ( $aRR=2.75$ ) or in the medical center ( $aRR=5.87$ ) were more likely to become long-term BZD users. Individuals prescribed BZDs in forms of multiple agents, short-acting, and hypnotic indication were at 2 to 5 times greater risk to become long-term users once started. With respect to discontinuity of prescribed BZD LTU, the effects of pharmacological factors seem more salient as compared to individual and services provider factors. Conclusions: Our study highlights the importance of individual, services provider, and pharmacological factors in determining the onset of prescribed BZD LTU whereas for the discontinuity of prescribed BZD use only pharmacological factors appeared to be predictive. Future strategies for identifying individual factors and modifying prescription behaviors may be considered to reduce possible negative consequences of BZD LTU. Support: NHRI MDSP-01 and NHRI MOSP01-001

## **POTENTIATION OF CUE-INDUCED REINSTATEMENT OF COCAINE SEEKING IN FEMALE RATS BY YOHIMBINE**

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**Aims:** Clinical research has shown that gender differences exist in cocaine dependence. Similarly, female rats exhibit higher response rates during cocaine self-administration and enhanced cocaine-primed reinstatement of drug-seeking. However, little evidence exists regarding sex differences in reinstatement behavior following exposure to stress or drug-associated cues, two factors that trigger drug craving and relapse in abstinent cocaine users, or whether an interaction between these factors can enhance cocaine-seeking during relapse. To test this hypothesis, we assessed the effects of the anxiogenic  $\alpha$ 2-noradrenergic receptor antagonist, yohimbine, on reinstatement of cocaine-seeking in rats either in the presence or absence of cocaine associated cues. **Methods:** Sprague-Dawley rats were trained to lever press for intravenous cocaine (0.5 mg/kg/infusion) paired with the presentation of a light-tone stimulus cue for 10 days. Responding was then extinguished in the absence of reinforcement. Thirty min prior to reinstatement of cocaine-seeking either in the presence or absence of the previously cocaine-paired stimulus, rats received an injection of yohimbine (1.25 or 2.5 mg/kg, IP) or vehicle. **Results:** Yohimbine during the no cue test condition resulted in reinstatement of cocaine-seeking behavior ( $p < 0.05$ ), an effect that was significantly greater in female rats. While cues alone produced comparable cocaine-seeking in both male and female rats ( $p < 0.05$ ), yohimbine pretreatment in combination with the cues resulted in a supra-additive effect, with female rats demonstrating greater yohimbine+cues reinstatement. **Conclusions:** Thus, while there are no apparent sex differences in response to drug-paired cues, exposure to a stressor alone, or in combination with cocaine-associated cues, resulted in greater reinstatement in female rats. Overall, these results suggest that stress enhances the saliency of drug-associated cues and that the impact of stress activation on drug-paired stimuli may potentiate relapse risk in abstinent drug users, especially in females. **Support:** Supported by NIH grant P50 DA16511 and 1K12ZDH55885-01

## **SUBSTANCE USE AND SEX TRADE AMONG SOUTH AFRICANS**

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**Aims:** The importance of understanding the relationship between sexual behavior and substance use is underscored by the high rates of sexually transmitted diseases and HIV found among substance users and their partners. Understanding the intersection is particularly relevant to HIV prevention in South Africa given: (1) 20% of the population is HIV positive with heterosexual sex accounting for the majority of cases coupled with (2) rising heroin and cocaine use rates. The purpose of the current study is to identify patterns in substance use associated with engaging in transactional sex among a sample of 400 South African non-injection drug users enrolled in the Neurobehavioral Study of HIV and hepatitis A, B, and C. **Methods:** Sequential logistic regression was employed to examine the association between substance use behaviors and transactional sex. **Results:** Approximately 50% of the sample was female, 25% graduated high school and less than 5% was employed. One third of the sample tested positive for marijuana, heroin and cocaine; 37% participated in transactional sex; and 32% tested positive for HIV/AIDS. Females were 14 times as likely to be involved in sex trade (AOR = 14.4; 95% CI = 7.82-26.63). Substance use to cope was associated with participating in transactional sex (AOR = 3.4; 95% CI = 1.9-6.14). Polysubstance users were 2.5 times more likely to be involved in transactional sex (AOR = 2.21; 95% CI = 1.31-4.79). Persons engaging in transactional sex were almost 3 times as likely to test positive for HIV (AOR = 2.7; 95% CI = 1.68-4.30). **Conclusions:** Our substance use findings are consistent with recent data suggesting the rising rates of polysubstance use. Given the low SES which characterizes the sample, it is likely the participants experience stress related to social and economic deprivation. Almost half adopted deleterious coping strategies, such as, the use of drugs to cope, which in turn, places them at increased risk for HIV through engaging in transactional sex. Findings suggest intervention efforts should focus on fostering educational achievement and employment skill and salubrious coping strategies. **Support:** NIDA RO1DA14498

## **IDENTIFICATION OF THE ENZYMES METABOLIZING BUPRENORPHINE IN PRETERM HUMAN PLACENTAS**

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**Aims:** Buprenorphine (BUP) is used in treatment of the pregnant opiate addict. In term placenta, microsomal cytochrome P450 19 (CYP19/aromatase) was identified as the major enzyme responsible for the dealkylation of BUP to norBUP. BUP is also metabolized by preterm placentas but the activity of CYP isozymes vary between individuals and with gestational age. Therefore, the participation of enzymes other than CYP19 in the metabolism of BUP could not be ruled out. The aim of this investigation was to identify the major CYP isozyme(s) responsible for BUP metabolism in placentas of different gestational ages. **Methods:** Placentas were obtained from preterm deliveries, microsomal fractions prepared from each and then grouped according to the following gestational ages: late 2nd trimester (17-26 weeks), early 3rd (27-33 weeks) and late 3rd (34-37). Monoclonal antibodies, raised against the following human CYP isoforms were

utilized to investigate the inhibition of BUP metabolism by each pool: 2C8, 2C9, 1A2, 2E1, 2C19, 2A4, 2D6 and 19 (aromatase). The amount of norBUP formed was determined by LC-MS. Results: Antibodies against CYP 2C9, 1A2, 2E1, 2C19, 3A4 and 2D6 did not inhibit BUP metabolism by any of the preterm placental groups. However, antibodies against CYP2B6 and 2C8 caused a slight decrease in norBUP formation in placentas of early gestational age only. The inhibition of BUP metabolism by antibodies against CYP19 increased with gestational age (~50% for pools of 2nd and early 3rd trimesters and 80% for the late 3rd). These results suggest that CYP19 becomes the major enzyme responsible for BUP metabolism around the late 2nd trimester of pregnancy through term as previously demonstrated. Conclusions: In conclusion, it appears that BUP and methadone are metabolized by placental CYP 19 during gestation. However, in early gestation CYP2B6 and 2C8 may also participate in BUP biotransformation. Support: National Institute of Drug Abuse. MSA

### **AN EXAMINATION OF DRUG CRAVING OVER TIME IN ABSTINENT METHAMPHETAMINE USERS**

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Aims: Although methamphetamine (MA) dependence is a rapidly growing global concern, surprisingly little research has examined the trajectory of craving in individuals who are attempting to reduce their drug use - an important question for users who would like overcome MA addiction. The aim of this study was to examine changes in MA craving during abstinence from use. We hypothesized that craving would decline with increased time of abstinence and that the rate of decline would be independent of age, race, and gender. Additionally, we predicted that the rate of decline would be greater for more frequent users and for intravenous (IV) users and smokers as compared to those who insufflated as their usual route of administration. Methods: Participants included 857 outpatients (50% men, 50% women) receiving psychosocial treatment for methamphetamine dependence as part of the Center for Substance Abuse Treatment Methamphetamine Treatment Project. Craving was assessed on a 0-100 scale and abstinence was assessed by self-report and urine toxicology; assessments were made weekly. The majority of participants were of Caucasian (65%) or Hispanic descent (11%) and the mean age of the sample was 33 years old. The most common route of MA use was smoking (58%). Results: We estimated a 2-level unconditional linear growth model and found that craving decreased by 1.69 points per week of consecutive abstinence ( $p < 0.002$ ). Craving no longer differed significantly from zero after 12 weeks of abstinence. Men had higher levels of craving than women throughout treatment ( $p = 0.04$ ), but rate of decay was independent of gender as well as age, race, and treatment type. The hypotheses that rate of decay would be greater for more frequent users and for IV users and smokers as compared to snorters were not supported. Conclusions: Craving for MA declines as time abstinent from MA increases. The findings underscore the importance of rapid intervention for ongoing MA use. Support: DA18179

### **ETHNIC DISPARITIES IN HEALTH AND HEALTH-RELATED BEHAVIORS AMONG HOMELESS WOMEN**

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Aims: Limited empirical research has focused on ethnic differences in the health of homeless women. Using a probability sample of homeless women in Los Angeles, we employ the Behavioral Model for Vulnerable Populations to examine the predisposing, enabling, and need factors associated with health and health-related behaviors in this population. Methods: A community-based probability sample of 974 homeless women in 66 Los Angeles County shelters and meal programs underwent a one hour structured face-to-face personal interview. Results: Numerous ethnic differences in the correlates of health and health-behavior exist among homeless women. White women are especially vulnerable to poor health, reporting more gynecological symptoms, limitations on physical functioning, history of drug and alcohol abuse, and history of psychiatric hospitalization. White women's experience of homelessness is also more severe compared to African Americans and Hispanics; White women had been homeless longer on average and reported more exits from homelessness. No significant ethnic differences exist in key sociodemographic factors including income, health insurance coverage, work status, or receipt of food stamps. Conclusions: The experience of homelessness differs by ethnicity, as do the correlates of health and health related behaviors. Notably, White women in this population experience poorer health than African American and Hispanic women on a number of measures. These ethnic differences must be considered when using the Behavioral Model for Vulnerable Populations to examine health outcomes. While most homeless women have health disparities, our findings that white homeless women had the greatest disparity on many measures suggest that this subgroup also needs to be targeted by program planners and policy makers to improve their health and access to care. Support: NIDA NIAAA AHRQ Robert Wood Johnson Foundation

## **PREDICTORS OF SOCIAL STABILITY AMONG DRUG USERS AND NON-DRUG USERS IN BALTIMORE CITY, MARYLAND**

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**Aims:** Few have sought to understand the range of social challenges among urban residents and determine the extent to which this varies by drug use. This research sought to measure social stability as an index of cumulative social disadvantage and determine independent predictors of stability among drug users (DU) and non-drug users (NDU). **Methods:** Data are from comprehensive baseline interviews with low-income urban women and their social network members (n=636 females and 179 males) enrolled in an HIV prevention project in Baltimore, MD. Bivariate t-tests and regression analyses were conducted for the full sample and stratified by past six-month heroin or cocaine use (DU n=531 vs. NDU n=284) and gender. Social stability was measured as a sum score of housing, employment, income, jail and main partner relationship in the past six months, with a high score indicating greater stability (range 0-5). **Results:** The mean social stability score was significantly lower among DU compared to NDU (2.7, SD: 1.1 vs. 3.09, SD: 1.1,  $p < 0.001$ ). Social stability in DU and NDU was positively associated with male gender, age, education, and living with children, and negatively associated with depression. Type of drug, mode of drug administration and HIV status were not significant in multivariate models. In gender-specific models, age and living with children were only significant for women, and education was only significant among men. **Conclusions:** Although DU had lower social stability scores than NDU, similar factors predicted social stability in both groups. These findings support the need to better understand the dimensions and implications of social stability among DU and NDU and implement programs to address structural challenges among urban residents. **Support:** This research was supported by the National Institute of Mental Health, R01 MH66810-03 and 5 F31 MH073430-03.

## **PSYCHOBIOLOGICAL CORRELATES OF CHILDHOOD NEGLECT AND PARENTAL CARE PERCEPTION IN COCAINE ADDICTS**

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**Aims:** To investigate homovanillic (HVA) and prolactin (PRL) plasma levels, as expression of possible changes in dopamine function, ACTH and cortisol plasma levels, as measures of HPA axis function, and concomitant psychiatric symptoms profile in abstinent cocaine addicts, in relation to childhood history of neglect and poor parental care perception. **Methods:** 60 abstinent cocaine dependent patients, and 60 controls were submitted to psychiatric assessment (DSM IV criteria). All patients and controls completed a range of diagnostic instruments to evaluate psychiatric symptoms frequency and aggressiveness levels (SLC-90, BDHI, WURS) and to retrospectively investigate parent-child relationships (CECA-Q, PBI). Blood samples were collected to determine HVA, PRL, ACTH and cortisol basal plasma levels. Cocaine addicted individuals showed significantly lower HVA, and higher PRL, ACTH and cortisol basal levels respect to controls. **Results:** In particular, neuroendocrine changes characterized cocaine addicts with childhood history of neglect and low perception of parental care. Obsessive-compulsive, depression and aggressiveness symptoms have been found related to poor parenting measures, inversely associated to HVA levels and directly associated to PRL, ACTH and cortisol levels. Similarly, attention deficit hyperactivity (ADHD) measures at WURS were found directly related to neglect measures and inversely related to HVA plasma values. **Conclusions:** These findings suggest the possibility that childhood experience of neglect and poor parent-child attachment may partially contribute to a complex neurobiological derangement including HPA axis and dopamine system dysfunctions, playing a crucial role in addictive, affective and ADH disorders susceptibility. **Support:** Univ. Rome, Univ. Bologna, Public Health System -Add. Treatment Centre, Parma

## **GENDER DIFFERENCES IN PROBLEM GAMBLING AND COMORBID SUBSTANCE USE BEHAVIORS IN THE CANADIAN GENERAL POPULATION**

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**Aims:** Problem gambling is a serious public health concern in Canada that often co-occurs with drug problems. This study examines gender differences in the comorbid association between subtypes of gambling behaviors as defined by the Canadian Problem Gambling Index (CPGI) and substance use, controlling for demographics and other gambling characteristics. **Methods:** Past year gamblers (n=9555) were identified using the CPGI dataset. **Results:** Past year gamblers were categorized using the CPGI: non-problem gamblers (84.8%), low-risk (10.4%), moderate risk (3.8%) and problem gamblers (1.0%). The prevalence of reporting gambling while drunk or high in the past year was higher among past year gamblers belonging to more severe CPGI categories [non-problem gamblers (3.9%), low-risk (13.9%), moderate-risk (18.3%), problem gamblers (35.7%)]. The same trend was observed for those who admitted to having an alcohol or drug problem. Two thirds of the problem gamblers were male, in the mid 30's to mid 60's, and had some post-secondary or less education. Gamblers who reported having an alcohol or drug problem were 3 times more likely to be

problem gamblers (vs. non-problem gamblers). Moreover, gambling while drunk or high was associated with an increasing odds of being in the more severe gambling groups compared to non-problem gambling group [3.4 (2.5, 4.8) moderate risk, 8.9 (5.2, 15.1) problem gambler]. Associations held true in both males and females, and women were less likely to report problem gambling (0.8% vs. 1.3% in males) but, interestingly, the magnitude of the comorbidity with substance use did not differ across genders. Conclusions: This study highlights the increased comorbidity between problem gambling and substance use in the Canadian general population. The magnitude of the comorbidity is similar for both genders, but further investigation is needed to examine whether gender differences exist for distinct drug and alcohol use patterns. Support: Supported by the Ontario Problem Gambling Research Centre (OPGRC, P.I.: Dr. Martins).

#### **NICOTINE, BUT NOT VARENICLINE, PRETREATMENT SYNERGISTICALLY ENHANCED AMPHETAMINE-STIMULATED LOCOMOTOR ACTIVITY IN RATS**

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Aims: Nicotine and other stimulants are used often in close temporal proximity to each other and have been reported to enhance each others' effects, suggesting that these drugs have acute interactions. The present study investigated the acute interactions of the nicotinic receptor agonists, nicotine and varenicline, with amphetamine on locomotor activity in rats. It was hypothesized that pretreatments with either nicotinic receptor agonist would enhance amphetamine-stimulated locomotor activity and that the partial agonist varenicline would produce less augmentation than the full agonist nicotine. Methods: Female Holtzman rats (N=120) were implanted with telemetry devices (MiniMitter/Respironics) to measure continuously locomotor activity in the home cage following drug treatments. Results: Nicotine, but not varenicline, administered as a 2 h pretreatment synergistically enhanced locomotor activity stimulated by amphetamine challenge. In addition, the nicotinic antagonist mecamylamine and varenicline attenuated nicotine-induced enhancement of amphetamine-stimulated activity. Conclusions: These results demonstrated that, similar to clinical studies, sequential administration of nicotine and amphetamine potentiated drug responses. Furthermore, nicotinic receptor activation by a full agonist was required to enhance the effects of amphetamine, suggesting that smoking cessation therapeutics such as varenicline may not enhance the effects of abused stimulants. Finally, varenicline antagonized the effects of nicotine consistent with its partial agonist activity. Support: These studies were supported by the MICH Pilot and Collaborative Grant Program and the United States Public Health Service Grant T32 DA007268.

#### **OUTCOMES OF SUBSTANCE ABUSE TREATMENT FROM THE CALIFORNIA OUTCOMES MEASUREMENT SYSTEM**

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Aims: This analysis examines outcomes of treatment for substance abuse from a statewide perspective. Data are from the first evaluation of the new California Outcomes Measurement System (CalOMS). Analysis focused on selected outcome domains (from the National Outcome Measures), including measures of frequency of use of primary and secondary substances, family conflict, hospital use, IV drug use, arrests, and days worked. Hypotheses include: 1) positive outcomes will be observed; 2) there will be differences in outcomes by selected client and treatment characteristics (e.g. gender, age, ethnicity, primary drug, type of and time in treatment). Methods: Generalized regression models for repeated measures assessed change from admission to discharge across episodes of continuing care ending in fiscal year 2006-07. Analyses included nearly 150,000 episodes. Results: The client sample was 64% male/36% female, 44% non-Hispanic White, 14% African-American, 31% Hispanic, 11% other. Primary drug was: 37% methamphetamine, 19% alcohol, 15% marijuana, 16% opiates, 10% cocaine, and 3% other. Results showed substantial decrease in frequency of primary drug use, to about 1/2 of pre-treatment levels (from an overall average of 10 days to 5 in the past 30 days). Number of days of work increased significantly; and decreases occurred in family conflict, emergency room visits, IV drug use, and number of arrests. No significant difference between men and women was seen in change in primary substance use; slight differences were observed by age, ethnicity, primary drug, and type of service. Conclusions: Results indicate generally positive effects of treatment, measured by change from admission to discharge. Results may identify areas for future expansion of specialized services for subpopulations of treatment clients and will form a basis for future modification of the statewide system to improve its utility in planning and delivering substance use treatment. Support: Contract #06-00216 with CA Dept. of Alcohol & Drug Programs

#### **A LATENT CLASS ANALYSIS OF PRESCRIPTION OPIOID ABUSE IN THE NATIONAL ADDICTIONS VIGILANCE INTERVENTION AND PREVENTION PROGRAM**

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Aims: Abuse of prescription opioids has been linked to health problems, psychiatric history, and poor access to therapy, among other things. To determine prevalence, predictors, and covariates of prescription opioid abuse typologies, we conducted a latent class analysis. We hypothesized that there would be >3 classes of prescription opioid abusers and that sex, age, and race would contribute to the definition of class. Methods: Data from November 2005-September 2007 were

obtained from ASI-MV® Connect, a national database of self-reported data on patients admitted to substance abuse treatment. The sample had 1921 illicit (non-medical) users of prescription opioids from 82 facilities; 47% were women. Latent class analysis was conducted on 24 binary indicators of prescription opioid abuse class; covariates were sex, age >35, and race. Results: We detected 4 classes of prescription opioid abusers of sizable prevalence. a) Self-medicators with multimorbidity (30.9%) had psychiatric, chronic medical and pain problems, and substance abuse issues, whose conditions were largely untreated; b) prescribed misusers (21.4%) had pain and recent medical problems and received prescribed pain medication for providers; c) comorbid abusers (26.6%) had profound psychiatric problems and emotional abuse histories, but no chronic medical issues; and d) healthy abusers (21.1%) had no medical, pain, or psychiatric problems and no abuse history. The final model was interpretable, had adequate entropy (.86), and minimized measures of fit (AIC, BIC) vs. models with >4 classes. Classes a and b were significantly older than c and d; classes a and c had more females whereas class b had more men; race was not a significant covariate for any class. Conclusions: Distinct profiles of prescription opioid abusers suggest a range of typologies of abuse. A better understanding of abuse etiologies can help target prevention and treatment efforts. Support: Supported by Alpharma Pharmaceuticals LLC, Endo Pharmaceuticals, and a grant from the National Institute on Drug Abuse (NIDA).

### **TREATMENT ENGAGEMENT AS A MEDIATOR OF OUTCOME IN THE WOMEN'S RECOVERY GROUP STUDY**

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Aims: In a Stage 1 trial, women enrolled in the Women's Recovery Group (WRG)(n=29) had reductions in mean days of substance use and drinking days at 6 months follow-up while women in mixed-gender Group Drug Counseling (GDC) (n=7) did not. We investigated ancillary treatment engagement as a mediator of outcome. Methods: We used the Treatment Services Review (TSR) and Monthly Self-Help Questionnaire (MSH) to determine services use at baseline, treatment, and 6 months follow-up. Results: At baseline, women in GDC used more day treatment days than those in WRG [5.7 (s.e.=2.17) vs 1.4 (se=0.49), p=0.005]. Women in WRG had a greater number of individual sessions in treatment [2.57 (se=0.19) for WRG vs 1.62 (se=0.41) for GDC, p=.038] and during follow-up [2.33 (se=0.17) for WRG and 1.07 (se=0.36) for GDC, p=0.002] than those in GDC. Women in GDC used more sessions of self-help in treatment [5.01 (se=0.85) for WRG and 8.28 (se=1.81) for GDC, p=0.10] and in follow-up [5.12 (se=0.81) for WRG and 8.88 (se=1.72 for GDC, p=0.04] than those in WRG. Across both treatments, use of residential services during treatment was associated with fewer drinking days [mean number decreased drinking days = 5.4 (se=2.43), p=.028] and fewer substance use days [mean number decreased substance use days = 7.47 (se=3.47), p=0.03] during follow-up. For those in WRG, for each self-help session attended, there was a decrease of 0.41 (se=0.13) drinking days from baseline to follow-up (p=0.002); participation during a self-help session was associated with a decrease of 4.94 (se=2.40) drinking days from baseline to follow-up (p=0.061). Conclusions: Small sample size may have limited detection of differences between WRG and GDC. However, ancillary treatment engagement, especially residential services and self-help attendance, was overall significantly associated with decreased drinking and substance use days during follow-up. Support: NIDA R01 DA015434 and K24 DA019855

### **WITHIN-SESSION SATISFACTION AND STATE MOTIVATION AS PREDICTORS OF MARIJUANA USE AT FOLLOW-UP: AN ILLUSTRATIVE ANALYSIS**

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Aims: Few intervention studies have focused on dynamic, within-session predictors of treatment response. The current research aimed to examine two such predictors; participant satisfaction and state motivation. Our goal was to determine the degree to which these variables predicted outcome among a sample of post-partum women undergoing a single-session drug use intervention. Methods: 107 low-income, primarily African-American women participated in a computerized motivational drug use intervention. The intervention consisted of three counterbalanced components: "feedback," "pros and cons" and "goal-setting." Participant state motivation was measured at baseline and immediately following each of the three intervention components; satisfaction was measured following each component. The primary outcome was marijuana use at 4-month follow-up (defined as either self-report or a positive urine screen). Results: After controlling for baseline marijuana use, participants' mean satisfaction ratings following all three components significantly predicted post-intervention marijuana use. After controlling for baseline marijuana use, only participants' mean motivation rating following the "pros and cons" component predicted post-intervention marijuana use ( $\chi^2$  [1, N=107] = 4.4; p < .05). In addition, change in motivation from baseline to the end of the first component also predicted marijuana use ( $\chi^2$  [1, N=107] = 3.9; p > .05). Conclusions: Results suggest that within session measures of client satisfaction and motivation may serve as indicators of long-term treatment response. Though exploratory, these findings suggest that: (1) clinicians may be able to evaluate and modify their progress on a session-by session basis, and (2) researchers could efficiently evaluate and modify their interventions before proceeding to large-scale clinical trials.

Satisfaction and state motivation may be promising components of such a process. Support: This study was supported by National Institute on Drug Abuse grant DA14621 (Ondersma).

### **PARENTAL SUBSTANCE ABUSE AND LONG-TERM COPING IN A SAMPLE OF ADULT DOMESTIC VIOLENCE SURVIVORS**

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**Aims:** Research indicates that adult children of substance abusers often develop avoidant coping strategies in order to negotiate stressors in their family of origin. These strategies appear to increase the risk of victimization and are associated with negative outcomes (Griffing et al., 2006). Parental substance abuse (PSA) is associated with adverse familial experiences, such as domestic violence, incarceration, mental illness, and child abuse (Griffing et al., 2007). The present study examines the interrelationships between these variables and their effects on the development of coping skills among domestic violence (dv) survivors. **Methods:** 245 female residents of two New York City dv shelters completed a structured interview which included questions about adverse childhood experiences and coping. **Results:** 52.7% of the sample (n=129) reported a PSA history. As hypothesized, the results of a multiple regression indicated that, a PSA history was significantly associated with greater reliance on emotionally disengaged forms of coping (p<.01). However, further analysis through hierarchical regression revealed that avoidant coping was more closely associated with child emotional abuse and parental mental illness than with PSA (p<.01). These findings have important clinical and empirical implications. **Conclusions:** Substance abuse programs should provide psychoeducational parenting groups that address the effects of multiple stressors on children. Counselors should be cognizant of the relationship between adverse childhood experiences and avoidant coping in trauma-exposed populations, and should incorporate coping skills training into their interventions. **Support:** There is a clear need for closer collaboration among substance abuse, mental health, domestic violence and child welfare programs, and cross-training for staff within these agencies. Findings also underscore the need for researchers to examine the complex relationships between different types of adverse childhood experiences in order to avoid misattributing the effects of these other events solely to PSA.

### **POLYDRUG USE AMONG CLUB-GOING YOUNG ADULTS**

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**Aims:** The purpose of this study is to estimate the extent of polydrug use among young adults who use "club drugs," which include ketamine, MDMA, cocaine, GHB, methamphetamine, and LSD. Although researchers have identified relations between club drug use and polydrug use, there has been little assessment of the patterns of polydrug use among club drug users. Among a myriad of negative health outcomes, polydrug combinations can increase metabolic toxicity (e.g., cocaine and alcohol metabolize as cocaethylene, a third highly-toxic substance). **Methods:** Using time-space sampling, a stratified sample of 400 18-29 year old club-drug-users were enrolled in the Club Drugs and Health Project (100 gay/bisexual men, 100 lesbian/bisexual women, 100 heterosexual men, 100 heterosexual women). Participants indicated their club drug use and experiences combining club drugs with other substances. **Results:** Polydrug use was common: 95% of cocaine users, 87% of MDMA users, 71% of ketamine users, 69% of LSD users, 66% of methamphetamine users, and 54% of GHB users used these drugs with other drug(s). Men were significantly more likely than women to have combined GHB with another drug (63% v.38%), and heterosexuals were significantly more likely than non-heterosexuals to have combined LSD with another drug (76% v. 61%). Compared with persons of color, whites were significantly more likely to have combined GHB (62% v. 39%) and LSD (74% v. 60%) with another drug. The most frequently cited polydrug combinations included cocaine-alcohol (n = 153), cocaine-MDMA (n = 125), MDMA-alcohol (n = 93), MDMA-ketamine (n = 82), and MDMA-LSD (n = 79). **Conclusions:** The data indicate many club drug-using young adults are actively combining substances. They highlight the need to develop culturally sensitive polydrug education and prevention initiatives targeted toward club going young adults. Furthermore, they suggest that there is a need to further evaluate the pharmacological effects of polydrug combinations in addition to the social-psychological motivations driving polydrug use. **Support:** NIDA NRSA T32-DA07233

### **INJECTING EQUIPMENT SHARING AMONG RUSSIAN DRUG-INJECTING DYADS**

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network level, network exposure was associated with all three sharing variables (higher number of sharing partners with SC, RSS and DSS; and lower number of advice givers with RSS and DSS). On the dyad level, being a sex partner was associated with RSS and DSS; and higher levels of trust, greater personal exposure (hanging out with network member [NM], seeing NM daily, living with NM, NM's sharing injecting equipment with others), and dependence on resources (relying on each other for drugs, financially supporting each other) were associated with all three sharing variables. Conclusions: In the injecting dyads of Russian IDUs there is overlapping risk of unsafe injecting and unsafe sexual behaviors. Injection and sexual risk, and their combination need to be addressed in interventions that target the injecting partnerships of IDUs. Interventions should also aim at reducing the number of injecting and sharing partners, increase non-drug social support, and address the issue of trust as an impediment to risk reduction. Support: Funded by the National Institute on Drug Abuse (NIDA), Grant number R01 DA016142. V. Anna Gyarmathy was funded by the Ruth L. Kirschstein award, Drug Dependence Epidemiology Training Program, NIDA Grant T32 DA007292

### **LONGITUDINAL CHANGES IN ATTACHMENT, SOCIAL SUPPORT, PARENTING ATTITUDES, AND PSYCHOLOGICAL FUNCTIONING AMONG WOMEN DRUG OFFENDERS**

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Aims: Our study involves women drug offenders in community treatment. We hypothesized that: subjects (Ss) would show extensive disruption in their attachment, social support, and psychological functioning; Ss who attended treatment longer would show greater improvement in functioning; and Ss who attended women-focused treatment would show greater improvement in their adult relationships, social support, psychological functioning, and parenting. Methods: Instruments: Experiences in Close Relationships Inventory, ISAP social support scale, Brief Symptom Inventory, and Adult-Adolescent Parenting Inventory. Preliminary sample: 57 female drug offenders in mixed gender and women-focused treatment. Results: Preliminary results: At baseline, Ss showed levels of attachment anxiety and avoidance of intimacy greater than women in normative samples. Ss' parenting scores were far below normative samples. Over time, Ss showed improvements in adult attachment anxiety, social support, and a trend toward improved psychological functioning. Ss' parenting attitudes showed no change over time. Social support at 12 months was associated with days in treatment, however, type of treatment did not predict 12-month scores on any scales. Results may change as data from additional Ss becomes available. Conclusions: Preliminary results indicated that few participants had secure attachment styles. While attachment styles changed over time, most notably a reduction in fearful attachment style, the move to a dismissing attachment style (preferring not to depend on others or have others depend on them) was not a positive sign of growth. Ss showed improvement in social support and psychological symptoms. While Ss had appropriate expectations, they lacked empathy for their children, tended to favor physical punishment, tended toward parentification of their children, and an authoritarian relationship with their children. Given the cyclical nature of abuse, the lack of improvement in parenting attitudes over time shows a high need among this population for additional parenting intervention. Support: NIDA R01DA016277

### **DIFFERENTIAL INCIDENCE OF HIV AND SYPHILIS BETWEEN MALE AND FEMALE DRUG USERS IN SOUTHWEST CHINA**

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Aims: To investigate the incidence rates of human immunodeficiency virus (HIV) and syphilis among injection drug users (IDUs) in a drug trafficking county in southwest China. Methods: A cohort of 333 HIV-seronegative IDUs was followed up for 48 months starting from November 2002 and evaluated seroconversions of HIV and syphilis every 6 months. Questionnaire interviews were conducted to collect information about risk behaviors. Results: Of 379 IDUs at baseline, HIV prevalence was 12.1%(38/313) and 7.6%(5/66) among male and female (p=0.288), and syphilis prevalence was 12.5% (39/313) and 28.8% (19/66) among male and female (p=0.0008), respectively. 59.2 % subjects completed the 48-month follow-up survey. A total of 14 HIV and 24 syphilis seroconversions were observed over the 48-month follow-up period, yielding average incidence rates of 2.19 per 100 person-years for HIV, and 4.15 for syphilis. Multivariate Poisson regression analyses showed that factors independently associated with HIV seroconversion was minority ethnicity (RR: 4.31; 95%CI: 1.56, 11.91; p=0.0049) and higher frequent sharing of needles or syringes in the past 3 months !1 times per week (RR: 32.51; 95% CI: 10.43, 101.35; p<0.001). Predictors for syphilis seroconversion included female (RR, 4.09; 95% CI, 1.79, 9.34; P=0.0008) and married or co-habit (RR, 2.65; 95% CI, 1.19, 5.92; P=0.0173). Syphilis incidence was 2.99 and 11.87 per 100 person-years among male and female IDUs, respectively. Conclusions: High infection of syphilis and overlapped unprotected sex among female IDUs along a drug-trafficking route may suggest a potential risk for rapid sexual spread of HIV, and underscore the urgency of preventive interventions to break the bridge of female IDUs for HIV/STD spread. Support: The Ministry of Science and Technology of China (2004BA719A01), the National Natural Science Foundation of China (30571612, 10501052).



### **LOBELINE ATTENUATES METH-INDUCED HYPERACTIVITY BUT DOES NOT ALTER METH-MEDIATED CONTEXTUAL CONDITIONING IN MALE AND FEMALE PERIADOLESCENT RATS**

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**Aims:** Epidemiological research suggests that long-term drug use begins in adolescence, and that females exhibit increased vulnerability for drug abuse compared to males. Therefore, increased emphasis is being placed on developing treatment solutions targeted at adolescents who exhibit drug seeking behaviors. Lobeline (LOB) decreases METH self-administration in rats; however, this research was conducted exclusively in adult, male rats, and little is known about the behavioral effects of lobeline in females, or in periadolescent rats of either sex. The aim of the present experiment was to determine if LOB decreased METH-induced hyperactivity in male and female periadolescent rats. We also determined if repeated LOB pretreatment attenuated METH-induced contextual conditioning. **Methods:** Rats were randomly assigned to one of 6 treatment groups. Animals were habituated to locomotor chambers on post natal days (PND) 25-27. On PND 28, rats were injected with saline (SAL) and placed into activity chambers to determine baseline activity. Rats were injected with SAL or LOB (3 mg/kg) and 5 min later, were treated with SAL or METH (.1, .3 mg/kg; sc) and put into activity chambers 1X/day on PND 29-35. A 2nd SAL baseline session was conducted on PND 36. **Results:** METH dose dependently increased horizontal activity, whereas LOB produced hypoactivity. LOB attenuated METH-induced hyperactivity after rats exhibited tolerance to the LOB-induced hypoactivity. This effect was more evident in females compared to males: LOB attenuated the behavioral effects of METH in females across the entire 7-day period whereas males exhibited tolerance to LOB. Only the females exhibited METH-induced conditioned hyperactivity. LOB pretreatment did not prevent acquisition of contextual conditioning. **Conclusions:** LOB repeatedly decreased the behavioral effects of METH in female periadolescent rats. Further experiments should examine potential sex differences in the LOB-mediated attenuation of METH self-administration using periadolescent animals. **Support:** Supported by NIDA grant DA21287.

### **A META-ANALYSIS OF THE USE OF MOTIVATIONAL INTERVIEWING FOR SMOKING CESSATION**

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**Aims:** Motivational Interviewing (MI; Miller & Rollnick, 2002) is a popular and effective intervention for substance disorders and other behavioral health problems. Prior reviews and meta-analyses of MI have included very few smoking cessation trials. The aims of the current meta-analysis are to determine the efficacy of MI for smoking cessation and identify potential outcome moderators. **Methods:** MEDLINE/PubMed and PsycInfo databases were searched. Title/abstract search terms "motivational interview" OR "motivational enhancement" AND "smoke, cigarette, tobacco, OR nicotine." Randomized controlled trials that reported the number of smokers who were abstinent at follow up were eligible. We estimated the overall MI effect using a Bayesian model. **Results:** Twenty-six published trials were identified since 1998: 8 general adults, 5 chronically ill adults, 5 adolescents, and 8 pregnant/postpartum women. Preliminary analyses of the trials with sufficient data (3134 individual participants) showed an overall treatment effect size of 1.36 [1.10-1.68]. No difference in effect was found between the populations. Based on a funnel plot and regression analysis, publication bias was not detected. **Conclusions:** This is the most comprehensive review of MI for smoking cessation conducted to-date. There was a great deal of methodological variability and lack of trial reporting detail. The intervention effect was relatively low but significant and within the range of other behavioral smoking cessation approaches. Upcoming analyses include the addition of more trials identified through other sources including the "gray" (unpublished) literature and examination of more potential outcome moderators. These findings suggest that current MI smoking cessation approaches should be tested head-to-head against other behavioral approaches and that they may need to be enhanced for greater efficacy. **Support:** This research was supported by grants 7K07CA108685-03 (Heckman) and CA006927 (Center Grant). The authors thank Sharon Manne, PhD, Chelsea Rose, Jeanne Pomenti, Sara Filseth, and Indira Friel for their assistance.

### **CHARACTERIZING METHADONE DOSE DURING LATE PREGNANCY AND POSTPARTUM**

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**Aims:** Methadone maintenance (MM) is the standard of care for opioid dependent pregnant women, but little is known about appropriate dosing regimens. Due to increasing metabolism and clearance over the antepartum (AP) period, women may need dose increases over time to prevent withdrawal. Postpartum (PP), dosing recommendations include a return to the pre-pregnancy level or to half the 3rd trimester dose. However, these clinical recommendations lack empirical support. Here, we report preliminary results from an ongoing retrospective review of MM during and after pregnancy which aims to characterize the pattern of dose changes AP and PP. Because methadone metabolism appears to be most altered during the 3rd trimester, initial efforts focused on this trimester as well as the first 12 weeks PP. **Methods:** Participants were 9 women in MM both AP and PP. Dose changes (10mg increments) were organized according to the AP or PP week in which each change occurred to calculate the number of, direction of, and time between dose changes during the 3rd trimester and the first 12 weeks PP. **Results:** Preliminary data indicate that on average, women were 26 years old, high school educated, White (100%), and with an unintended pregnancy (89%).

Three were in MM prior to pregnancy; 6 entered MM at 17±2 weeks AP. Entering the 3rd trimester, mean dose was 85mg (range 18-150). During the 3rd trimester, women needed an average of 1.6±0.4 dose increases. Dose increases occurred on average, every 6.5±1.7 weeks. Mean dose at the end of the 3rd trimester was 101mg (range 21-150), a 19% increase. In the first 12 weeks PP, the majority of women (56%) did not need any dose adjustments. One woman needed 1 dose decrease at 2 weeks PP, while the remaining 3 women each needed 1 additional dose increase. Conclusions: Methadone dose increased by nearly 20% during the 3rd trimester. After delivery, most women needed no change or continued to need dose increases. More scientific data further characterizing methadone dosing during and after pregnancy are needed to improve the management of this special population. Support: NIDA RO1DA018410

### **RACIAL DIFFERENCES IN PSYCHOSOCIAL FUNCTIONING AMONG YOUTH IN JUVENILE DETENTION**

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Aims: Compare the offense histories, justice involvement, and psychosocial functioning of detained African American youth to youth of Latino and White, Non-Hispanic ethnicities. Methods: STUDY 1 Participants: 672 female adolescents. 42% African American, 33% Hispanic, 11% Haitian, 8% white, non-Hispanic, and 6% other. Participants averaged 2.78 lifetime arrests. Measurements: A semi-structured interview assessed: family functioning, trauma history, delinquent behavior, education, mental health and substance use. The DISC Predictive Scales identified the presence or absence of psychiatric disorders. Juvenile justice records identify number of arrests, type of arrests, and number of detainments. STUDY 2 Participants: 150 male and female detained adolescents. Participants were primarily male (82%) and African-American (56%). 56% were African American, 21% White, Non-Hispanic, and 19% Latino. On average, participants averaged 4.1 lifetime arrests. Measurements: We examined functioning in the following domains: (1) substance use, (2) delinquent activity, (3) internalizing and externalizing problems, (4) family functioning, (5) risky sexual behavior, and (6) educational problems. Results: In two studies, juvenile justice involvement is related to worse psychosocial functioning in White-Non Hispanic, but not African American youth. Moreover, despite deeper juvenile justice involvement and more severe juvenile justice histories, African American youth showed healthier psychosocial functioning than White youth. Conclusions: Information that reveals important competencies are usually not available to decisions makers who instead rely primarily on juvenile justice records. More comprehensive intake assessments may reveal hidden strengths among African American youth, and may help decrease racially-based disparities in the juvenile justice system. Support: Support provided by the National Institute on Drug Abuse, U01DA016193, Howard Liddle PI

### **SOCIAL AND MENTAL HEALTH CORRELATES OF FEMALE INMATES IN THE PUERTO RICO PRISON SYSTEM WITH LIFETIME DRUG USE DISORDER AND LIKELY POST TRAUMATIC STRESS DISORDER**

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Aims: Although 1.4% of the Puerto Rico population has a lifetime diagnosis of drug abuse/dependence, the prevalence among women inmates is 40%. Patient centered drug treatment needs to address the specific social and psychological needs of women with a drug use disorder. The present study explores whether sentenced female inmates in the PR prison system with substance use disorder (SUD) with and without Post Traumatic Stress Disorder (PTSD) differ in their social needs and other co-occurring mental health conditions. Results will assist treatment planning. Methods: Cross sectional study in 2005 with a representative sample of the sentenced inmate population of the Puerto Rican correctional institutions. Data was gathered anonymously from 1,179 respondents (220 women and 959 men). In this study we use the sub-sample of female inmates. SUD was assessed with the UMCIDI and PTSD symptoms were assessed with the Davidson Trauma Scale (DTS). Other emotional disorders measured were: Major Depression and Attention Deficit Hyperactive Disorder (ADHD). Social factors surveyed included: relatives with drug problems, number of dependents before prison, employment, previous incarcerations, victimization last year, blood-borne viruses and suicide attempt. Results: 63% of females had a lifetime diagnosis of drug abuse/dependence. Of these, 17% also have likely PTSD. Lifetime drug abuse/dependence with likely PTSD was significantly associated with attempted suicide ( $X^2=9.18$ ,  $p=0.002$ ); Major Depression ( $X^2=6.52$ ,  $p=0.01$ ); ADHD ( $X^2=27.06$ ,  $p=0.001$ ) and victimization last year ( $X^2=5.23$ ,  $p=0.02$ ). Conclusions: Female inmates with a lifetime diagnosis of drug abuse/dependence with likely PTSD have specific needs different from those who only have a substance use disorder. Treatment must address the social and mental health factors that can constitute barriers to their rehabilitation. Support: Dr. Carmen Albizu-García, MD

### **HIV RISK BEHAVIORS AND PTSD: SECONDARY FINDINGS FROM A NIDA CLINICAL TRIALS NETWORK RANDOMIZED CONTROLLED TRIAL OF WOMEN IN COMMUNITY-BASED SUBSTANCE ABUSE TREATMENT**

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**Aims:** Heterosexual women with substance use disorders (SUD) are at high risk for HIV. A substantial number of women in substance abuse treatment have histories of interpersonal violence, as well as comorbid psychological disorders, such as posttraumatic stress disorder (PTSD). **Aim:** To examine HIV sexual risk behaviors of treatment seeking women with SUD and PTSD and the treatment effect of two interventions on sexual risk outcomes. **Methods:** Secondary analyses were conducted with 353 women meeting criteria for SUD and full or subthreshold PTSD enrolled in a study of the effectiveness of two group interventions: 1) an integrated treatment for SUD and PTSD, and 2) a health education attention control. Bivariate associations between baseline demographic, diagnostic characteristics and HIV sex risk behavior were examined. Zero-inflated negative binomial model regressions were run to assess differences in sexual risk behaviors between intervention groups. **Results:** At baseline, 54% of women were sexually active in the previous 30 days, averaging one sexual partner and 5.4 unprotected sexual occasions. Women with more substance use reported more sexual partners and unprotected sex. The integrated treatment for PTSD and SUD had a significant impact in decreasing sexual risk behaviors post treatment ( $p=.05$ , 95% CI 0.51 -1.03). **Conclusions:** Women in outpatient substance abuse treatment with comorbid PTSD may reduce unprotected sexual encounters by participating in trauma integrated treatment. Increasing PTSD coping skills and understanding the role of trauma may enhance feelings of empowerment or increase efficacy to make choices that will improve sexual health. **Support:** This study was supported by National Institute on Drug Abuse, Clinical Trials Network, (U10DA13035) with the Long Island Node as the Lead Node and K24 DA022412 (Dr. E Nunes).

### **DRUG PROBLEMS, SEX TRADING, AND SEX-RELATED ATTITUDES AMONG WOMEN ENTERING SUBSTANCE ABUSE TREATMENT**

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**Aims:** Women with alcohol and drug problems are at increased risk for a variety of negative outcomes associated with high-risk sexual behaviors. The purpose of this work is to describe sex-trading behavior and sex-related attitudes of women entering substance abuse treatment. **Methods:** Women who presented for treatment ( $N=110$ ) were recruited from inpatient and outpatient facilities in Buffalo, NY. Women completed assessments regarding substance use, relationships, and sexual behavior. Women were categorized into two groups based upon their Drug Abuse Screening Test score: non-severe drug problems (0-15;  $n=72$ ) and severe drug problems (16+  $n=38$ ). Chi-square and t-tests were conducted to identify group differences in sex trading and number of different types of drugs used in the last 90 days, Alcohol Dependence Scale (ADS) scores, sexual and nonsexual sensation seeking, sex-related alcohol expectancies, concerns about body image and sexual performance, and perceived ability to engage in safer sexual behaviors. **Results:** Women who reported severe drug problems had used more types of drugs (2.50 vs. 1.72;  $p<.01$ ) and were more likely to have engaged in extensive sex trading (18.4% vs. 2.8%;  $p<.01$ ) in the last 90 days, and had higher scores on the ADS (15.13 vs. 9.96;  $p<.05$ ), non-sexual sensation seeking ( $p<.05$ ), and sex-related alcohol expectancies ( $p<.01$ ) compared to women in the non-severe group. Women in the severe problems group also tended to report having greater confidence in their ability to engage in AIDS prevention behaviors ( $p=.067$ ). No differences existed on the women's sexual sensation seeking or attitudes related to body image and sexual performance. **Conclusions:** Women with severe drug problems were more likely to have engaged in extensive recent sex trading. The start of treatment provides a unique opportunity for health care providers to address sex-related factors that place women with severe drug problems at heightened risk for infection with HIV. **Support:** 1R01AA015288 awarded to KHD

### **GENDER DIFFERENCES IN STRESS AND CUE-RELATED ADRENERGIC RESPONSE IN COCAINE-DEPENDENT PATIENTS COMPARED WITH SOCIAL DRINKING CONTROLS**

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**Aims:** Cocaine alters the stress and reward pathways of the brain changing psychobiological responses to stress and enhancing drug craving. These adaptations have been associated with relapse, and may also be sex-specific. To date, however, the sympathetic response associated with stress-related craving has not been compared in CD male and females. **Methods:** 46 recently abstinent treatment-seeking CD patients (27M/19F) and 47 SD controls (22M/25F) were exposed to 3 personalized guided imagery conditions (stress, drug-cue and neutral/relaxing) presented randomly, across consecutive days, 1 imagery per session. Craving, anxiety, blood pressure (BP), Norepinephrine (NE) and Epinephrine (EPI) were measured at baseline, immediately following imagery and at various recovery time-points. **Results:** CD patients reported higher ratings of stress and cue-induced craving and anxiety compared with SDs. CD females demonstrated higher levels of basal NE compared with both CD males ( $p<.04$ ) and SD females ( $p=.005$ ). They also

showed a significant increase in NE compared with SD females following exposure to all three imagery conditions ( $p=.008$ ). In the CD females, basal NE levels were also positively correlated with cocaine use in the last 30 days ( $p<.04$ ). BP at baseline was positively associated with basal NE in all groups with the exception of CD females. CD and SD males demonstrated significantly higher levels of EPI compared with CD and SD females both at baseline and following all imagery conditions. Conclusions: CD females showed an overall increased noradrenergic drive accompanying the stress and cue-related craving state. This may indicate possible sympathetic dysregulation as basal NE levels were correlated with cocaine consumption and showed no association with BP. Such gender-related dissociations may contribute to variation in co-occurring psychopathology and risk of relapse. These findings have implications for gender-specific pharmacological treatment development in cocaine dependence. Support: P50-DA16556; K02- DA17232 Yale University

### **MECHANISMS OF A MOTIVATIONAL INTERVIEWING INTERVENTION THAT REDUCED DRINKING AND IMPROVED CONTRACEPTION**

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Aims: What are the mechanisms of action of motivational interviewing? We will identify therapist and participant behaviors and interactions that relate to outcomes in a completed trial. Methods: In Project CHOICES, we reduced alcohol-exposed pregnancy risk. Using data on 400 cases, we are coding audio taped sessions for MI therapist behaviors using the MITI 3, items from the MISC 1 & 2, and the MISTS. We are coding protocol adherence with checklists, global Client Self-Exploration and global interpersonal Warmth and Dominance, and content of sessions with the Checklist of Psychotherapy Transactions and the Psychotherapy QSort. We will describe our methods for training raters and achieving inter-rater agreement and our one-pass system to rate the motivational and interpersonal characteristics of CHOICES sessions. Results: Ratings data on 150 cases show that activities vary across the sessions, with role induction, agenda setting, and information occurring in session 1, with feedback, decisional balance exercises, and scaling readiness in session 2, and other activities in sessions 3 and 4. Common behaviors included providing information, open and closed questions, and reflections, with almost no confrontation. Therapist global scores were highest for Direction and Autonomy Support. Attending to change talk, addressing ambivalence, rolling with resistance, and supporting self-efficacy increased across sessions peaking at session 4. Question-answer and expert traps were observed in a minority of cases. Both therapist and client were in the Friendly-Dominant quadrant of the interpersonal circle. A rich description of sessions was generated with 17 PQS items occurring in a third of cases. Conclusions: A one-pass rating system yields an array of useful variables that will be examined as predictors of outcomes. Support: NIH R01 AA015930

### **DOES TOBACCO USE IDENTIFY POST-PARTUM WOMEN AT RISK FOR ALCOHOL PROBLEMS AND DEPRESSION?**

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Aims: While significant efforts have been directed toward screening and intervention for alcohol and tobacco use during pregnancy, less attention has focused on post-partum use. New mothers are faced with a variety of stressors, increasing their risk for alcohol problems and depression. The pediatric clinic offers an ideal setting for screening post-partum women to identify problems. Since time and resources are often limited, it would be important to identify subgroups of women at increased risk for alcohol problems and depression. The present study examined current tobacco use as a screen for identifying postpartum women at risk for alcohol and depressive disorders. Methods: Study participants were 238 postpartum women whose children received pediatric care at VCU. Demographically, the women were primarily African- American (84.8%) with a mean age of 25.5 yrs. All provided informed consent to complete a brief Health Screening Survey administered by computer or via interview. Items included the CES-D and TWEAK. Over one-third (38%) of the women were current smokers (CS) (N=91); the rest were non-smokers (NS). Results: CS women were more likely to obtain CES-D scores above the clinical cut-off for depression (40%) than NS women (26%) ( $p<.05$ ). CS women were also almost twice as likely to score "at risk" for alcohol problems (35%) compared to NS women (19%) ( $p<.01$ ). Conclusions: Study findings support utility of training pediatric staff to survey new moms about smoking to identify those at greatest risk for problem drinking and postpartum depression. Support: This research was supported by a grant from the Alcohol Beverage Medical Research Foundation.

## **STANDARD VERSUS STRINGENT CO CUTOFFS: IMPLICATIONS FOR SMOKING CESSATION OUTCOMES**

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**Aims:** Previous studies have suggested the standard carbon monoxide (CO) cutoff of 8-10 ppm is too liberal and may misclassify current smokers as abstinent (Cropsey et al, 2006; Jarvor et al, 2005; Low et al, 2004). We compared differences in cessation outcomes using a more stringent cutoff of 2 ppm versus the standard. **Methods:** CO levels were collected during a 10-week group therapy + nicotine replacement intervention with incarcerated female smokers (N = 250). Follow-up CO levels were collected at 3, 6, and 12 months. Quit rates were calculated using both cutoff values and were compared using Chi-square analyses. **Results:** The sample was primarily young (M = 33.8 + 9 years), non-white (56%), with at least a high-school education (73.0%). Using the standard CO cutoff, quit rates of 37.2%, 40.4%, 30.8%, and 24.0% were found at end-of-treatment (EOT), 3-month, 6-month, and 12-month follow-ups, respectively. Using the stringent cutoff, quit rates of 18.4%, 16.8%, 14.0%, and 11.6% were found at the same time points. Differences in quit rates at all time points were found to be significant at  $p < .001$ . Using the standard cutoff misclassified 25.0% of smokers as nonsmokers at EOT and 20.8% at 12-month follow-up. **Conclusions:** Using standard cutoffs in this clinical trial inflated smoking cessation outcomes and classified up to 25% of smokers as non-smokers. This has important implications for the existing smoking cessation literature, which may cause researchers to overestimate the effectiveness of current cessation interventions. We recommend using a more stringent cutoff for future trials. **Support:** K23DA15774 and product support provided by GlaxoSmithKline.

## **WOMEN ON NICOTINE REPLACEMENT THERAPY SHOW SIGNIFICANT BRAIN ACTIVITY IN RESPONSE TO SMOKING CUES**

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**Aims:** Nicotine replacement therapy (NRT) is less effective at maintaining abstinence in women than men, suggesting that women may be more sensitive to smoking-related cues. The aim of this study in women was to use blood oxygen level dependent functional MRI (BOLD fMRI) to assess brain response patterns to smoking-related cues. We sought to determine the effectiveness of NRT on abolishing smoking cue-induced brain activation. **Methods:** Subjects were 19 nicotine-dependent women aged  $47.9 \pm 7.6$  years old, 9 of who participated in a second fMRI session while on NRT during smoking abstinence. Functional MRI scans, conducted on a Siemens 3T scanner, involved presentation of neutral and smoking-related cues, using a modification of the method of Due et al. (Am. J. Psychiatry 159:954, 2002). Data were analyzed with Brain Voyager QX 1.9 and random effects region of interest analyses were run. **Results:** In active smokers, fMRI responses to smoking images were greater than those to neutral images in the prefrontal frontal cortex ( $t=2.4$ ,  $p=0.02$ ), a region correlated with reward expectancy. In abstinent smokers on NRT, fMRI responses to smoking vs. neutral images were greater in the left insula ( $t=2.5$ ,  $p=0.04$ ) anterior cingulate ( $t=2.5$ ,  $p=0.03$ ) and posterior cingulate ( $t=2.7$ ,  $p=0.03$ ), regions identified by others as being active during cue-induced craving. **Conclusions:** Our preliminary findings imply that smoking-related cues activate different brain areas depending upon a subject's smoking status. They also suggest that smoking related cues activate brain areas correlated with cue-induced craving in women on NRT, which in part explain why women on NRT remain relatively susceptible to relapse. Additional studies are under way to determine fMRI responses to smoking-related cues in subjects administered novel smoking cessation treatments. **Support:** Supported by NIDA grants CDDG-ND U0119378-01, DA017324, DA014013, and DA022276.

## **MATERNAL METHADONE DOSING SCHEDULE AND FETAL NEUROBEHAVIOR**

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**Aims:** Methadone maintenance, typically delivered once daily, is the standard of care for opiate dependency during pregnancy. Previous research by this group has shown that single dose maternal methadone administration significantly affects fetal neurobehaviors, and these effects are greater at peak vs trough methadone levels. Specifically, at peak, fetal heart rate was slower and less variable, fetuses displayed less motor activity, and the coupling between movement and heart rate was attenuated. The purpose of this study was to determine if split methadone dosing would have less impact on fetal neurobehavior than single dose administration. **Methods:** Forty methadone maintained women were evaluated at peak and trough methadone levels on single and split dosing schedules. Maternal doses were the same between the monitoring sessions, which occurred at 36 and 37 weeks gestation in a counterbalanced study design. Fetal measures included heart rate, variability, motor activity and fetal movement-heart rate coupling. Maternal measures included heart period, variability, skin conductance, respiration and vagal tone. Repeated measure analysis of variance was used to

evaluate within-subject changes. Results: At peak methadone levels, fetuses on a single dose showed lower fetal heart rate (single M=129.85 bpm, split M=133.24 bpm),  $F(1,38)=8.81, p<.01$ , greater depression of heart rate variability (single M=4.08, split M=4.59,  $F(1,38)=6.66, p<.05$ , shorter movement durations (single M=16.6 s, split M=26.0 s)  $F(1,37)=5.81, p<.05$ , and less coupling (single=13%, split=18%),  $F(1,37)=6.50, p<.05$ , than fetuses on a split dose. Maternal physiologic parameters were not different between the split and single monitoring sessions. Conclusions: Fetuses exposed to split methadone dosing displayed significantly less depression of fetal neurobehavior as compared to single dose fetuses. Split dosing during late gestation may be beneficial for fetal development. Support: This research is supported by NIDA RO1DA019934 (Jansson)

### **TREATMENT OUTCOMES FOR WOMEN AND MEN OFFENDERS WITH COMORBID MENTAL DISORDERS**

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Aims: This study examines gender differences among substance-abusing offenders comorbid with mental disorders in order to identify gender-specific needs, treatment outcomes, and factors predicting recidivism. Methods: Data are based on 438 women and 565 men participating in the multi-site prospective Treatment System Impact (TSI) study. TSI investigates the impact on the California treatment system due to Proposition 36 (i.e., a law mandates nonviolent drug offenders community-based treatment in lieu of incarceration or probation without treatment). Gender difference was tested using chi-square analyses and t-test. Logistic regression analyses were conducted separately for men and women to identify gender-specific factors associated with recidivism. Results: Female offenders were significantly more likely than men to have co-occurring mood disorders including depressive disorder (48% vs. 40%), and anxiety disorder (22% vs. 11%), but less likely to have psychotic disorders (12% vs. 20%). Female offenders demonstrated higher severity in family/social relationships (0.22 vs. 0.15), legal status (0.26 vs. 0.22), medical status (0.33 vs. 0.25), and psychiatric status (0.25 vs. 0.23), measured by the Addiction Severity Index. The regression analysis showed that primary methamphetamine use was positively related to recidivism for women while older age and greater drug severity predicted recidivism among men. Conclusions: Substance abuse treatment programs need to pay special attention to the unique needs of women and men offenders with mental health problems, and that gender differences found in the present study should be considered for development of gender-appropriate treatment strategies. Support: NIDA grants No. R01 DA15431

### **SMOKING IN PREGNANT PATIENTS SCREENED FOR AN AGONIST MEDICATION STUDY: COMPARISONS TO OTHER PREGNANT AND/OR DRUG-DEPENDENT FEMALE PATIENTS**

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Aims: Compare the prevalence and severity of smoking in pregnant patients screened for an agonist medication study to other samples differing by pregnancy and/or drug-dependent status. Methods: Pregnant women (N=702) were screened for the MOTHER study. A smoking subsample (n=317) was compared to samples of (1) non-drug-addicted pregnant women (N=1,516; Goodwin et al., 2007), (2) agonist-treated non-pregnant women (N=75; Clemmey et al., 1997), and (3) drug-dependent pregnant women (N=240; Kissin et al., 2001) on smoking status and severity variables, using X<sup>2</sup> goodness-of-fit and t tests. Results: The total sample (N=702) was 72% white, 76% single, and 90% unemployed; 80% had abused opioids and 43% had abused cocaine in the past month. In the smoking subsample, mean age at first use of nicotine was 14.6 (SD=3.5), and the mean number of months of nicotine use was 64.7 (SD=92.1). They smoked at a significantly higher rate than a non-drug-addicted pregnant sample (94% v. 22%, respectively;  $p<.0001$ ), and smoked more cigarettes per day, on average, than agonist-treated non-pregnant women and less than drug-dependent pregnant women (15 v. 14 and 26, respectively, both  $ps<.002$ ). The mean Fagerstrom Tolerance Questionnaire score was significantly lower in our smoking subsample than in a sample of agonist-treated non-pregnant women (4.2 v. 8.0,  $p<.001$ ). Conclusions: Smoking in pregnant women screened for an agonist medication study is pervasive and although less severe than in a sample of agonist-treated non-pregnant women, aggressive efforts are needed to drastically reduce or eliminate smoking in this population. Support: NIDA RO1DA 045778 015832 015764 015738 017513 018410 018417 015741

### **CHARACTERISTICS OF A SAMPLE FEMALE INJECTION DRUG USERS IN MALAYSIA**

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Aims: There is lack of information on female drug users in Malaysia. The National drug information system only provides data on the number of female drug users in the country but not much is known about their drug use characteristics. 26 female IDUs were interviewed as a part of a survey of injection drug users in three cities in Malaysia (Kuala Lumpur, Penang, and Johor Bahru). Specific Aim: A subsample of female IDUs was analyzed to explore the

socio-demographic and drug use characteristics of female drug users in the country. Methods: The survey utilized a purposive sampling technique and enrolled not in treatment drug users. The target subjects were buprenorphine injectors in the community. Survey data was collected by trained interviewers using a face to face structured interview. Results: The sample (n=26) were largely from the Malay 21 (80.8%) ethnic group, followed by Chinese 3 (11.5%) and Indian 2 (7.7%). The mean (SD) age of the sample was 35 (9). Majority of them 20 (76.9%) had between 6 to years of education. Half the subjects were unemployed and 2 of them are married. HIV status is self-reported. 4 are positive, 21 negative and 1 never tested. All of them reported lifetime drug use and are also currently injecting drugs. Almost all of them 25/26 reported lifetime sharing needles while 15/26 reported current sharing needles. In terms of the type of drug used, 25/26 reported lifetime heroin abuse, 21/26 reported lifetime cannabis abuse, 19/26 reported lifetime methamphetamine abuse and 19/26 benzodiazepine abuse. The mean (SD) age of initiation of drug abuse was 20 (5) for heroin, 21 (8) for THC, 30 (11) for Methamphetamine, and 32 (10) for benzodiazepines. Conclusions: Most female IDUs in the sample were poly-drug abusers who reported high levels of drug-related HIV risk behaviors. More specialized studies looking specifically at female drug use and sexual risk behaviors among them are needed. Support: This study was supported by a short term grant provided by University Sains Malaysia.

### **INTERNALIZING AND EXTERNALIZING BEHAVIOR OF CHILDREN OF MOTHERS WHO MISUSE DRUGS VERSUS FATHERS WHO MISUSE DRUGS**

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Aims: A growing body of empirical evidence indicates that children of substance-abusing parents often manifest problems in emotional and behavioral adjustment. Although the focus of much of this research is on 'parental' substance abuse, studies have failed to compare directly the effects of maternal versus paternal drug use on the psychosocial adjustment of children living in these homes. The purpose of the present investigation was to compare the emotional and behavioral adjustment of children living with a substance-abusing mother versus those living with a substance-abusing father. Methods: Participants were substance-abusing men (n = 58) and women (n = 58) entering outpatient treatment and their nonsubstance-abusing partners who lived with at least one child between 8 and 12 years old, inclusive. Families were matched on child age, parents' age, education, family income, length of parental relationship, and parental substance use severity. Parents completed the Child Behavior Checklist (Achenbach, 1991); children completed the Children's Depression Inventory (Kovacs, 1980/1981) and the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978). Results: In general, children from homes where mothers misuse psychoactive substances had significantly more internalizing and externalizing symptoms across ratings of both parents and also reported higher levels of depression and anxiety than their counterparts from homes of substance-abusing fathers. Conclusions: Children who live in homes where parents misuse alcohol and other drugs are at risk for a host of emotional and behavioral problems. However, living with a mother who has a problem with substance abuse is even more deleterious to children's psychosocial adjustment than paternal substance abuse. The potential reasons for these differences, particularly differences in caretaking responsibilities of mothers versus fathers in these homes, will also be discussed. Support: This project was supported, in part, by R21 DA018304 -01.

### **DIFFERENTIAL EFFECT OF ESTROUS CYCLE ON COCAINE-PRIMED REINSTATEMENT TO FOOD- AND COCAINE-SEEKING**

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Aims: Reproductive cycles and sex hormones have been implicated in the gender differences seen in the pattern of drug-taking among cocaine users. It has been shown that estrogen augments and progesterone attenuates the subjective and behavioral effects of cocaine in women and females in other species. Female rats during proestrus (highest levels of progesterone) show the lowest levels of cocaine-primed cocaine-seeking behavior whereas females in estrus (lowest levels of progesterone) have the highest levels of cocaine-primed cocaine seeking relative to males. The present study examined how reproductive cycle influences cocaine-primed reinstatement of food-seeking and cocaine-seeking behavior. Methods: Separate groups of male and female Sprague Dawley rats were trained to lever press for food (45 mg food pellet) or cocaine (0.5 mg/kg/0.1 ml infusion/4 sec) over 10 daily sessions. Reinforcement was conducted on an FR1 schedule of reinforcement and delivery of each reinforcer was paired with a tone/light stimulus for 5s. Rats then underwent extinction of operant responding training during which lever presses had no scheduled consequences during seven daily 1-h sessions. Lastly, each rat received three cocaine-primed reinstatement tests. Prior to each test vaginal smears were taken to determine cycle phase of the female rats. After which, each rat was injected with a priming dose (0, 5, or 10 mg/kg, i.p) then placed in the operant chamber under extinction conditions. Results: Results indicated that non-estrus females exhibited higher cocaine-primed reinstatement to food-seeking relative to estrus females and male rats on the highest dose. In contrast, estrus females showed enhanced cocaine-primed reinstatement to cocaine-seeking relative to non-estrus females and male rats on the highest dose. Conclusions: The present data indicates that estrous cycle does not modulate the ability of cocaine to reinstatement operant responding but rather produces a selective elevation in the motivation for cocaine reinforcement. Support: Supported by NIDA grant R03-DA021161.

## **PREDICTORS OF SUCCESSFUL TREATMENT OUTCOMES IN A 30-DAY BUPRENORPHINE DETOXIFICATION**

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**Aims:** This study examined predictors of successful detoxification and engagement in post-detox counseling in patients enrolled in 30-day buprenorphine detoxification. **Methods:** Opioid-dependent patients (n=177) entering 30-day buprenorphine detox were randomly assigned to routine treatment (RT), Intensive Role Induction (IRI; 5 individual sessions focusing on the transition from detox to ongoing treatment), or IRI with Case Management. Baseline measures of drug use and psychiatric problem severity, motivation, hopelessness, age, gender, and cocaine use were examined as predictors of counseling attendance during detox (range: 0 to 5 sessions); and successful detox (attending counseling and having a negative drug test during the last week of detox). Counseling attendance and successful detox were examined as predictors of transition (attendance at one or more post-detox counseling sessions); and engagement (number of days in treatment after detox). **Results:** Regression analyses revealed that IRI participants attended more sessions during detox than RT participants (b=.4, p<.001). Type of treatment was unrelated to successful detox, transition, or engagement (all ps >.1). Motivation was positively associated with counseling attendance during detox (b=.3, p=.02). A baseline cocaine-negative test was related to an increased likelihood of successful detox (OR=2.4; 95%CI=1.2-5.0). Greater counseling attendance during detox (OR=2.0; 95%CI=1.5-2.9) and successful detox (OR=7.0; 95%CI=2.5-20.1) increased the odds of transition. Greater attendance during detox (b=4.2, p=.04) and successful detox (b=14.2, p < .001) were associated with increased retention after detox. **Conclusions:** IRI improved counseling attendance during detox but was unrelated to other measures of success. Counseling attendance during detox and successful detox predicted engagement in long-term treatment. IRI strategies may improve long-term treatment outcomes by promoting counseling attendance during detox. **Support:** Supported by NIDA RO1DA11402 and Reckitt Benckiser.

## **SEX AND REARING CONDITION AFFECT GENERALIZATION TO DIRECT AND INDIRECT DOPAMINE AGONISTS IN ADULT RATS DISCRIMINATING COCAINE**

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**Aims:** Repeated separation of pups from dams during critical periods has profound effects on the dopamine (DA) system including changes in receptor density, agonist binding and antagonist sensitivity. **Methods:** Male and female rats (n=5-6/sex/rearing condition) were exposed to either long maternal separation(LMS), brief maternal separation(BMS) or animal facility rearing (AFR) as neonates, prior to two-lever discrimination with cocaine(10mg/kg). Generalization with direct DA D1 (SKF38393) and D2 (quinpirole) agonists and the DAT inhibitor GBR12909 were determined to assess the roles of these receptor subtypes in the subjective effects of cocaine. **Results:** In males, more drug-lever responding was seen following quinpirole in BMS and AFR rats (>75% at 0.061-0.18mg/kg) than LMS rats (>75% at 0.125mg/kg only). D1 agonism produced full substitution (>80% drug-lever responding) at 18 & 32mg/kg in BMS rats, while full substitution was apparent at 32mg/kg for AFR rats. Decreased response rates prevented testing BMS and AFR rats with 40mg/kg, but in the LMS rats this was the only dose producing full substitution. DAT inhibition produced more drug-lever responding in LMS (full: 10,18mg/kg; partial: 3.2 & 5.6mg/kg) and AFR rats (full: 5.6 & 10mg/kg;partial: 3.2 & 18mg/kg) compared to BMS (full: 18mg/kg;partial: 5.6 & 10mg/kg). In females, D2 agonism produced partial substitution in all groups at 0.061-0.18mg/kg except in AFR that showed full at 0.18mg/kg. D1 agonism produced partial substitution in all groups at 18-32mg/kg with AFR also showing partial at 10mg/kg. DAT inhibition produced varying effects among the females with full substitution in AFR at 5.6-18mg/kg, in BMS at 10 -18 mg/kg and LMS at 18 mg/kg. **Conclusions:** Differential rearing history affects the substitution profile of DA agonists in animals trained to discriminate cocaine from its vehicle, suggesting changes in DA systems mediating these effects. Further, these are the first data to show sex differences in generalization of D1 and D2 agonists in animals trained to discriminate cocaine. **Support:** Supported by the Mellon Foundation and NIDDK

## **SEX DIFFERENCES IN NON-REINFORCED RESPONDING FOR COCAINE**

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**Aims:** Previously, we found female rats consume more cocaine than male rats during acquisition of self-administration yet show poorer lever discrimination. Hence, female rats are said to acquire the operant of self-administration less readily than male rats. Now, we test for sex differences in cocaine self administration after behavior is established. Specifically, we sought to determine whether there are sex differences in non-reinforced responding but not in cocaine consumption. **Methods:** Male and female rats that had acquired self-administration were tested with various doses (0.0625-1.0 mg/kg/infusion) under a fixed-ratio 3 (FR3) schedule in 3-hr sessions. Numbers of active but not reinforced lever presses (presses during infusion and time-out periods) and inactive lever presses were tabulated in Experiment 1. Persistence of responding during extinction when saline replaced cocaine was also examined. Whether response rate differences reflect sex differences in activity was tested in Experiment 2. Finally, cocaine may affect lever press rates



differentially between sexes. In Experiment 3, we examined the effects of cocaine (0.3-30 mg/kg; IP) on lever pressing for food. Results: Females show greater non-reinforced responding during self-administration compared to males but do not differ in cocaine consumption. Females respond more during extinction sessions but there is no sex difference in activity levels. Lever pressing for food is decreased more in female vs. male rats at higher cocaine doses. Conclusions: That females engage in more non-reinforced responding may represent heightened "craving" and cannot be explained by increased activity or cocaine-stimulated increases in lever press responding. In contrast, lever press responding in males appears driven by drug delivery. Support: VA MERIT grant

#### **PERIADOLESCENT MALE, BUT NOT FEMALE RATS, ACQUIRE METHINDUCED CTA WHEN THE CS-US TRACE INTERVAL IS EXTENDED BEYOND TWO HOURS**

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Aims: Epidemiological research indicates that adolescents are more vulnerable to drug addiction than adults. Increased vulnerability to drug abuse may be mediated, in part, by a reduced ability to experience the negative effects of drugs, such as withdrawal or malaise. The aim of the present experiment was to determine if male and female periadolescent rats acquire methamphetamine (METH)-induced conditioned taste avoidance (CTA) with extended trace intervals between the conditional stimulus (CS; saccharin) and the unconditional stimulus (US; METH). We also determined if METH CTA was exhibited in young adulthood. Methods: Rats were randomly assigned to saline (SAL), immediate (IMM), 2 hour (2 h) or 4 hour (4 h) METH groups. Rats were allowed access to saccharin for 15 min on post natal day (PND) 38, 39 and 40 following 2 days of water restriction. SAL or METH (3 mg/kg) injection was administered either immediately, 2 or 4 h after consumption (sc; n= ~14/group). Two-bottle tests, which measured saccharin preference, were administered on PND 41 and 62 (i.e., measured within-subjects). Results: Males and females acquired CTA when METH was injected immediately and 2 h after saccharin consumption; however, only the males acquired METH CTA when the trace interval was extended to 4 h. The 2-bottle test conducted on PND 41 revealed that males in the IMM, 2, and 4 h groups showed CTA, whereas only the females in the IMM group expressed CTA. The 2-bottle test conducted on PND 61 showed that the males in the IMM and 2 h groups, and females in the IMM group, exhibited CTA.

Conclusions: Trace intervals of 2 or 4 hours revealed sex differences in the expression of METH-induced CTA. These data suggest that females may experience fewer negative effects from METH compared to males. Moreover, expression of CTA was observed during young adulthood. These findings indicate that Pavlovian conditioned responses acquired during periadolescence, which are known to play a role in drug seeking behavior, persist into adulthood. Support: Supported by NIDA grant DA21287.

#### **DUAL SUBSTANCE-ABUSING PARENTS VS. MOTHER-ONLY SUBSTANCEABUSING PARENTS IN TREATMENT: BEHAVIORAL FUNCTIONING OF CHILDREN**

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Aims: Couples-based treatment studies have targeted females with nonsubstance-abusing male partners. However, many female substance abusers entering treatment are involved with male partners who also abuse substances, which may increase risks in the family. Regardless of their partners' substance use status, most women entering treatment retain caregiving responsibilities for children in their homes. At present, we know little about how children's functioning may be associated with whether only mothers abuse substances, or whether parents are dual substance abusers. This study compares emotional and behavioral functioning of children living with two substance-abusing parents versus a substance-abusing mother and nonsubstance-abusing father. Methods: Participants were 8- to 12-year-old children living with a substance-abusing mother entering couples-based treatment and either a substance-abusing father (n=76) or a nonsubstance abusing father (n=76). Families were matched on child age, parents' age, education, family income, length of relationship, and severity of parental substance use. Parents rated children's externalizing and internalizing behaviors; children completed self-report measures of depression and anxiety. Results: Across raters, children from homes of dual-substance abusing parents had significantly fewer internalizing and externalizing symptoms than children from homes with only a substance-abusing mother. Conclusions: Children who live in 2-parent homes in which both parents abuse substances exhibit lower internalizing and externalizing problems than children of mother-only substance-abusing parents. These seemingly paradoxical findings may reflect lower inter-parental conflict found in dual-substance abusing couples relative to female-only substance-abusing couples. Findings underscore the need to understand interrelationships among parental substance abuse, relationship conflict, and child outcomes as both risk and protective factors for children of substance abusers. Support: This study was supported in part by NIDA grant R01 DA015849.

## **PRENATAL COCAINE EXPOSURE, CHILDHOOD MALTREATMENT, AND ADOLESCENT MARIJUANA USE**

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**Aims:** Aims were to assess the relation of prenatal cocaine exposure (PCE) to childhood maltreatment (CM) and determine the contribution of PCE and CM to substance use and age of onsets among 172 adolescents in a longitudinal study. **Methods:** Cocaine, alcohol, marijuana, and tobacco exposures were assessed prenatally; CM and substance use were reported at age 15. First trimester PCE was used dichotomously (none/any), as was adolescent substance use. The Childhood Trauma Questionnaire (CTQ) assessed CM. CTQ subscales were dichotomized (no/yes CM); a variable was created for number of maltreatment exposures (0-4). The relation of PCE to CM was examined with multiple regression. Covariates were demographics, prenatal substance exposures, current maternal psychosocial and substance use. Predictors of onset ages were evaluated using proportional hazards; predictors of adolescent substance use were defined by logistic regression. Covariates for the hazards and logistic models were demographics, home, child depression, and prenatal exposures. **Results:** The average age was 15.6 years (14.7-18.4); 51% were African-American; 50% were female; mean monthly family income was \$2362(0-\$9000); 35% used alcohol, 20% used tobacco, and 21% used marijuana; 45% were exposed to cocaine in the 1st trimester; 23% were classified as maltreated. PCE ( $p < .05$ ) and current life events significantly predicted CM. PCE (hazards ratio 1.96, 95% CI 1.01, 3.78), CM (hazards ratio 1.42; 95% CI 1.2, 1.9) and home environment predicted earlier age at marijuana use. PCE (OR 2.54; 95% CI 1.04, 6.25), CM (OR 1.81; 95% CI 1.11, 2.96), child depression, and home environment significantly predicted marijuana use. PCE was not related to alcohol or tobacco use. **Conclusions:** Marijuana is the most common illicit drug used by youth. Adolescents exposed to cocaine prenatally are at higher risk of child maltreatment and marijuana use. Pathways for these relations include a sub-optimal home environment. **Support:** NIDA DA008916; NIDA DA008916-05A2s1; NIDA DA019482

## **CLINICIAN KNOWLEDGE OF COGNITIVE BEHAVIORAL THERAPY STRATEGIES: ROOM FOR IMPROVEMENT**

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**Aims:** To describe community-based clinician performance on a CBT knowledge questionnaire and factors associated with knowledge. **Methods:** Data are from a national study of 60 clinical teams at community-based agencies enrolled in a randomized trial of CBT training. Participants include 141 counselors and 61 supervisors who completed a web-administered questionnaire. Male respondents were 31.2%; 71.3% white; 82.0% of supervisors and 59.6% of counselors had masters degrees or higher ( $p = 0.002$ ). An evidence-based practice (EBP) attitude scale score was the average of six responses. Clinicians answered 18 multiple-choice (MC) questions and 5 questions on case vignettes (CV) to assess knowledge. MC and CV were analyzed using ANOVA with supervisor/counselor, gender, race/ethnicity, education, and EBP attitude as predictors. **Results:** Supervisors had an average of 8.3 years and counselors 6.8 years of experience. Supervisors reported more favorable EBP attitudes: 4.03, counselors 3.81 ( $p = 0.003$ ). Supervisors answered more MC questions correctly (11.23), counselors (9.55) ( $p = 0.001$ ). EBP attitude was significantly associated with MC; a one point attitude increase resulted in a 1.51 increase in MC score ( $p < 0.0001$ ). Supervisors answered more CV questions correctly (3.25), counselors (2.48) ( $p = 0.016$ ), as did those with a masters degree or higher (3.01) vs those without a masters (2.10) ( $p = 0.004$ ). A one point attitude increase resulted in 0.46 more correct CV questions ( $p = 0.015$ ). The MC and CV variables were correlated ( $\rho = 0.4$ ). **Conclusions:** In this sample of community-based clinicians seeking additional training on CBT there was substantial room for knowledge improvement. EBP attitude was a predictor of knowledge scores, and supervisors had both more favorable attitude and greater knowledge scores than counselors. Accessible, cost-effective methods to expose clinicians to additional CBT materials are warranted. **Support:** NIDA R01 DA016929

## **DECONSTRUCTING 12-STEP INVOLVEMENT AS PREDICTOR OF SUSTAINED ABSTINENCE FROM POLYDRUG USE**

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**Aims:** Predictors of long-term abstinence remain under investigated. We documented the role of continuous 12step meeting attendance in sustaining abstinence from polydrug use for 3+ years. Involvement in 12-step activities (e.g., reading literature, helping others, peer contact) may be more predictive than is meeting attendance alone; further, because many substance users chose not to attend 12step meetings, there is a need to specify the elements of 12step involvement (INV) that underlie its benefits and may be helpful independently of meeting attendance or even of the 12-step context. We examine (1) the role of overall 12step involvement in predicting sustained abstinence independently of meeting attendance; (2) the individual role of each of 9 INV behaviors (3) gender differences in these processes. **Methods:** Former polydrug users (N=285, 44% women) drug abstinent from one month to >10 years at intake (BL)

reinterviewed yearly for 3 years (F3 -83% retention). BL levels of overall INV and individual behaviors were entered as predictor in logistic regressions with abstinence sustained from BL to F3 (biologically corroborated) as outcome, controlling for BL abstinence length and number of 12step meetings past year. Results: 51.9% sustained continuous abstinence at F3. INV level predicted outcome (trend), and several individual activities increased the odds of abstinence by a factor >2 (p.<05). Though not different from men in clinical history or INV at BL, women were more likely to sustain abstinence; INV and most individual behaviors significantly enhanced the odds of continuous abstinence among women but not among men; helping others, contacting and socializing with recovering peers increased odds of abstinence by >2.5. Conclusions: 12-step involvement promotes sustained abstinence independently of meeting attendance, especially for women. Key predictor activities (helping, socializing with peers) may translate outside of the 12-step context; their usefulness in promoting sustained abstinence for persons who do not attend meetings or embrace 12step tenets needs further investigation. Support: R01DA14409

### **PSYCHOSOCIAL CORRELATES OF SEX TRADE AMONG DRUG-ABUSING WOMEN BY RACE/ETHNICITY**

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Aims: Substance using women are at increased risk for sex trade, a known risk factor for HIV/AIDS. A variety of psychosocial influences are likely contributing to sex trade entry and these factors likely vary across race/ethnicity. The current study sought to examine SES factors (education, homelessness) and drug use (crack, speedball) as correlates of sex trade involvement among African American and white drug using women. Methods: Participants consisted of 266 women aged 15-50 enrolled in the International Neurobehavioral HIV Study. Approximately, 62% were African American and 36% of the women reported selling sex for drugs or money. Separate binary logistic regression models were run to obtain adjusted odds ratio estimates for the associations between sex trade involvement, drug use, education and homelessness for African American and white women, controlling for age of sexual debut. Results: Among AA women, those who used crack or speedball were approximately 3 times more likely to trade sex for drugs or money (OR = 3.12; 95% CI = 1.20; 8.11 and OR = 3.46; 95% CI = 1.57; 7.63), respectively. Homelessness was also related to sex trade among AA women (OR = 3.32; 95% CI = 1.19; 9.27). In contrast, neither lifetime crack or speedball use nor homelessness was a significant predictor of sex trade for white women. However, white women who did not graduate high school or obtain a GED were approximately 3 times more likely to be involved in sex trade than those who received a high school or equivalency diploma (OR = 2.99; 95% CI = 1.01; 8.87). Conclusions: Given that the majority of HIV cases among women are contributed to sex with an infected male, it is important to study the factors involved in sex trade. Current findings indicate the role of SES factors and drug use varies differently for African American and white women with regard to sex trade. It is important to account for these differences in the development of prevention and outreach programs with particular focus on school achievement and job skills training. Support: Research support provided by NIDA R01 DA14498

### **ASSESSING PARANOIA IN METHAMPHETAMINE USERS: THE METHAMPHETAMINE EXPERIENCE QUESTIONNAIRE**

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Aims: The prevalence of paranoia in methamphetamine (MA) users is unknown. To investigate, we adapted the Cocaine Experience Questionnaire to create the Methamphetamine Experience Questionnaire (MEQ). We hypothesized that the MEQ would be a reliable and valid method of assessing MA-induced paranoia. Methods: We administered the MEQ to 228 MA dependent subjects who were enrolled in a large ongoing study of MA use. Test-retest reliability was assessed in 26 subjects and inter-rater reliability was assessed in 30 subjects. Convergent and discriminant validity were assessed with the paranoid ideation and depression subscales, respectively, of the Brief Symptom Inventory (BSI), which was administered to 193 of the subjects. Results: 131 (57%) of the subjects reported at least one paranoid experience while under the influence of MA and, of those, most had multiple episodes of paranoia, concomitant hallucinations, and found the episodes to be more than moderately distressing. 51 (39%) of the 131 subjects who reported paranoia also reported acquiring a weapon during a paranoid episode and 17 (13%) reported using a weapon while paranoid. MA-induced paranoia was reported by a greater proportion of men (90/146, 62%) than women (41/82, 50%), but this difference did not reach statistical significance (chi = 2.91, p = 0.09). Test-retest and inter-rater reliability for MA-induced paranoia showed substantial agreement (kappa 0.77, p < 0.05 and kappa 0.80, p < 0.05, respectively). There was a moderate correlation between paranoia on the MEQ and the BSI paranoid ideation scale (rho = 0.27, p < 0.05). As expected, there was a poor correlation between paranoia on the MEQ and the BSI depression scale (rho = 0.12, p = 0.11). Conclusions: The MEQ provides important data on paranoia associated with MA use. The MEQ showed good test-retest and inter-rater reliability and moderate evidence of convergent and discriminant validity. Support: DA10641, DA24359

## **MARIJUANA ABUSE IN INCARCERATED ADOLESCENTS**

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**Aims:** The current study was designed to extend basic knowledge of reasons for marijuana(mj)use, establish factors related to use, and examine if relaxation therapy is effective in reducing mj use. It is hypothesized that, upon entrance to a juvenile training facility, teens who abuse mj will report a related set of background variables (e.g., family history) that differs from teens who do not have a mj abuse diagnosis and will find relaxation therapy more effective than motivation intervention for reducing mj use 3 months after release. Additionally, teens with negative affect (NA; high expectancies mj to help one relax and reduce tension, and a low confidence score for not smoking in situations where negative feelings will be alleviated) will have elevated mj use compared to those with positive affect (high expectancy for mj to make parties more fun and make one more social, and a low confidence for not smoking in celebratory situations).

**Methods:** Participants were 189 incarcerated teens age 14-19 (M=17 years). Participants adjudicated between January 2001 and September 2005 were included if they reported mj use prior to their incarceration. Of the 189 participants, 86% were boys, 32.8% White, 29.1% Hispanic/Latino, 28% African American, and 10.1% other. Analyses included computing a variable from items from the Brief Situational Confidence Questionnaire-M (BSCQ-M) to form a negative affect (NA) and a positive affect (PA) variable. **Results:** Results indicated that incarcerated teens who were in the NA group report higher averages of weekly mj use and a higher number of days using mj at 3-month follow-up than did those who were not in the NA group. While those in the PA group reported no difference in the average amount smoked per week in the past 3 months. Additionally, gender differences were found with females reporting a more significant family history of drug use and were more likely to report that they perceive that mj has bad effects on a person.

**Conclusions:** Further research is needed to examine reasons for mj use among incarcerated teens to inform and streamline treatment needs. **Support:** NIDA grant #13375

## **THE VALIDITY OF MEASURES FOR MONITORING COCAINE USE IN OUTPATIENT CLINICAL TRIALS**

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**Aims:** The gold standard for monitoring cocaine use in outpatient clinical trials is urinalysis of benzoylecgonine levels. Many limitations of this biological marker exist including short half-life which requires frequent sampling often resulting in missing data. Therefore, retrospective self-reports are commonly used to supplement urinalysis results. However, underreporting limits the validity of self-report. Therefore, a validity study was conducted on 129 participant urinalysis and self-reported cocaine use as part of two outpatient treatment studies for cocaine dependence. **Methods:** A benzoylecgonine level of 300ng/ml or higher constituted a positive urinalysis result and a self-report of cocaine use within 72 hours of the urinalysis qualified as positive self-report. Statistical tests of validity included the computation of sensitivity and specificity using urinalysis as the standard. Further, demographic characteristics were compared for participants who self-reported use versus participants who self-reported no-use for the subset of participants (n=97) with positive urinalysis. **Results:** Validity results indicated both high sensitivity (83.51%) and specificity (90.63%). Given that previous studies have found sensitivity ranging from 28% to 78%, our treatment studies indicate high validity of self-report when compared to urinalysis. Furthermore, comparisons of urinalysis positive participants who self-reported use versus those who self-reported no-use demonstrated no differences in age, race, or gender. However, participants with a self-report of no-use reported fewer days of past month cocaine intake than those who self-reported use, (p=.0255).

**Conclusions:** Future analysis will focus on further differentiating self-reports of participants with positive urinalysis in order to identify subgroups of participants who may inaccurately self-report their cocaine use. **Support:** This research is supported by NIDA 1 R01 DA016368-01A1 and NIDA 1 R01 DA019903-01.

## **THE ACUTE SUBJECTIVE EFFECTS OF BENZYLPIPERAZINE IN HEALTHY FEMALES**

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**Aims:** BZP is a stimulant drug that causes amphetamine-like subjective and physiological effects in humans. The acute effects of BZP in humans have not been well characterized in the clinical setting. This double-blind, placebo controlled study reports the acute subjective effects of BZP in healthy females. **Methods:** Participants (age:22±3 years, n=27) were given either placebo or a single oral dose of BZP (3.3mg/kg) and tested before and 2.5hr after drug administration. Subjective and mood effects were evaluated using the Profile of Mood States (POMS), Visual Analog Scales (VAS) and the Addiction Research Centre Inventory (ARCI). Blood pressure, body temperature and resting heart rate were measured at both time points. Data was analyzed using repeated measures analysis of variance (ANOVA) to evaluate changes. **Results:** Results were considered significant if P<0.05. **Results:** BZP significantly increased systolic

(Pre:118±12,Post:130±11mmHg) and diastolic (Pre:72±7,Post:80 ±8mmHg) blood pressure and heart rate (Pre:71±12,Post:86±18beats/min) but decreased the body temperature (Pre:37±0.3,Post:36.6±0.5°C) relative to placebo.

VAS demonstrated that BZP significantly increased ratings of Stimulated, High, Self-Confident, and Anxiety scales. Significant effects were also observed in the categories of Drug effect i.e. Good Drug Effect, Drug Liking, Hungry and Talkative. BZP significantly increased scores of euphoria (Morphine-Benzedrine Group) and dysphoria (Lysergic Acid Diethylamide) in the ARCI scales. Furthermore the POMS also demonstrated that BZP significantly decreased Fatigue and increased Vigor. Conclusions: The present study examined the subjective effects of BZP on humans utilizing VAS, POMS and ARCI. Our results suggest that BZP displays many characteristics typical of other psychostimulants such as MDMA and related amphetamines because it produced easily measurable cardiovascular effects in addition to well characterized subjective effects and demonstrating its potential for abuse. Support: Trecia Wouldes

### **DRUG USE, SEX, AND WOMEN'S RISKY RELATIONSHIPS**

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Aims: HIV risk is a public health concern, particularly for drug abusing women. Although gender-specific HIV interventions target risky drug use and sex, they do not focus on partner relationships. The Restructuring Risky Relationships for HIV intervention was developed to reduce risky drug use and sex among women re-entering their community from prison. The intervention is grounded in the women's relational model and targets changing Thinking Myths about behaviors in relationships. The intervention is being evaluated in a multi-site trial across 4 participating NIDA supported CJ-DATS research centers. Methods: Sexual relationships were examined using the Sexual Relationship Power Scale (SRPS) (Pulerwitz et al., 2000). Baseline data were compared for high and low sexual relationship power groups on risky drug use and sexual behaviors. Results: When the initial 222 women were examined, the median age was 35; 69% had a high school degree or GED; and 46% were never married. Self-reported drug use before incarceration was 90% for marijuana; 78% for cocaine; 78% for crack; 54% for Librium and 43% for methamphetamine. Findings indicate that participants with high sexual relationship power measured by the SRPS were 53% less likely than women with low relationship power in the 30 days before incarceration to engage in daily opiate use (95% CI: 0.22, 0.99); 61% less likely to engage in anal sex without a condom (95% CI: 0.15, 0.95); and 53% less likely to engage in sex without a condom with someone using methamphetamine (95% CI: 0.24, 0.91). Women who indicated that they did not make healthy choices about HIV when using drugs were also significantly more likely to have unprotected sex with a stimulant user. Conclusions: Findings suggest there is a strong association of power in relationships with risky drug use and sex. In addition, women with greater power in relationships were less likely to engage in risky drug use and sex. Future research should focus on understanding women's risky relationships and empowerment. Support: NIDA 5U01DA016205

### **GENDER DIFFERENCES IN MORTALITY AMONG HEROIN, COCAINE AND METHAMPHETAMINE USERS**

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Aims: Studies examining gender differences in mortality among drug users over a long period of observation have been limited. This study examines gender differences in mortality among primary heroin, cocaine, and methamphetamine users based on five long-term follow-up studies conducted in California. Methods: Data from subjects (N=1906) in five long-term followup studies were used to study the mortality of these subjects who had reported their primary drug problem as heroin, cocaine or methamphetamine. In this combined study, there were 474 (24.9%) methamphetamine users, 738 (38.7%) heroin users, and 694 (36.4%) cocaine users. The average age at onset of primary drug use was 21 years. Fisher's exact tests and logistics regression mixed effects models were used to analyze the death rates among the three types of drug users over years since the first primary drug use. Results: Overall, heroin users had the highest mortality rate regardless of gender. Over 12% of heroin users were dead within the first 20 years of heroin use, compared to only 4% of cocaine users and less than 1.5% of methamphetamine users. More males than females died among primary heroin users (12.4% vs. 9%) and among primary cocaine users (5.1% vs. 1.5%), whereas the number of deaths between male and female using methamphetamine were similar. Continuing to the first 30 years of primary drug use, mortality increases to about 25% for the heroin users and 6.5% for the cocaine users, whereas there was no change for the methamphetamine users. Conclusions: Data from five long-term follow-up studies of individuals with a history of heroin, cocaine and methamphetamine use showed different patterns of mortality between males and females across drugs. Support: This study is funded by the National Institute on Drug Abuse (P30DA016383).

## **EXAMINATION OF WITHDRAWAL SYMPTOMS IN METHADONE- OR BUPRENORPHINE-EXPOSED NEONATES**

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**Aims:** This study examines item-level withdrawal symptoms in neonates exposed to opioids in utero. Prenatal opioid exposure can lead to neonatal abstinence syndrome (NAS), with ~50% of neonates requiring pharmacological treatment. NAS tools (e.g., Finnegan Scale; Finnegan & Kaltenbach, 1992) assess central and autonomic nervous systems (CNS, ANS), gastrointestinal tract, and respiratory system symptom presence and severity. Present symptoms sum to a total score. Few studies have examined neonatal withdrawal at the level of individual symptoms. Data from a randomized controlled trial (RCT) was examined to further our understanding of the symptoms comprising NAS. **Methods:** Twenty-one pregnant heroin-dependent women were randomized to receive either methadone (n=11; 5 requiring treatment for NAS) or buprenorphine (n=10; 2 requiring treatment for NAS) in double-blind, double-dummy RCT design. From birth, neonates were assessed every 3-4 hours using a 19-item modified Finnegan Scale. Pharmacological treatment was initiated when 2 consecutive scores  $\geq 9$  were recorded. The individual symptoms were examined for each baby and summed across the treated and untreated neonates. **Results:** In treated opioid-exposed neonates, 75% of the symptoms observed at time of treatment and 12 hours prior to treatment were CNS symptoms. Individual symptoms in untreated babies were more widely distributed across the different classes of symptoms compared to treated babies. However, nasal stuffiness, irritability, and vomiting were rarely observed in the untreated babies. In all neonates, 21% of symptoms (seizures, yawning, sweating, failure to thrive) occurred infrequently. **Conclusions:** The current RCT study confirmed the previously reported observation that CNS classified symptoms are the most prominent symptoms observed in opioid-exposed infants. Additionally, these data suggest continued refinement of the assessment of neonatal withdrawal will enhance accurate identification of NAS as well as improve the utility of the scoring tool. **Support:** NIDA R0112220, 018410, and M01RR-02719

## **CROSS-CULTURAL SEX DIFFERENCES IN ADOLESCENT SUBSTANCE USE: GERMANY AND THE UNITED STATES**

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**Aims:** Past research on adolescent substance use has consistently confirmed sex differences. Even though more recent studies suggest that the 'gender gap' seems to be closing, significant sex differences remain at least in some areas. The present study addresses this issue by examining cross-cultural sex differences in Germany and the U.S. with regards to (a) substance use patterns and (b) correlates of substance using behaviors. **Methods:** Self-report data on adolescent substance use in the U.S. and Germany are provided by the 2003 waves of the Monitoring the Future (MTF) and the European School Survey Project on Alcohol and Other Drugs (ESPAD). A series of NBRM models was used to estimate cross-cultural sex differences in alcohol, tobacco, and marijuana use among these adolescents. **Results:** Results show several interesting patterns. First, sex differences exist on measured levels of drinking, indicating that females in both countries are more likely to be abstainers or drink alcohol only occasionally. German females had higher rates of drinking compared to American female respondents. However, in a full explanatory model, sex differences disappeared for both countries. Second, females had higher rates of cigarette smoking in both countries. German males and females had higher rates of smoking than their American peers. Again, sex differences vanished when peer influence and attitudes were added. Finally, the use of marijuana was more common among males in both countries, and sex differences persisted when other factors were controlled for. **Conclusions:** Despite significant differences in legal and cultural environment, both male and female substance use patterns showed surprising cross-cultural similarities, especially regarding the influence of peers and attitudinal measures. Findings thus suggest that attempts to prevent or curb adolescent substance use could benefit from lessons learned by other countries. **Support:** n/a

## **GENDER MODERATES STEREOTYPE THREAT IN CANNABIS USERS**

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**Aims:** Research reveals mixed results for the effects of cannabis on cognitive functioning. These divergent results might stem from stereotype threat (ST), which occurs when individuals believe that a group to which they belong is inferior, resulting in poor test performance. Widespread media coverage of purported cannabis-related deficits in cognitive functioning may elicit ST among cannabis users. **Methods:** To investigate this hypothesis, cannabis users (27 male, 20 female) read a summary of research indicating either that cannabis produced deficits (ST condition), or that cannabis actually created no changes in cognitive functions. Participants then completed cognitive tests. **Results:** No main effects were found between conditions. However, separate analyses of gender revealed that male ST participants (n = 13) scored lower on the tests than male controls, while female ST participants (n = 10) scored higher than controls. Men exposed to ST generated significantly fewer words ( $t(25) = 2.87, p = .008$ ) and switched between word clusters less often ( $t(25) = 2.38, p = .025$ ) on the Controlled Oral Word Association Test, demonstrating decreased verbal fluency. Women exposed to ST scored significantly higher on the California Verbal Learning Test-II immediate recall ( $t(18) = -2.57, p = .019$ ), Forward Digit Span ( $t(18) = -2.12, p = .048$ ), and the Digit Symbol Substitution Task (DSST) ( $t(15.15) = -2.14, p =$

.046), demonstrating superior working memory and psychomotor speed. Differences remained significant after controlling for age, amount of cannabis consumed, belief that cannabis diminishes cognitive functioning, and state anxiety for all tests except the DSST. Conclusions: These results suggest that cognitive deficits observed in male cannabis users may be attributed to ST rather than decreased functioning. Surprisingly, women in the ST condition scored higher than controls. Perhaps female users do not identify with the typical cannabis stereotype, as cannabis use is observed most frequently among males. This study highlights the importance of disconfirming relevant stereotypes prior to examination of the cognitive abilities of cannabis users. Support: Funded by Marijuana Policy Project.

### **PERCEIVED HARMFULNESS OF DRUGS AND ITS ASSOCIATION WITH DRUG USE: YOUNG MEN AND WOMEN IN BOGOTÁ, COLOMBIA SEE AND DO THINGS DIFFERENTLY**

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Aims: Risk-perception is a key component of most behavioral theories, predicting adoption of protective or risky behaviors. Accordingly, many studies have suggested the importance of perceived drug harm in predicting adolescent use of illegal drugs. This study explores gender differences in the perceived harm of drugs and in the association between perceived harm and drug use, among a representative sample of adolescents in Bogotá, Colombia. Methods: Data was collected via a standardized questionnaire administered to 1169 female, and 1192 male students in Bogotá, Colombia, selected in a stratified multistage probability cluster sample. Results: Average age of participants was 14.8 years (SD=1.3), 65.3% studied in public schools and 56.3% belonged to the lowest social strata. Rates of any perceived physical, psychological or other harm were: 77.3% for marijuana, 85.1% for inhalants, 86.8% for cocaine, and 84.3% for ecstasy. Females were significantly more likely to report any perceived harm for marijuana (Odds Ratio=1.4, 95% CI=1.2,1.8), inhalants (OR=1.6, 1.2-2.0), cocaine (OR=1.4, 1.1-1.8) and ecstasy (OR=1.3, 1.0-1.6). Students who did not perceive any harm were more likely to ever have used marijuana (OR=3.7, 2.9-4.6), inhalants (OR=2.1, 1.5 -2.9), cocaine (OR=3.9, 2.4-6.2) and ecstasy (OR=2.9, 1.9-4.4). Gender specific analyses indicate that among females lack of perceived harm was associated with a greater likelihood to use marijuana (OR=6.5, 4.1-10.2) and ecstasy (OR=5.3, 2.8-10.1), while among males no association between perceived harm of ecstasy and ecstasy use was evident (OR=1.7, 0.9-3.2). Conclusions: In this sample of Colombian adolescents, the nature of the association between perceived drug harm with drug use differs between young men and women. Identifying and understanding gender differences in the protective effect of perceived harm of drugs is essential in the development of gender-specific prevention activities. Support: This study was supported by a Milstein Doctoral Fellowship to C. Lopez

### **BRIEF, UNIVERSAL INTERVENTION FOR CHILD MALTREATMENT PREVENTION AMONG HIGH-RISK PARENTS: EFFECTS ON SUBSTANCE USE, MENTAL HEALTH, AND INTIMATE PARTNER VIOLENCE**

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Aims: Primary care-based brief interventions typically focus on a single behavior, and are dependent upon patient disclosure. In contrast, prevention of child maltreatment requires attention to a constellation of risk factors and awareness of the likelihood of under-reporting. This exploratory study was designed to evaluate the potential efficacy of a universal maltreatment prevention intervention for pregnant women. Methods: 100 low-income pregnant women were recruited-;without pre-screening for risk factors-;from urban prenatal care clinics, and randomly assigned to single-session brief intervention vs. assessment-only. The 30-minute intervention was based on Motivational Interviewing principles, and was designed to address risk factors for child maltreatment, including substance abuse, intimate partner violence, and depression. Before addressing risk factors reported by the participant (if any), interventionists briefly presented normative information about each factor and elicited the participant's thoughts. Follow-up evaluation took place an average of 3 weeks after delivery, and briefly assessed evidence of drug use in the birth medical record, receipt of intimate partner violence, and depression. Results: Using change scores where appropriate, there were no overall group differences on any outcome, although effect sizes consistently favored the intervention group (average d = approximately .40). Analyses within subgroups showing a particular risk factor at baseline revealed similar results, with stronger effects evident only with respect to intimate partner violence (d = .91, ns). Conclusions: These results suggest that, despite the challenges of evaluating a universal intervention in an unselected sample, there may be utility in such an approach. A more adequately powered trial appears to be merited. Support: This study was supported by NIDA DA000516 (Ondersma).

## **GENDER DIFFERENCES IN SUBJECTIVE AND PHYSIOLOGICAL RESPONSE TO ORAL THC IN CANNABIS-DEPENDENT HUMANS**

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**Aims:** Recent research has shown that oral THC alleviates some marijuana withdrawal symptoms and attenuates marijuana craving subsequent to marijuana cue exposure. These findings suggest that oral THC warrants further investigation as a potential pharmacotherapy for cannabis abuse. Few studies have examined gender differences in subjective and physiological responses to oral THC challenge. The current (ongoing) study is investigating whether males and females differ in subjective drug effects, blood pressure (BP), and heart rate following administration of three doses of oral THC (0 mg, 10 mg, 20 mg; counterbalanced and randomized). **Methods:** Subjects completed to date include 14 (7 male) healthy, young adults (M age = 28.7 yrs) who met DSM-IV criteria for Cannabis Dependence but no other substance use disorder. They participated in 3 sessions separated by one week. Subjective drug effects and physiological data were collected for 4 hrs following oral THC challenge. **Results:** Repeated measures ANOVA on peak subjective drug effects revealed significant drug X gender interactions on the VAS items "Feel Effects," "Like Effects," and "Want More." Females had higher scores than males on all three VAS items at the 10 mg dose. Females also reported higher scores on "Want More" at the 10 mg relative both to 0 mg and 20 mg oral THC. Repeated measures ANOVA also revealed a significant drug X gender interaction on diastolic BP. In females only, diastolic BP was lower following 10 mg and 20 mg oral THC relative to placebo. **Conclusions:** These findings indicate that females report feeling and liking the effects of 10 mg oral THC more than males, although this difference is not evident at the 20 mg dose. Females also may be more physiologically reactive to oral THC than males. These results illustrate the importance of considering gender in dosing with oral THC, should this medication be approved for use as treatment for cannabis abuse. **Support:** Supported by NIDA Grant DA19236 and Joe Young, Sr. funds from the State of Michigan.

## **ACQUISITION AND MAINTENANCE OF NICOTINE SELF-ADMINISTRATION IN ADOLESCENT MALE AND FEMALE RATS**

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**Aims:** Despite the fact that initiation of nicotine use generally begins during adolescence, and that rates of nicotine use are comparable between males and females at this time, most animal studies have focused on adult males. Thus, in this study, we examined rates of acquisition of nicotine self-administration and subsequent progressive-ratio responding for nicotine in male and female rats beginning during early adolescence (i.e., on postnatal day 30). **Methods:** Six male and nine female Sprague Dawley rats were trained to self-administer nicotine (0.01 mg/kg/infusion) under a fixed ratio 1 schedule (i.e., each response was reinforced by an infusion of nicotine). Following acquisition (defined as two consecutive sessions during which a rat obtained all 20 infusions available), responding was assessed under a progressive-ratio schedule until postnatal day 45. **Results:** Under these conditions, both males and females rapidly acquired nicotine self-administration (typically in the first 2 sessions) with all of the animals meeting the acquisition criterion by postnatal day 39. Males and females also responded at similar levels under the progressive-ratio schedule suggesting that they were equally motivated to obtain nicotine infusions. **Conclusions:** These data demonstrate rapid and maximal rates of acquisition of nicotine self-administration during early adolescence in male and female rats. The lack of a sex difference is in contrast to results in adult rats suggesting that sex differences may vary at different developmental time-points. It is also possible that sex differences are relevant during adolescence but that the use of a high dose of nicotine obscured differences. Studies are underway to examine this possibility and to determine the relationship between gonadal hormones (i.e., estradiol, progesterone, and testosterone) and motivation for nicotine during this important hormone transition period. **Support:** Virginia Youth Tobacco Project Small Grants Program for Research and The University of Virginia

## **CONTRASTING MODELS OF GENETIC COMORBIDITY FOR CHILDHOOD CONDUCT DISORDER AND CANNABIS INVOLVEMENT**

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**Aims:** Conduct disorder (CD) has been consistently associated with increased risks for cannabis use & abuse/dependence. Several hypotheses may explain these observed associations, including the possibility that CD may directly cause cannabis use and abuse/dependence or that CD and cannabis involvement reflect correlated liabilities (including genetic vulnerabilities). **Methods:** We investigate the source of the co-morbidity between CD and cannabis use and abuse/dependence symptomatology using 13 distinct genetic models proposed by Neale and Kendler. These models were fit to data from 4152 same-sex male and female Australian twins on CD and early onset (before age 18) cannabis use and lifetime symptoms of cannabis/dependence. **Results:** DSM criteria of CD were reported by 18.9% of males and 7.6% of females and was associated with dramatically elevated risks of early onset cannabis use (OR = 7.0, 95% CI = 5.1-9.6 (females); OR = 4.5, 95% CI = 3.5 -5.8 (males)) and lifetime abuse/dependence symptomatology (OR = 5.6, 95% CI = 4.1-7.8 (females); OR = 3.9, 95% CI = 3.1-5.1 (males)). Results from the best fitting model indicated



moderate heritable components to CD ( $h^2 = 27\%$  in females;  $41\%$  in males) and to both early onset cannabis use ( $h^2 = 51\%$  in females;  $49\%$  in males) and symptoms of cannabis abuse/dependence ( $h^2 = 34\%$  in females;  $60\%$  in males). Importantly, both the genetic correlations ( $r_g = .52-.81$ ) and shared environmental correlations ( $r_{cE} = .58-1.0$ ) were substantial, indicating that much of the observed comorbidity between CD and cannabis involvement could be explained by correlated genetic and environmental liabilities. Conclusions: The comorbidity between CD and cannabis involvement can largely be attributed to a common predisposition to these behaviors. Support: DA18267; DA18660; DA23668; AA07728; AA11998

### **GENDER DIFFERENCES IN RESPONSE TO DISULFIRAM TREATMENT FOR COCAINE DEPENDENCE IN METHADONE-STABILIZED OPIOID- AND COCAINE-DEPENDENT INDIVIDUALS**

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Aims: Previously we showed that disulfiram (DSF) at 62.5 and 125 mg/day, but not 250 mg/day, increased cocaine use relative to placebo in those with low, but not high, dopamine beta-hydroxylase (DBH) activity. This present study conducted secondary analyses to examine whether response to disulfiram differs by gender. Methods: In this 14-wk, double blind, placebo controlled clinical trial opioid- and cocaine-dependent individuals ( $N=152$ ; mean age = 36.3 yrs; 59% male; 10%*H*/11%*AA*/78%*Cauc*/2%*Other*) were inducted onto methadone (wks 1-2) and randomized to receive DSF (wks 3 -14) at either 0, 62.5, 125, or 250 mg/day. In addition, all participants received weekly 1-hour CBT. Thrice-weekly urine samples were tested for the presence of cocaine metabolites. HLM with gender, treatment group and time as factors was performed on cocaine urine results. Results: Medication groups generally did not differ on subject characteristics or retention. Males and females generally did not differ on baseline characteristics, except that males reported significantly longer duration of opioid use ( $p=0.04$ ). In males, cocaine-positive urines increased over time in the 62.5 ( $p=0.0006$ ) and 125 ( $p<0.0001$ ) DSF groups relative to placebo and decreased similarly over time in the 250 DSF and placebo groups ( $p=0.64$ ). In females, cocaine-positive urines did not differ between the 62.5 ( $p=0.52$ ) or 125 ( $p=0.42$ ) DSF and placebo groups; however, cocaine-positive urines showed a trend toward decreases over time at DSF 250 relative to placebo ( $p=0.06$ ). These results cannot be explained by differences in DBH activity. Conclusions: These results suggest that DSF, at doses of up to 250 mg/day, is ineffective treatment for cocaine dependence in cocaine- and opioid-dependent men and may escalate cocaine use at doses lower than 250 mg/day. DSF at 250 mg/day may be effective treatment for cocaine dependence in cocaine- and opioid-dependent women. Support: Supported by grant DA13441 and Arkansas Biosciences Institute.

### **SIGNIFICANT ASSOCIATION OF BITTER TASTE RECEPTOR GENES WITH NICOTINE DEPENDENCE IN AFRICAN AMERICANS**

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Aims: Psychophysical studies suggest that bitter sensitivity is a factor in cigarette smoking. However, genetic involvement is not well understood. The current investigation sought to determine whether single nucleotide polymorphisms (SNPs) in the bitter receptor gene TAS2R38 are associated with nicotine dependence (ND) and if effects vary by gender and ethnicity. Methods: Samples used included 2037 individuals from 602 nuclear families of either African American (AA) or European American (EA) origin, recruited from the Mid-South States from 1999-2004. Proband smokers were at least 21 years old, smoked for at least five years, and smoked at least 20 cigarettes per day for the past 12 months. Siblings and parents were recruited whenever possible. ND was assessed with three measures: indexed Smoking Quantity (SQ), Heaviness of Smoking Index (HSI), and the Fagerström Test for Nicotine Dependence (FTND). Peripheral blood DNA was genotyped for three SNPs of each gene using a TaqMan assay. Results: Association analysis indicated that the TAS2R38 taster haplotype, PAV, was negatively associated ( $P = 0.0165$ ) and the nontaster haplotype, AVI, was positively associated ( $P = 0.0120$ ) with SQ in AAs. Our results further revealed that the nontaster haplotype was positively associated with all three ND measures in AA female smokers (SQ, HSI, and FTND;  $P = 0.003$ ,  $0.008$ , and  $0.010$ ). These associations remained significant after correction for multiple testing of major haplotypes. No significant associations were detected for the gene in EAs. Conclusions: Genetic variants in bitter taste receptor genes may play a more important role in the etiology of ND in AAs compared to EAs. Our results further imply that increased sensitivity to bitter substances (i.e., being a taster) confers protection against the development of ND. Conversely, decreased sensitivity (i.e., being a nontaster) represents a risk factor for ND, especially in AA female smokers. Support: This study was supported by NIH grant R01- DA12844.

### **TRENDS IN RECENT-ONSET EXTRAMEDICAL OPIOID ANALGESIC USE IN THE US FROM 1990 TO 2005**

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Aims: This study examines trends in recent-onset extramedical opioid analgesic use over a 15-year period testing for changes in demographics, opioid analgesic abuse/dependence, and associations with other extramedical prescription

drugs (stimulants, sedatives and tranquilizers). Methods: Secondary analysis from the National Survey of Drug Use and Health (NSDUH) years 1990 (n=8,841) to 2005 (n=50,022). Data was analyzed through basic contingency tables and weighted logistic regression models. Results: Recent-onset extramedical opioid analgesic use (defined as respondents who initiated use within 24 months of assessment) in the general US civilian population aged 12 years of age and older increased from 0.9 % in 1990 to 2.6% in 2005 (OR=2.9[2.2-3.9]), increases were more pronounced from 1999 onwards. Recent-onset analgesic use increased among both males (2005 vs. 1990: OR=3.5[2.2-5.5]) and females (2005 vs. 1990: OR=2.6[1.8 -3.6]); among non-Hispanic Whites (2005 vs.1990:OR=3.2[2.3-4.4]) and Hispanics (2005 vs.1990:OR=6.6[3.5-12.4], suggesting greater proportional increase among Hispanics than among Whites over time); among those with less than college education; among adolescents and adults younger than 35 years of age; and among those with an annual family income of less than US \$75,000. Analgesic abuse/dependence among recent-onset analgesic users did not change across time (measured from 1999 to 2005). Lifetime extramedical use of other prescription drugs among recent-onset analgesic users was stable across time, with the exception of sedative use, that decreased from 27.2% in 1990 to 5.5% in 2005 (OR=0.2[0.07-0.3]). Conclusions: Recent-onset analgesic use has increased in the US general population particularly among Hispanics and younger age groups, however, this did not translate to an increase in analgesic abuse/dependence nor were there increases in other prescription drug use among this subpopulation. Support: NIDA grant DA020667-01A2 (P.I. Martins).

### **NONMEDICAL USE OF PRESCRIPTION OPIOIDS AND OTHER DRUG USE: WHAT COMES FIRST**

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Aims: The high prevalence and incidence rates of nonmedical use of prescription opioids (NMUPO) among adolescents and young adults in the U. S. warrants a more detailed examination of the initiation patterns of NMUPO within this age group. Methods: Data were collected from structured diagnostic interviews as part of the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC; n = 43,093). The present study used a sub-sample of U.S. young adults 18 to 29 years of age (n = 8,666), of which 50% were women, 61% White, 18% Hispanic, 13% African American, 6% Asian, and 2% Native American or of other racial background. Results: Among young adults 18 to 29 years of age, the lifetime prevalence rate of NMUPO was 7.4% and males reported higher rates of NMUPO than females (9.2% vs. 5.5%,  $p < 0.01$ ). The mean age of onset for NMUPO (18.4 years, SE = 0.2) was higher than for alcohol, tobacco, marijuana and many other drugs. Among those who reported lifetime NMUPO (n = 547), approximately 86.1% initiated NMUPO after using alcohol, tobacco and/or marijuana (ATM), 12.6% initiated NMUPO at or before using ATM, and only 1.3% never used ATM. Further, 41.3% initiated NMUPO after using at least one other prescription or illicit drug (e.g., cocaine, hallucinogen, inhalant, heroin, sedative, stimulant, tranquilizer), 34.9% initiated NMUPO at or before using at least one other prescription or illicit drug, and 23.8% never used other prescription or illicit drugs. Early NMUPO initiation (15 years or younger) was significantly associated with the development of prescription opioid abuse and dependence, especially among those who initiated NMUPO after using other drugs. Conclusions: The results indicate that NMUPO is prevalent and is associated with other forms of substance abuse. Age of initiation of NMUPO appears associated with abuse and dependence and this relationship has implications for both the identification of high risk youth and early prevention efforts. Support: This study was supported by a NIDA research grant DA020899.

### **GENDER DIFFERENCES IN COPING MOTIVES AND SUBSTANCE USE DISORDER SEVERITY**

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Aims: Motives for substance use may serve as a particularly important variable in the etiology and treatment of substance use disorders. As substance use disorders are associated with high levels of negative affect, coping motives may be of particular relevance to treatment. Further, studies suggest that there may be important gender differences in motives, with higher rates of coping motives among women. The purpose of this study was to investigate the relationship between coping motives and substance use disorder severity in men and women with current opioid dependence. We hypothesized that coping motives would be associated with greater drug use disorder severity and that this would relationship would be moderated by gender. Baseline data from a treatment outcome study for treatment-resistant substance dependence was utilized for this analysis; 51 participants (26 female), who were currently receiving methadone maintenance therapy were administered the Addiction Severity Index (ASI) and the COPE questionnaire, a self-report measure of coping strategies. A linear regression was conducted examining the relationship between coping motives and substance use disorder severity as measured by the ASI drug and alcohol use composite score. The main effect for coping motives reached significance ( $p < 0.05$ ), and with the addition of the moderator the regression gained small improvement in the variance predicted ( $R^2$  change = 0.04;  $p = 0.16$ ). The interaction term reflected a small to medium effect size ( $d = 0.40$ ), but did not reach statistical significance. The full model predicted 20% of the variance in substance use disorder severity. For women, the regression was significant ( $p < 0.05$ ) and predicted 23% of the variance in drug use disorder severity. This analysis suggests that gender may have some role in moderating the relationship between the use of substances to cope and substance use disorder severity. Among women relative to men, coping motives predict significant variance in substance use disorder severity. Affect regulation may be a particularly important

treatment target for women with opioid dependence. Supported by NIDA grant R01 DA17904-03SI awarded to Michael W. Otto.

### **ACUTE EFFECTS OF PROGESTERONE ON NICOTINE SELF-ADMINISTRATION BY FEMALE NONHUMAN PRIMATES**

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**Aims:** There is increasing evidence that the neuroactive steroid progesterone attenuates cocaine's abuse-related effects in women and in rats, but little is known about the effects of the neuroactive steroids on another psycho stimulant, nicotine. We examined the effects of acute administration of progesterone on nicotine self-administration by female nonhuman primates to determine if its effects were similar to its effects on cocaine. **Methods:** We studied the effects of single doses of progesterone (0.1, 0.2 and 0.3 mg/kg, i. m.) on nicotine self-administration dose-effect curves (0.001-0.10 mg/kg/inj). Nicotine self-administration (0.10 mg/kg/inj) was maintained on a progressive ratio schedule of reinforcement, and monkeys had unlimited access to nicotine during one daily session. Nicotine doses were administered in an irregular order during each dose-effect curve determination, and the same dose order was used in an individual monkey in all treatment conditions. Progesterone was administered 30 min before each test session, twice each week on Tuesday and Friday. Blood samples for hormone analysis were collected at the end of each test session. **Results:** Progesterone (0.2 and 0.3 mg/kg, i.m.) produced a dose-dependent downward and rightward shift in the nicotine self administration dose-effect curve. There was no evidence of sedation following progesterone treatment. These preliminary results are consistent with clinical reports that progesterone administration may decrease ratings of positive subjective effects of cocaine in women. **Conclusions:** The neuroactive steroid progesterone produces a dose-dependent decrease in nicotine as well as cocaine self-administration by female rhesus monkeys. These results could not be accounted for by sedation. Progesterone and its metabolite allopregnanolone are positive modulators of GABAA receptors. The extent to which these data reflect interactions with GABAA systems remains to be determined. **Support:** This research was supported in part by R01-DA14670, P01-DA14528 and K05-DA00101 from the National Institute on Drug Abuse, NIH.

### **TRAUMA, HEALTH PROBLEMS AND DEPRESSION IN DRUG-DEPENDENT WOMEN**

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**Aims:** This study examined rates of trauma, physical health problems and depression in a sample of drug dependent women assessed on admission to residential treatment. It further examined whether trauma symptom severity was associated with more significant physical health problems and depressive symptoms. **Methods:** The current sample includes N=60 women (final sample N=120 by June) who provided informed consent as part of a larger randomized clinical trial. The sample was predominantly African-American (66.1%) with a mean age of 37.8 years and a mean of 10.9 years of education. Baseline measures included the Posttraumatic Stress Diagnostic Scale (PDS), Pennebaker's Inventory of Limbic Languidness (PILL), and the CES Depression Scale (CES-D). The PDS assists with PTSD diagnosis and quantifies PTSD symptom severity, while the PILL assesses frequency of physical health symptoms. **Results:** Over 90% of the women (91.5%) reported at least one lifetime trauma, with a mean of 4.0 (SD=2.5) different types of trauma (e.g. sexual assault, non-sexual assault, serious accident). Over half (55.9%) of the women met diagnostic criteria for current (past month) PTSD. A Pearson correlation showed that women with greater trauma symptom severity (re-experiencing, avoidance, and arousal symptoms) also reported more severe physical health problems ( $p<.001$ ). A t-test revealed that those with PTSD reported more severe health problems ( $M=37.0$ ) compared to those without PTSD ( $M=24.8$ ) ( $p<.001$ ). Further, women with clinically elevated CES-D depression levels ( $CES-D >16$ ) reported greater trauma symptom severity compared to those without depressive symptoms. **Conclusions:** Results suggest that female SUD patients are an appropriate target population for trauma-focused interventions, as the majority has experienced at least one traumatic event of sufficient intensity to elicit PTSD level symptoms. Female SUD patients with PTSD and trauma also experience more severe physical health problems and levels of depression, and such women also should be referred for psychiatric and/or medical evaluation. **Support:** Grant from the VCU Institute for Women's Health

### **DRUG-ENDANGERED CHILDREN: PARENTAL METHAMPHETAMINE USE AND MANUFACTURE**

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**Aims:** 1. To describe the epidemiology of children removed from home-based MA labs in Los Angeles County; 2. To describe the child welfare services and placement outcomes of children removed from home-based MA labs in Los Angeles County. **Methods:** UCLA ISAP analyzed existing data collected on 100 drug-endangered children (DEC) in Los Angeles County. We also analyzed data on pre-existing contact with child protective services (e.g., prenatal drug/alcohol exposure) and the final case dispositions (or placement outcomes) of these children. The study is the first attempt to comprehensively identify the epidemiology of this population of neglected and abused children. **Results:** The distribution of females and males are approximately equal with 45.5% female and 54.5% male children removed from labs. There are

significantly more Latino and Caucasian children compared to other ethnic groups; 68.7% Latino, 29.3% Caucasian, 3% Native American, and 1% Asian. 3%. This finding is not surprising when MA use patterns in Los Angeles and California are considered. The mean age of the children was 6.9 years (SD = 4.5) with a range from less than 12 months old to 17 years old. Overall, 59.2% of the children were at grade level, 6.5% were below grade level, and 5.5% had severe deficits. More detailed results will be available at the time of the presentation. Conclusions: There is currently no comprehensive information about the needs of this special population of drug-endangered children or the implications of California legislation and the federal ASFA regulations on their cases in juvenile dependency court settings. Data collection documenting seizures of methamphetamine labs in California as it relates to child endangerment has been minimal, and the lack of statistical data to validate the extent of the drug-endangered children problem has masked its significance from policy makers. Support: The study is a collaborative effort between UCLA ISAP and the Los Angeles County DEC Response Team funded by the National Institute on Drug Abuse.

### **SEXUAL MATURATION, PEER DELINQUENCY, AND DRUG USE IN DAUGHTERS OF SUBSTANCE USE DISORDER FATHERS FROM CHILDHOOD TO ADOLESCENCE**

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Aims: The aim of the study was to determine the association of sexual maturation and peer delinquency with drug use from ages 10-12 (T1) and 12-14 (T2) to 16 (T3) in daughters of substance use disorder (SUD)(n=92) and non SUD (n=100) fathers controlling for parental SUD. Methods: At T1 socioeconomic status differentiated between groups but not age, educational level or ethnic composition. At T1, T2 and T3, sexual maturation and peer delinquency were assessed using the Tanner Staging Scale and Peer Delinquency Scale, respectively. Drug use (number of drugs ever used) was measured using the Drug and Alcohol Checklist at T3. Parental SUD was evaluated using the SCID at T1. T-test and Chi-Square were used to compare the groups regarding demographic characteristics. Path analyses were used to test the model in the total sample. Results: The results of the direct path analysis showed that maternal SUD predicted peer delinquency which together with early sexual maturation and paternal SUD predicted peer delinquency from T1 to T2 which in turn predicted peer delinquency and substance use at T3. The results of the indirect path analysis demonstrated that peer delinquency at T2 mediated the association between peer delinquency at T1 and drug use at T3. Conclusions: In conclusion, this study underscores the impact of affiliation with delinquent peers on the development of drug use by mid adolescence in girls. Influenced by parental SUD and early sexual maturation, affiliation with delinquent peers continues from late childhood to mid adolescence and contributes substantially to the development of drug use by mid adolescence. Prevention efforts should focus on helping young girls to adjust to an early sexual maturation and teach them to enhance their skills to select non delinquent peers to offset the risk for drug use. Support: This study was supported by NIDA grants DA 05605 and DA 05952

### **THE EFFECTS OF PRENATAL COCAINE EXPOSURE AND LEAD ON LANGUAGE AT AGE 10**

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Aims: The aim of this study was to investigate the effects of prenatal cocaine exposure on language skills including phonological processing in 10 year-old children while controlling for multiple drug exposures, maternal psychological distress, foster/adoptive care and lead. Methods: 350 primarily African American, low SES children (175 cocaine positive (C+) and 175 cocaine negative (C-)) recruited at birth from a large urban teaching hospital were assessed using the Comprehensive Test of Phonological Processing (CTOPP) and the Test of Language Development-Intermediate (TOLD-I:3) at 10 years. Linear regression, controlling for confounders, was used to evaluate the relationship of prenatal cocaine exposure to language development. A subanalysis of those children who had blood lead data available (n=275) at 2 or 4 years was completed. Results: Cocaine-exposure had a negative effect on expressive language (p<.04) and syntax (p<.004) composite scores of the TOLD-I: 3. An interaction between cocaine and gender was obtained, with cocaine-exposed females having poorer performance on phonological awareness than C- females. The addition of prenatal exposure to alcohol also predicted lower phonologic awareness and current caregiver tobacco use predicted rapid naming (p<.0004). Foster/adoptive care enhanced language development in C+ children, with higher composite scores in total language (p<.01), receptive language (p<.001), expressive language (p<.05), semantics (p<.01) and syntax (p<.05) compared to C+ children in biologic/relative care. Caregiver psychological distress was negatively related to syntax scores (p<.03). Sub-analyses revealed that effects of cocaine were confounded by lead exposure. Cocaine was no longer significant for expressive language, syntax and phonological awareness after control for lead. Conclusions: Effects of prenatal cocaine exposure on language development should be further evaluated controlling for multiple postnatal environmental conditions, including foster care, alcohol and tobacco exposure, and exposure to lead. Support: National Institute on Drug Abuse R01 DA 0007957

### **PREVALENCE OF CHRONIC HEALTH CONDITIONS AMONG DRUG USERS**

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**Aims:** Drug users, who are at higher risk for drug-related infections such as HIV, also suffer disproportionately from other health conditions. This study presents the self-reported prevalence of several health conditions among heroin and cocaine users, examined by age, gender and current drug use status. **Methods:** Participants (n=230) were recruited from 6 MMTP clinics (50% of sample) in NY and NJ, through participant referrals (28%) and outreach (22%), as part of an intervention study for Puerto Rican drug users. **Criteria for MMTP patients:** heroin or cocaine use in PR or knowing friend/family who used there; for others: heroin or cocaine use in PR and current use of either drug. **Drug toxicology exams** were performed on all participants. **Results:** Sample was mostly male (70%) and mean age was 41. Overall, 70% tested positive for heroin or cocaine. 75% were currently in MMTP. Primary medical care sources were: private doctors (33%), hospital/community clinics (31%) and ERs (27%). 49% rated their health as excellent or good; 51% as fair or poor. The most common conditions were: mental health (43%), asthma (36%), HCV (26%), heart problems (17%), HIV/AIDS (12%) and diabetes (10%). Older age was related to having diabetes (mean of 45 years vs. 40), mental health problems (43 vs. 39), heart problems (45 vs. 40) and asthma (43 vs. 39). Women, whose mean age was the same as men, were more likely to have asthma (52% vs. 30%), heart problems (24% vs. 13%) and mental health problems (57% vs. 37%). For all comparisons  $p < .05$ . Current drug use was not associated with any health condition. **Conclusions:** Drug users have a range of health conditions, as demonstrated in this relatively young cohort. While age was related to several conditions, the age difference was only 4-5 years, suggesting that many are at risk of developing these conditions. Women also reported higher rates of several health problems. Since these rates are based on self-reports, the true prevalence is likely substantially higher. This suggests the need for comprehensive health screening for drug users, both in and out of drug treatment settings. **Support:** NIDA, Grant No. R01 DA010425

### **PREGNANCY AND RACE/ETHNICITY AS PREDICTORS OF READINESS FOR DRUG TREATMENT**

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**Aims:** While drug use during pregnancy represents substantial obstetrical risks to both mother and baby, little research has examined motivation for drug treatment among pregnant drug-using women. In the present study, we hypothesized that pregnancy status would be positively associated with motivation for drug treatment. We also examined this relationship with respect to race/ethnicity. **Methods:** Propensity score analysis was used to match a sample of 51 pregnant drug-using women with 103 non-pregnant drug-using women. A factor analysis using nine items describing motivation for treatment was used to create a dichotomous outcome variable representing higher and lower motivation for treatment. Finally, logistic regression analyses were used to test the association between pregnancy status and motivation for drug treatment as well as the modifying effect of race/ethnicity in this relationship. **Results:** The pregnant and non-pregnant samples of drug-using women were satisfactorily matched using propensity scores. The first logistic regression model indicated that pregnant women were more than three times as likely as non-pregnant women to express greater motivation for treatment. The second analysis indicated an interaction between pregnancy status and race/ethnicity, such that white pregnant women were more than five times as likely as African-American pregnant women to score higher on the motivation for treatment measure. **Conclusions:** These results suggest that African-American pregnant drug-using women should be targeted for interventions that increase their recognition of problems associated with their drug use and motivation for making plans for treatment enrollment. These findings also suggest that future research should examine causes for this racial/ethnic difference. **Support:** William Latimer (PI) R01's: NEURO-HIV Epidemiologic Study and ADAPT IFCBT for HIV Prevention

### **PRENATAL AND NEONATAL EXPOSURE TO BISPHENOL-A AFFECTS THE CENTRAL DOPAMINERGIC SYSTEMS IN MICE: IMPLICATIONS OF THE FUNCTIONAL CHANGES IN DOPAMINE D3 RECEPTORS**

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**Aims:** Bisphenol-A (BPA), one of the most common environmental endocrine disruptors, has been extensively evaluated for toxicity and carcinogenicity. In the previous study, we found that prenatal and neonatal exposure to BPA markedly enhanced the rewarding effect induced by morphine. The present study was then undertaken to investigate the changes in the function of dopamine D3 receptors by prenatal and neonatal exposure to BPA in mice. **Methods:** [<sup>35</sup>S]GTP[S] binding assay, binding assay, RT-PCR, Intracellular Ca<sup>++</sup> imaging **Results:** We found that prenatal and neonatal exposure to BPA (2 mg/g of food) resulted in the attenuation of dopamine D3 receptor-mediated G-protein activation by (±)-7-hidroxy-n,n-dipropyl-aminotetralin (7-OHDPAT, 0.001-10 microM) in the mouse limbic forebrain (n=7-8, F1, 174=30.45,  $p < 0.001$  vs. vehicle-treated group). This treatment also caused a significant decrease in the Bmax value of [3H]PD128907, a dopamine D3 receptor ligand, in this area (n=7-9,  $p < 0.05$  vs. vehicle-treated group). Under these

conditions, no change in dopamine D3 receptor mRNA expression in the limbic forebrain and lower midbrain was observed by prenatal and neonatal exposure to BPA. We also demonstrated that a deletion of central dopamine D3 receptor causes the enhancement of dopamine (0.001-10 microM)-induced G-protein activation (n=8-10, F1, 174=26.52, p<0.001 vs. wild-type mice) and Ca<sup>2+</sup> responses (n=81-90, p<0.05 vs. wild-type mice) using mice lacking dopamine D3 receptor. Conclusions: The present data provide further evidence that prenatal and neonatal exposure to BPA leads to the dysfunction of the dopamine D3 receptor, resulting in the enhancement of morphine-induced rewarding effect. Support: Grants from the Ministry of Health, Labor and Welfare, and the Ministry of Education, Culture, Sports, Science and Technology of Japan.

### **INTEREST IN MARIJUANA QUIT PROGRAMS AMONG ADOLESCENTS SEEKING TOBACCO CESSATION TREATMENT: GENDER AND ETHNIC DIFFERENCES**

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Aims: Adolescent marijuana (MJ) use is more common among cigarette smokers than among non-smokers and there are few treatment programs for adolescent MJ use. In a substantial proportion of youths, blunt (guttled cigars then filled with MJ) smoking precedes cigarette smoking. We hypothesized that a majority of MJ smokers among adolescents seeking tobacco cessation treatment would show high demand for a MJ treatment program. Methods: Of 365 adolescent participants presenting for a tobacco smoking cessation treatment trial (Mean Age = 16.7 years ± 1.5; years of MJ use 1.7; 46.8 % female; 49.9% African American), 127 admitted to using marijuana, with the vast majority smoking blunts. Among MJ smokers, 76.4% were interested in a MJ program, with 55.1% stating they would participate. Results: Chi square analysis revealed that participants who smoked MJ first were 2.12 times more willing to participate in a MJ program (chisq= 3.92, p<.05). Analyses further showed a significant gender difference with girls being 2.38 times more willing to participate (chisq=5.15, p<.05). African Americans were 2 times more willing to participate (chisq= 3.21, p<.06) than European Americans. However, when gender differences were analyzed across ethnicity, African American boys were 3.28 times more willing to participate than European American boys (chisq= 4.04, p<.05) with no significant ethnic difference emerging among girls. Conclusions: Our findings from these screening data suggest that a substantial number of adolescent MJ users applying for smoking cessation assistance are also interested and willing to participate in a MJ quit program. Programs that conjointly address tobacco and MJ use might benefit youth. Support: Supported by the NIDA Intramural Program funds

### **WOMEN WHO HAVE SEX WITH WOMEN: HIV RISK BEHAVIORS AND PERCEIVED HIV RISK**

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Aims: Research suggests that women who have sex with women (WSW) may not identify as homosexual or bisexual and may feel less at risk for HIV or other sexually transmitted infections since male to female penetration does not occur. The purpose of the study is two-fold. First, differences in HIV risk behaviors will be examined between WSM and women who do not have sex with women (NWSW). Second, multivariable analyses will identify the correlates of perceived risk for contracting HIV. Methods: Structured interviews with 222 female prisoners (N=102 WSW, N=120 NWSW) were collected as part of the Reducing Risky Relationships for HIV protocol in the Criminal Justice Drug Abuse Treatment Studies cooperative. Chi-square and tests were used to distinguish differences between WSW and NWSW. Multinomial logistic regression was used to examine the correlates of perceived HIV risk (no risk, some risk, high risk) among WSW and NWSW. Results: Participants were mostly white (67.9%) and the median age was 35 years old. WSW were significantly (p<0.05) more likely than NWSW to have a high school education, lifetime use of crack, lifetime history of injection drug use, and self-reported trichomoniasis and Chlamydia, and were less likely to report lifetime sedative use. In the 30 days prior to their incarceration, WSW were more likely to report unprotected sex with a partner, using stimulants, and sex trade. Multivariate analysis revealed that WSW were 5.7 times more likely than NWSW to perceive their HIV risk to be high (95% CI: 2.1, 15.4), even after adjustment for sex trade, age and race. Conclusions: Contrary to previous research on WSW substance users, women in this study perceived greater risks for HIV than NWSW although still engaged in unprotected sex and risky drug use behaviors. Further research should examine explanations for WSW who are aware of their HIV risks but still engage in risky behavior. Support: NIDA SU01DA016205 to CL.

### **HPA AXIS RESPONDING IN COCAINE-DEPENDENT MALES AND FEMALES**

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Aims: Stress likely plays an important role in vulnerability and motivation to abuse addictive substances, and examining response to stressors may have implications for relapse and treatment. Recent data indicate that repeated cocaine exposure may result in differential effects on hypothalamic pituitary adrenal (HPA) axis responding in males and females. The goal of the present study was to examine the effects of gender and cocaine dependence on HPA axis

response to pharmacologic activation. Methods: Corticotropin releasing hormone (CRH) was infused in groups of cocaine dependent males (n=28), cocaine dependent females (n=20), control males (n=20) and control females (n=24). The subsequent HPA response was assessed by measuring percent change ( $100 * (\text{maximum-baseline})/\text{baseline}$ ) in plasma cortisol, adrenocorticotrophic hormone (ACTH), and subjective ratings of stress and craving. Results: A significant positive correlation (Spearman's rank correlation coefficient) was observed between ACTH and cortisol in control females ( $\mu=0.412$ ;  $p<0.05$ ), control males ( $\mu=0.797$ ;  $p<0.0001$ ), and cocaine dependent males ( $\mu=0.523$ ;  $p<0.005$ ). However, there was no association between ACTH and cortisol in the cocaine dependent females ( $\mu=0.199$ ;  $p=0.4$ ). In addition, a negative correlation was observed between stress and cortisol in cocaine dependent females ( $\mu=-0.497$ ;  $p<0.05$ ), but not in the male cocaine dependent subjects ( $\mu=-0.243$ ;  $p=0.21$ ). Stress was positively correlated with craving in both cocaine dependent males ( $\mu=0.473$ ;  $p<0.05$ ) and females ( $\mu=0.564$ ;  $p<0.01$ ). Conclusions: These data suggest that repeated cocaine exposure may produce a hypo-reactive HPA axis in cocaine dependent women, which may have implications for stress induced craving and relapse. Gender differences such as these also may guide development of gendermatched treatment. Support: National Institutes of Health National Center for Research Resources M01 RR001070 National Institutes of Health National Institute on Drug Abuse and the Office of Research on Women's Health P50 DA016511

### **ACCESS TO SUBSTANCE ABUSE TREATMENT FOR PEOPLE FROM HISTORICALLY DISADVANTAGED SOUTH AFRICAN COMMUNITIES**

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Aims: To identify factors associated with access to substance abuse treatment for people from historically disadvantaged communities (HDCs) in Cape Town, South Africa. Methods: A mixed methods design was used that comprised a case-control study and qualitative indepth interviews. For the case-control study, data were gathered from 434 cases who had accessed treatment and 555 controls who had substance abuse problems but had not accessed services. Participants were recruited from 12 HDCs in the Cape Town metropole. The Behavioural Model of Health Services Utilization was used to guide variable selection. Data were gathered on sociodemographic variables, treatment need and barriers to service use. Hierarchical logistic regression procedures were used to analyze the data. Indepth interviews that focused on barriers to service use were conducted with 20 key informants from the substance abuse treatment system and local community leaders. Results: Both quantitative and qualitative findings point to the primary determinants of treatment uptake in HDCs being non-need rather than need factors. Non-need factors included service availability, affordability, geographic accessibility, and awareness barriers. Women and men from these communities did not have equal access to services. Vertical inequities were also present: those with relatively severe drug problems experienced greater difficulty in accessing services than participants with less severe problems. Conclusions: This study found inequities in the use of substance abuse treatment services among historically disadvantaged communities in Cape Town. Women experienced relatively more barriers to treatment access than men. Findings highlight the need for further transformation of the social welfare system responsible for treatment delivery. Specific, practical recommendations for how to improve access to treatment for HDCs are provided. Support: Open Society Foundation, First Rand Foundation, Western Cape Department of Social Development, National Research Foundation

### **YOUTH'S INHALANT DRUG USE IN BOGOTÁ, COLOMBIA**

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Aims: Inhalants are the 4th most prevalent class of drugs of abuse among Colombians. As elsewhere, 12-17 year olds are at highest risk for inhalant use and abuse. Worryingly, national studies show that 25% of females of childbearing-age report increasing their inhalant use in late-stage pregnancy. The present study explores rates of exposure-opportunity (E-O) to use inhalants, prevalence of inhalant use and its associated factors, in a representative sample of school-attending adolescents. Methods: Data was collected via a standardized questionnaire administered to 1169 female, and 1192 male students in Bogotá, Colombia, selected in a stratified multistage probability cluster sample. Results: Average age of participants was 14.8 years (SD=1.3), 65.3% studied in public schools, and 56.3% belonged to the lowest social strata. One sixth of students (17%) reported an inhalant drug E-O, of which 65.5% were defined as "passive opportunities". Transition from E-O to use was reported by 60.7% of students. Prevalence of inhalant use was 3.7% for past-year, and 1.7% for past-month. Average age at fist use was  $12.9\pm 2.2$ . Males were more likely to report an E-O (Odds Ratio=1.4, 95% C.I.=1.1,1.7) and to ever have used inhalants (OR=1.5, 95% C.I.=1.2,2.0). No gender differences were found for transition from E-O to use (OR=1.3, 95% C.I.=0.9,2.0). Inhalant use was associated with having used marijuana (OR=6.4, 95% C.I.=4.7,8.7), deviant peer behavior (OR=2.6, 95% C.I.=2.0,3.4), poor parental control (OR=2.1, 95% C.I.=1.6,2.9), and low academic performance (OR=1.5, 95% C.I.=1.1,2.0). Almost two-thirds (64.6%) of students perceived "great" risk in trying inhalants regularly, while 18.2% considered "trying inhalants once or twice" to be dangerous. Conclusions: By highlighting groups at risk, and substantiating reported relationships with other problem behaviors, this study of the epidemiology of inhalant use among adolescents in Colombia provides important information

for developing targeted prevention strategies among youth. Support: This study was supported by a Milstein Doctoral Fellowship to C. Lopez

### **CORRELATES OF SUBSTANCE USE AND RELATED PROBLEMS IN NIGERIA AND UGANDA: FINDINGS FROM GENERAL POPULATION SURVEYS**

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**Aims:** Findings from decades of research in Africa show that the usual pattern of drinking is sporadic heavy consumption. However, little is known about the factors associated with this pattern of drinking, use of other substances and related social and health problems. The aim of this study is to assess prevalence and correlates of drinking, illicit substance use, and problems in the general populations of Nigeria and Uganda. **Methods:** The study utilizes data from the WHO-GENACIS Project, an international collaborative survey in more than 30 countries. In Nigeria and Uganda a similar questionnaire was used for data collection from a randomly selected sample of male and female adults. The sample consisted of 1,093 male and 943 female (n=2,036) respondents in Nigeria; and in Uganda 698 male and 715 female (n=1,413) respondents. Bivariate and logistic regression analyses were conducted to test the association between selected socio-demographic factors and alcohol consumption, smoking, and use of illicit drugs. **Results:** In both countries, male respondents were more likely than females to report past year (daily) smoking, alcohol use and illicit drug use even after controlling for the probable effects of other variables. Age and level of education were associated with smoking and drinking in Uganda; and in Nigeria age, marital status, education played significant roles in drinking and illicit drug use. Unemployed respondents in Nigeria were more likely to report that their drinking had caused them problems than employed respondents (OR = 2.3; CI = 1.5-3.5). The data also provided evidence showing that certain demographic factors are associated with reported physical and mental health problems among people who drink and/or use other substances. **Conclusions:** Substance use has become an issue of public health concern in African countries, especially in relation to HIV/AIDS. Careful analysis of the data from the GENACIS project which will be carried out for this paper might lead to greater understanding of this problem. **Support:** Funding for the GENACIS project in Nigeria and Uganda was provided by the WHO, Geneva.

### **NICOTINE REPLACEMENT TREATMENT FOR PREGNANT SMOKERS**

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**Aims:** 1. To compare smoking cessation rates and smoking reduction among pregnant smokers randomized to receive 2mg nicotine gum or a matching placebo; 2. To compare nicotine gum versus placebo on surrogate measures of maternal and fetal safety (i.e., overall nicotine and tobacco exposure) and on birth weight at the time of delivery. **Methods:** Women at 26 weeks or less gestation who smoked daily were eligible to participate. They received individualized behavioral counseling and were randomized to receive 6 weeks of treatment with a 6-week taper with either nicotine or placebo gum for smoking cessation. Women who did not quit smoking were instructed to reduce the number of cigarettes smoked by substituting nicotine gum. We monitored participants for smoking outcomes and adverse events throughout the study. **Results:** 194 women were randomized to treatment. Baseline characteristics (i.e., cigarettes smoked per day) were similar between groups; the study population was 54% Hispanic. At 6 weeks after the quit date, abstinence rates were 13% in the nicotine group and 8.5% in the placebo group (P=NS). Although at the end of pregnancy, quit rates were 18% in the nicotine group and 14.8% in the placebo group (P=NS), there was a significant reduction in cigarettes smoked per day [-5.7 (SD=6.0) in the nicotine group vs. -3.5 (SD=5.8) in the placebo group (p=.035)], and in cotinine concentration [-252 (SD=399) ng/mL in the nicotine group vs. -110 (SD=336) ng/mL in the placebo group (p=.04)]. Birth weights were higher in the nicotine group 3287 (SD=569) g vs. 2950 (SD=657) g in the placebo group (p<.0001). **Conclusions:** Nicotine gum may be useful for tobacco reduction during pregnancy and may also improve birth weight. If replicated, these findings have important implications for the management of smoking during pregnancy. **Support:** NIDA DA15167

### **MET FOR PREGNANT SUBSTANCE-ABUSING WOMEN (NIDA CTN 0013): DOES BASELINE MOTIVATION MODERATE EFFICACY?**

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**Aims:** Although originally developed to help persons who are reluctant to change, evidence of the efficacy of Motivational Interviewing (MI) has led to its use with a range of individuals. Some investigations of this practice suggest that MI may be less efficacious, or even counter-productive, with persons who report adequate pre-treatment motivation. The present analysis examined whether a crossover interaction of baseline motivation and condition (disordinal moderation) could partially explain negative findings in NIDA CTN study 0013 (Winhusen et al., in press). **Methods:** Participants were 200 substance abusing pregnant women presenting for substance abuse treatment at 1 of 4 sites. Women were randomly assigned to either a 3-session Motivation Enhancement Therapy (MET) condition or treatment as



usual (TAU). Two primary measures of baseline motivation were utilized: (a) The University of Rhode Island Change Assessment Questionnaire, and (b) a single question regarding the participant's drug use goal. The primary outcome for this analysis was any positive urinalysis for drug use at either the 4- or 12- week follow-up. Results: Effect size analyses revealed small nonsignificant trends in the expected direction, such that MET was more efficacious than TAU with those not seeking to quit permanently (logit  $d = .15$ ), with the reverse being true for participants who indicated a desire to quit permanently (logit  $d = -.10$ ). However, this effect was not significant in logistic regression analyses controlling for drug use at baseline. Further, this effect was not present (and was even reversed) in some analyses of specific drugs and/or follow-up points. Conclusions: These findings highlight the often-neglected truth that moderation effects are unstable, and should be interpreted with caution. Disordinal moderation of MET efficacy by baseline motivation does not appear to have contributed to the negative results of CTN 0013. Support: U10DA013732 (Winhusen); DA000516, DA021329 (Ondersma)

### **ADULT WOMEN'S ALCOHOL ABUSE: BARRIERS TO DETECTION IN PRIMARY HEALTHCARE SETTINGS**

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Aims: Alcohol abuse, while common and increasing in prevalence among women in the United States, is often neither assessed for nor detected in primary care settings. It is important to understand the multi-systemic reasons for this situation. While primary care clinicians may miss the subtle signs of alcohol abuse, it is important to investigate all three pieces to the detection puzzle: the clinician, the patient, and the encounter between them. This literature review explores barriers to detection among all three entities, including challenges the clinician and patient bring to the encounter, as well as challenges inherent to the encounter itself, within the parameters of the healthcare system. Methods: A review of peer-reviewed literature up to 2006 within the area of detection and assessment of alcohol misuse in primary care was conducted. Results: Most of the intervention research in this area has focused on clinicians, such as improving training and education on alcohol misuse and screening options. Policy and organizational issues have been addressed, but to date there have been no interventions in this dimension. Similarly, although some research has suggested challenges that women have, research has been lacking with regard to what can be done to increase women's awareness and knowledge of alcohol abuse as well as decrease logistic and psychosocial barriers. Conclusions: Continuing to address health disparities for women includes testing interventions for clinicians, patients, and healthcare system entities that can improve early detection and assessment procedures for female patients in the primary care setting. Support: None

### **THE IMPACT OF RACE AND HIV/AIDS DISCUSSION STRATEGIES ON UNPROTECTED SEX AMONG FEMALE DRUG-ABUSING CRIMINAL OFFENDERS**

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Aims: The Bureau of Justice Statistics reports that HIV rates among inmates are disproportionate by gender with a higher prevalence among African American female inmates (Maruschak, 2004). Cultural differences may influence the degree of interpersonal power in sexual relationships prior to incarceration and women may be more likely to engage in HIV risk behaviors, such as unprotected sex, to attract and keep a sexual partner. As such, this study will examine racial differences and the impact of the AIDS Discussion Strategy scale (Snell & Finney, 1990) on participation in unprotected sex. Methods: Data were collected from female drug-abusing inmates as part of the Reducing Risky Relationships for HIV protocol within Criminal Justice Drug Abuse Treatment Studies (CJ-DATS) ( $n=209$ ). Bivariate analyses were used to identify racial differences on the types of interpersonal discussion strategies (i.e., rational, manipulative, withdrawal, charm, subtlety, and persistence) that women use to discuss AIDS with an intimate partner. Negative binomial regression was used to identify the impact of race and types of discussion strategies on the number of the times someone had unprotected sex in the 30 days prior to incarceration. Results: Most participants were white (73%), unemployed prior to incarceration (51%), and had a high school degree (65%). T-tests indicate that African American women are more likely to use the rational, withdrawal, and persistence discussion strategies but less likely to use the manipulative discussion strategy. Multivariate findings indicate that women who use the rational discussion strategy are 7% less likely than those who don't to engage in vaginal sex without a condom and that women who use the subtle strategy are 9% more likely to engage in vaginal sex without a condom, controlling for race and the other discussion strategies. Conclusions: Findings will add to the literature on cultural differences in HIV/AIDS communication strategies and sexual risk behaviors among drug-abusing female criminal offenders. Support: This research is funded by NIDA(U01- DA16205).

### **USING MICROSIMULATION MODELING TO CAPTURE HETEROGENEITY IN MARIJUANA USE**

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Aims: Demonstrate the ability of microsimulation modeling to capture heterogeneity in patterns of marijuana use and to thereby provide more accurate estimates than standard alternative approaches when modeling use trajectories. Methods:

We compare distributions of marijuana use measures using a microsimulation model, a population-based cohort model and a Markov cohort model. Each model uses a starting population with baseline gender, race/ethnicity, and drug use characteristics of U.S. 12 year-olds. At quarterly cycles, individuals face probabilities of transitioning between four physical locations (community; outpatient or inpatient drug treatment; or death) and four levels of proclivity to use marijuana (none; occasional; regular; or heavy). Transition probabilities are based on current population data in all models, and the microsimulation model also incorporates drug use history, location states, and demographics to predict transitions. Results: Microsimulation is better able to capture heterogeneity in trajectories of marijuana use than are the cohort and Markov models. While the simpler cohort model recognizes the distribution over time in expected values across individuals, it is not able to fully reflect the between-individual variation. In contrast, microsimulation modeling allows for variability across both dimensions of individuals and time, and thereby more completely reflects the non-linear and interrelated nature of lifetime drug use and consequences. Conclusions: Microsimulation modeling of marijuana use and its outcomes is a useful complement to traditional methods for representing heterogeneity in drug use across individuals and over time. This methodology can thus provide insight into policy decisions - such as determining the optimal timing of treatment or designing other interventions - aimed at reducing the overall use of marijuana. Support: Supported by NIDA grant R01DA019993

### **NOBODY ASKED ME: SUBSTANCE USE SCREENING AND HIV RISK AMONG HIGH SCHOOL STUDENTS IN TRINIDAD AND TOBAGO**

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Aims: This study examined HIV risk behaviors among high school students in Trinidad and Tobago. Eight focus groups with high school students (42 girls, 25 boys) and 19 personal interviews with health care providers, school personnel, government officials and NGOs were used to examine HIV risk among high school students. Clinic operations were also observed. All interviews were recorded and with field notes transcribed and analyzed using Atlas ti. Almost all high school participants reported that large numbers of both male and female students used alcohol and marijuana. Participants also reported that alcohol use seemed to be increasing, especially among girls. About half of the female students reported that they knew girls who had unprotected sex in exchange for marijuana. Most of the students mentioned that both genders engaged in frequent sexual activity, often without condoms. Informants who work with or on behalf of youth confirmed high risk of substance use behaviors among youth yet providers at family planning and STD clinics rarely screen for substance use among youth. Interviews and observations indicated substance use screening was being neglected because management systems are not patient-friendly, providers are forbidden from obtaining STD or substance use history or engaging in counseling and medical history screening instruments are not designed to assess substance use. Alcohol and marijuana use and regular sexual activities without condoms create situations in which HIV transmission is likely. The HIV infection rate in Trinidad and Tobago is especially high among females and youth: girls 15 -19 are 6 times more likely to be infected than their male counterparts. Since sex/drug use education is not provided in high schools, health care settings are often the first contact youth have to access information on sexual health and substance use. The absence of screening indicates that an important weapon in the fight against the HIV epidemic in the most affected groups is not being utilized. Screening for drug and alcohol use as well as HIV and sex education is important for designing and implementing behavioral change and HIV risk reduction interventions. Support: NIDA, NRSA, T32-DA07233

### **EFFECTS OF NALTREXONE ON THE ORAL SELF-ADMINISTRATION OF ETHANOL+MILK OR MILK ALONE IN RATS TRAINED UNDER A TWO-LEVER "CHOICE" PROCEDURE**

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Aims: 1) Determine if rats "choose" ethanol when a similar appetitive reinforcer is concurrently available. 2) Determine if naltrexone affects ethanol choice in rats trained to respond on two levers for alternative reinforcers. Methods: Female, S-D, rats (n=8) were maintained at 85% body weight and trained to respond on two levers under fixed ratio (FR) schedules of reinforcement. Daily 1-hr sessions were comprised of two sample components (one per lever) followed by concurrent FR10 schedules during which responding on either lever was reinforced. Completion of each FR resulted in delivery of a 0.1ml liquid reinforcer, followed by a 30-sec time-out period. The reinforcers were 5% sweetened condensed milk (milk) or 5% milk plus 8% (w/v) ethanol (milk+EtOH); the position of the lever which resulted in delivery of either reinforcer alternated weekly. The effects of saline and naltrexone (1.0-10.0 mg/kg, ip) were evaluated following a 30 min pretreatment. Results: A solution of 5% milk was able to maintain performance and was preferred to water in all rats. One rat developed a strong lever bias; the remaining rats showed a slight preference for the right lever when milk was available on both levers (60% of reinforcers earned on the right lever). A greater percentage of responses was consistently allocated to the lever associated with milk+EtOH than the lever associated with delivery of milk alone. Under control conditions, rats earned 82 to 86% of reinforcers on the milk+EtOH-associated lever, and ethanol intake varied from 1.7±0.2 to 1.9 ±0.2 g/kg. Pretreatment with saline had no effect on responding. Likewise, naltrexone had no effects on response rate, percentage reinforcers earned on the milk+EtOH-associated lever, or ethanol intake. Conclusions: Operant choice procedures with alternative reinforcers that support behavior may be valuable tools in the

study of ethanol self administration in rats. Naltrexone did not affect ethanol choice or intake in rats trained to self-administer ethanol using a choice procedure. Support: DA015723

### **PROGESTERONE TREATMENT OF THE ESCALATION OF I.V. COCAINE SELFADMINISTRATION IN RATS DIFFERING IN VULNERABILITY**

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Aims: Progesterone (P) decreases the subjective effects of cocaine in women, and it attenuates cocaine-seeking behavior across several phases of the addiction process in female rats. Previous studies using rats selectively bred for high (HiS) and low (LoS) saccharin intake showed an increased vulnerability to cocaine-seeking in the HiS rats compared to LoS. Our goal was to examine the effects of P on the escalation of cocaine self administration (SA) in HiS and LoS rats. While escalation has been studied as a hallmark of drug abuse in animal models, there has been little work examining treatment of escalation or differences in outcome due to genetic variation. Methods: Four groups of female rats were compared: HiS+P, LoS +P, HiS+V (vehicle), and LoS+V. Each rat was implanted with a jugular catheter and trained to self-administer 0.8 mg/kg cocaine under a FR 1 schedule during daily 2-hr sessions. After meeting the acquisition criteria, randomly-presented doses of cocaine (.2, .4, .8, 1.6 mg/kg) were tested to establish a dose response curve. The rats were then given 6-hr access to 0.4 mg/kg cocaine for 21 days. After this extended access period, the groups were reassessed under the dose response condition. Throughout the experiment, rats were treated with daily s.c. doses (0.5 mg/kg) of P or equal volumes of V 30 min prior to session. Results: Initial results indicate that the LoS+V, HiS+P, and HiS+V groups showed an escalation of their cocaine SA throughout the 21-day long-access (6-hr) period. However, the LoS+P group did not escalate cocaine SA compared to the other groups. The groups did not differ in the dose response short-access condition suggesting that the escalation phase was sensitive to the P treatment. Conclusions: This research indicated that LoS females were more sensitive than HiS to the protective effects of P on the escalation of cocaine SA. The results suggest that genetic differences in drug abuse vulnerability may contribute to treatment outcomes during critical phases of the drug abuse process. Support: Supported by R01 DA003240-23, DA015267-06 (MEC), F31 DA023301-01 (JJA).

### **GENDER DIFFERENCES IN PRESCRIPTION OPIOID USE AND MISUSE AMONG CHRONIC PAIN PATIENTS IN AN OUTPATIENT PAIN MANAGEMENT CLINIC**

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Aims: High rates of abuse of opioid medications among enrollees in chronic pain management programs has been observed (Manchikanti et al., 2006). This pilot study examined gender differences in prescription opioid misuse among chronic pain patients. Methods: Participants were 121 (72 women, 49 men) outpatients from a pain management clinic at a southeastern medical university. They completed a battery of self-report instruments assessing demographic information, prescription opiate use and misuse, alcohol and other substance use, Axis I symptomatology, and treatment satisfaction. Results: The most frequently prescribed opioid medications were: Hydrocodone, Lortab, OxyCodone and Percocet. Significantly more men than women (91.7% vs. 77.8%) were currently taking an opioid medication ( $p = .05$ ). Women were more likely than men to hoard unused pain medications ( $p = .02$ ) and to use additional medication to enhance pain medication effects ( $p = .04$ ). Men were more likely than women, however, to feel they may be dependent on their pain medications ( $p = .07$ ). Conclusions: These preliminary findings suggest there may be gender differences in prescription opioid use and misuse. Women were less likely than men to be currently taking a prescription opioid medication, but more likely to hoard unused medication and to use other medications to enhance the pain medication effects. These differences may place women at higher risk of adverse events associated with polypharmacy (i.e., respiratory depression, altered sensorium, morbidity). The findings help increase our understanding of gender differences and risks associated with prescription opioid use. Clinical implications and suggestions for future research will be discussed. Support: Funding from the NIH/NIDA Drug Abuse Research Training (DART) program R25DA020537-02

### **RISK FACTORS ASSOCIATED WITH DRINKING AND DRIVING IN BRAZIL**

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Aims: Anecdotal information suggests high prevalence of DUI among young Brazilian males. The aim of this study was to ascertain risk factors for drunk driving in a representative sample of Brazilian adults. Methods: 333 subjects with valid driver licenses who drank in the last year were drawn from a household random sample of 2,346 Brazilian adults (ages 18 to 79) interviewed about alcohol use. Bivariate analysis and a multivariate logistic analysis tested the association between "having driven after drinking at least three units of alcohol (DD)" and demographics, alcohol use/abuse, drunk driving, driving accidents, and perceptions about drunk driving/law enforcement. Variables in the analysis were: (age, gender, income, region, abuse/dependence, binge drinking, age of first use, support for DUI enforcement, perception of punishment, and being a car passenger). Results: Being under 30 (OR 2.3, 95% CI 1.2 - 4.6), male (OR 7.8, 95% CI 3.3

- 18,4), an alcohol abuser/dependent (OR 3,7, 95% CI: 1,5 - 9,3) and having started to drink between 16 and 17 (OR 2,8, 95% CI :1,1-6,8) remained independently associated with DD after model adjustments, as well as having had at least 2 binge episodes in the last year (OR 2,4, 95% CI 1,1 - 5,5). Having been a passenger in a vehicle where the driver was drinking (OR 2,5, 95% CI 1,3 - 4,9) was also significantly associated. Higher support for DUI enforcement was protective against DD(OR 0,3, 95% CI 0,2 - 0,7). Conclusions: Risk factors for DD in a representative sample of Brazilian adults are similar to those reported in other countries, except for the perception of punishment, because parallel to displaying strong opinions about DUI enforcement, subjects do not perceive punishment as effective. This factor could contribute to the elevated levels of risk factors associated with DD in this sample. Support: Secretaria Nacional Anti-Drogas, Brazil

### **SUBSTANCE USE DISORDER TREATMENT IS ASSOCIATED WITH LOWER INCIDENCE OF TRAUMATIC EVENTS FOR WOMEN**

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Aims: Substance use disorder (SUD) treatment reduces criminal activity. Less involvement in criminal activity can be expected to reduce exposure to violent traumatic events and, by extension, incidence of posttraumatic stress disorder (PTSD). The present study evaluated the role of SUD treatment by comparing incidence of traumatic events and PTSD in inner-city SUD samples out of treatment and in treatment. Methods: Traumatic events were assessed monthly, and PTSD was assessed every 4 months. Results: Data collection is ongoing - 6 month data are available for 228 opioid dependent participants; 145 are enrolled in a syringe exchange program (SEP) and 83 are enrolled in opioid-substitution treatment (OST). Although there were fewer women in the SEP sample (31% SEP vs. 60% OST;  $p < .001$ ), the samples were similar in age (42 SEP vs. 41 OST) and education (11.2 SEP vs. 11.3 OST). Exposure to a new traumatic event in a given month was twice as likely for the SEP sample as for the OST sample [e.g., Month 1: 34% SEP vs. 16% OST; PR = 2.2 (1.2, 3.7)]. This difference was largely due to higher rates of physical assault in the SEP sample [e.g., Month 1: 12% SEP vs. 4% OST; PR = 3.2 (1.0, 10.7)]. No sample differences in exposure were noted for men [e.g., Month 1: 25% SEP vs. 18% OST; PR = 1.4 (0.6, 3.1)], but women in the SEP sample were 4 times more likely to report re-exposure than women in the OST sample [e.g., Month 1: 53% SEP vs. 14% OST; PR = 3.8 (1.8, 8.0); Month 6: 40% SEP vs. 10% OST; PR = 4 (1.6, 10.0)]. Despite higher rates of traumatic event re-exposure, the proportion of each sample meeting criteria for PTSD was similar at each time-point [Month 1: 25% SEP vs. 18% OST; PR = 1.4 (0.8, 2.4); Month 4: 20% SEP vs. 26% OST; PR = 0.8 (0.4, 1.4)]. Conclusions: These data suggest that the harm reduction benefits of SUD treatment include less frequent traumatic event exposure in women. In spite of a lower incidence of exposure during this six-month period, SUD treatment was not associated with lower rates of PTSD for either gender. Support: Supported by: K23DA15739; R01DA16375; R01DA012347.

### **USE OF DIETARY SUPPLEMENTS BY REGULAR AND NON-REGULAR FEMALE USERS OF TOBACCO, ALCOHOL, AND CAFFEINE**

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Aims: The present study compared complementary and alternative medicine (CAM) use in women who were regular or non-regular users of tobacco, alcohol, and caffeine. Methods: Women were recruited from 3 health clinics within the VCU Health System including a suburban practice, an urban GYN clinic and a university student health service. A total of 294 women provided informed consent and completed the survey while waiting to see their health providers. The survey asked about lifetime (ever), recent (past 30 days) and regular use of 36 specific dietary supplements including 12 vitamins and minerals as well as alcohol, tobacco, and caffeine use. Results: Overall, 83% of the women reported having tried at least one CAM and 62% reported having tried a CAM excluding vitamins or minerals (CAM-EVM). Values for regular CAM use were 64% overall and 34% (CAM-EVM). When use of CAM was compared in women who were regular and non-regular users of other substances, no differences for tobacco users were found. However, regular users of alcohol were more likely to report any CAM use than nonregular users (73% and 58%, respectively,  $p = .025$ ). A similar pattern was found for regular CAM use, with more regular alcohol users reporting regular CAM use than non-regular alcohol users (79% and 58%,  $p = .001$ ). Similar patterns were found for caffeine, with women who regularly use caffeine twice as likely to report any CAM use than women who do not use caffeine regularly (67% and 33%,  $p = .001$ ). The same pattern was found for ever using CAM-EVM when regular and non-regular caffeine users were compared (68% and 32%,  $p = .010$ ). Rates of regular CAM and CAM-EVM use were similarly higher in regular caffeine users as compared to non-regular caffeine users (both  $p < .001$ ). Conclusions: Study findings suggest that women who regularly use alcohol and/or caffeine are also more likely to both experiment with CAM use and progress to regular CAM use as well. Support: Virginia Commonwealth University, Institute for Women's Health

## **GENDER AND THE ALCOHOL-VIOLENCE ASSOCIATION IN TWO CITIES OF PERU**

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**Aims:** The main aim is to estimate associations that link drinking behavior with being a victim or aggressor in partner violence, based upon epidemiological survey data from two cities of Peru: coastal Lima, with a population of 8.8 million people, and Ayacucho of the Andean highlands, with 70,000 residents. **Methods:** In 2005, the GENACIS study (Multinational OMS/PAHO Gender, Alcohol and Culture Study) drew a probability sample and assessed 18 to 64 year old residents of Lima (n= 1,110) and Ayacucho (n= 421), via standardized items harmonized to local vocabulary and conditions. **Results:** In Lima, some 10-11% of recently drinking women in Lima had been a victim of partner violence. Among Lima's women with no recent drinking, about 1 in 20 had been a victim of partner violence; 1 in 20 had been an aggressor in partner violence. Corresponding estimates for Lima's male nondrinkers were in the 1-4% range; for male recent drinkers, the estimates were in the 7-9% range. In Ayacucho, some of these estimates were larger. Logistic regression of physical partner aggression on whether respondent drank in the past year resulted in significant odds ratios for female victims and female aggressors in Lima. In both cities male alcohol consumption was more related to male physical aggression toward females than to female aggression towards males. Alcohol involvement also contributed to the severity of aggression for female victims in Ayacucho. Partner aggression was related to drinking five or more drinks on at least one occasion in the past year and was not related to other measures of alcohol consumption, such as the usual quantity of drinks and total number of drinks during the year. **Conclusions:** This study adds new epidemiological evidence on alcohol-associated physical violence directed toward males, and encompasses aggression from the perspective of the victim and from the perspective of the aggressor. **Support:** Support was provided by the Panamerican Health Organization & NIH/FIC/NIDA award D43TW05819.

## **LIFESTYLE MOBILITY IN A COHORT OF INJECTION DRUG USERS**

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**Aims:** Physical mobility is beneficial to health and disease prevention. We examined components of lifestyle mobility and their association with demographic and health factors for injection drug users.

**Methods:** Using a stratified design so sex and race balanced across age groups, data were collected at 12 methadone treatment centers. There were 138 men and 153 women, M age=48.0, SD=7.78 years. All injected drugs (M=19.53, SD=11.41 years) and used the lower extremities (M=9.09, SD=8.45 years). Measurements were obtained by patient self-report and clinical assessments. An investigator developed Lifestyle Mobility Questionnaire was used to quantify the amount of walking, change in activity level over time, and attitude toward physical activity. Other measures included demographics, drug use, and health questions and a leg assessment for chronic venous disorders (CVD). **Results:** Structural equation modeling was used to test theoretical relations among lifestyle mobility attitude, amount of walking, years of injecting, and CVD. The model included comorbidities, age, and body mass index, as potential confounders. The overall fit of the model was good [ $X^2/df=1.74$ ; comparative fit index (CFI)=.91; root mean square error of approximation (RMSEA)=.051]. Walking was significantly and inversely related to CVD disease severity. Walking mediated the relation between lifestyle mobility attitude and CVD, lending support to the hypothesis that positive attitude yields a health benefit through its effect on the amount of everyday walking activity. The model accounted for 25% of the variance in CVD severity. Positive attitude toward activity was significantly related to younger age, fewer comorbidities, and fewer years of injecting in the legs. **Conclusions:** Examining lifestyle mobility is important in understanding physical activity. More research is needed into the behavioral and physiological reasons for maintaining physical activity for those who have injected drugs. **Support:** National Institute of Nursing Research/National Institute of Health (NINR/NIH), R01 NR009264.

## **EARLY AND LATER ABSTINENCE IN COCAINE PHARMACOTHERAPY TRIALS: IMPORTANCE OF GENDER IN PREDICTING TREATMENT OUTCOME**

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**Aims:** There is a robust relationship between early and later abstinence in smoking cessation, but that relationship has not been explored among other substances of abuse. Data from two randomized double-blind controlled clinical pharmacotherapy trials (n =407) were analyzed to assess whether early abstinence predicted later abstinence among cocaine dependent patients. **Methods:** Stepwise linear regressions for two measures of later abstinence were conducted: abstinence during Weeks 7 & 8, and abstinence defined as percent clean urines after week 4. Early abstinence (abstinence in Weeks 3 & 4, the first two weeks of medication), as well as gender, baseline ASI composite scores, and cocaine craving were entered into the regressions. **Results:** Stepwise regression analyses of the whole data set revealed that abstinence in Weeks 3 & 4 was a significant predictor of abstinence in Weeks 7 & 8 ( $p < .001$ ), as was early abstinence with gender ( $p = .03$ ). Abstinence in Weeks 3 & 4 ( $p < .001$ ), alone and with composite craving in Week 3 ( $p = .04$ ) were predictors of percent clean urines. Subsequent analyses revealed that women in both studies achieved significantly lower rates of abstinence than did men, measured both as abstinence in Weeks 7 & 8 ( $p < .005$ ), and as

percent clean urines ( $p < .05$ ). Women also had non-significantly lower rates of early abstinence (abstinence in Weeks 3 & 4) than did men. Conclusions: Similar to the findings in the smoking cessation literature, our results indicate that early abstinence predicts later in-trial abstinence during cocaine pharmacotherapy trials. Findings also suggest that women may have poorer cocaine treatment outcomes than men in part because women have lower rates of early abstinence. Support: This work was supported by NIDA grants P50DA12756 (Pettinati) and T32DA007241 (O'Brien)

#### **INDIVIDUAL DIFFERENCES IN STIMULANT-INDUCED INCREASES IN CIGARETTE SMOKING**

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Aims: Individuals differ in their responses to drugs of abuse. The purpose of this retrospective analysis was to examine individual differences (e.g. gender, inattentive and hyperactive traits, and impulsivity) in stimulant-induced increases in smoking. Methods: Twenty-two human participants were included in the analyses. Participants completed a battery of psychiatric, medical and drug-use questionnaires prior to participation that were used to categorize individuals and determine individual differences. All participants were administered acute doses of methylphenidate (0, 10, 20, 40 mg). One hour after drug administration, participants were allowed to smoke ad libitum for four (4) hours. Measures of smoking included number of cigarettes, number of puffs, and carbon monoxide levels. Data were analyzed with mixed-model ANOVA, planned comparisons and simple regression. Results: Individuals with lower scores on scales measuring inattention, hyperactivity, and impulsivity were more sensitive to methylphenidate-induced increases in smoking than individuals with high scores on these traits. Men and women were equally sensitive to methylphenidate-induced increases in smoking. Conclusions: These retrospective analyses contribute to our knowledge of the extent to which individual differences contribute to behavioral responses to stimulants. Support: Supported by NIDA DA010325 and DA0126655.

#### **NEURAL CORRELATES OF STRESS-INDUCED AND CUE-INDUCED CRAVING: EFFECTS OF GENDER AND COCAINE DEPENDENCE**

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Aims: Stress- and drug-cue exposure each increase drug craving and contribute to relapse in cocaine dependence (CD). As no previous research has directly examined the neural correlates of stress-induced and drug cue-induced craving in women and men with CD as compared to those without, we sought to do so. Methods: Functional MRI responses to individualized stress, alcohol/drug cue and neutral imagery in 30 abstinent CD individuals (16 female, 14 male) and 36 healthy social drinkers (18 female, 18 male) were assessed. BOLD signal change in cortico-limbic regions (caudate, hippocampus, amygdala and anterior cingulate cortex (ACC)) was examined. Results: Stress and drug cue exposure each increased activity in the caudate, hippocampus and the ACC as compared to the neutral condition. Significant three-way interactions between diagnosis, sex and condition were observed for all four regions, where the CD group had greater brain response in the caudate, hippocampus and the ACC than did the control group. Men had increased activity in these regions during the stress condition and women showed greater amygdala activity during drug/alcohol cue exposure. Drug-condition-related craving correlated with caudate activation in CD men and women and stresscondition- related craving correlated inversely with amygdala activation in CD women only. Conclusions: Stress- and drug-cue-induced craving states are associated brain activity in distinct regions of the motivation and stress circuitry and chronic CD and gender are critical factors influencing these brain responses. Treatment development efforts to address drug craving and cocaine relapse prevention should consider environmental context and gender to generate improved interventions. Support: Yale Interdisciplinary Stress Center and the following grants from the National Institutes of Health and its Office of Research on Women's Health: P50-DA16556, K02-DA17232, and R01- DA019039.

#### **DRUG ABUSE AND HIV RISK AMONG IDUS NEAR DOWNTOWN KATHMANDU**

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Aims: (1) To assess the scope and characteristics of drug abuse among the residents of the study area; (2) To explore the gender differences in HIV status; (3) To see, if elevated rates of needles sharing were associated with HIV positive among a cohort of IDUs. Methods: IDUs ( $n=240$ ) aged 15-25 in Teku area (near down town Kathmandu) were administered a structured survey questionnaire from July 15 to October 15, 2006. Baseline surveys collected data on HIV infection rate, types of drug and alcohol use, demographic, sexual behavior, condom use, depression and readiness to quit drug use. Street Intercept method was used. Chi-square tests and logistic regression were used to determine associations between the above factors and needle sharing within the last one year. Results: Among the 240 participants, 95 percent were male and 5 percent female. Median age was 20 years. 60 percent of them were heroin injectors. Among the heroin injectors 40 percent share needles. Prior to base line of 2 months, 20 percent had  $>2$  sex partners, 10 percent of them had casual sex partners. While only 18 percent of them use condom. The study showed high prevalence of unsafe sex, injection and taking drugs before sex. A total of 24 (10 percent) of the 240 IDUs in the study were found HIV-positive. All of them shared needles. Among them 8.33 percent (20 persons) were male and 1.66 percent (4

persons) female. So significant gender associated differences were found having high prevalence of HIV among males and high number of male drug abusers (95 percent). Also 95 percent of the 240 participants were in depression, 60 percent were unwilling or unable to quit drugs, 65 percent used alcohol, 60 percent used marijuana and 17 percent used heroin. Conclusions: Persons struggling with drug abuse and HIV infection in Teku have been unnoticed or underserved to HIV treatment. To control the HIV epidemic in the study area, harm reduction program is highly necessary. Similarly, in order to lower the risk of HIV transmission, drug treatment policies should be improved and awareness raising programs should be carried out. Further study of depression screening among HIV infected is also necessary. Support: Prof. Bill Latimer, Ph.D., M.P.H.

### **ALCOHOL-ASSOCIATED SOCIAL MALADAPTATION, CANNABIS USE, AND MALE-FEMALE DIFFERENCES: A LATENT CLASS ANALYSIS**

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Aims: Extending more general latent structure analyses of alcohol-associated problems in the community, we hypothesized that membership in latent classes of alcohol-associated social maladaptation (AASM) might depend upon the drinker's sex and recent cannabis smoking. Data from three community surveys conducted by the World Mental Health Survey Consortium were analyzed (USA, Mexico, and Colombia). Methods: A total of 2,592 male drinkers and 1,706 female drinkers contributed information for the research, including confidential responses to binary items designed to tap DSM-IV alcohol abuse constructs and cannabis involvement. Multi-group latent class analysis was completed, with groups formed by sex and cannabis smoking, with the complex survey design taken into account and covariate adjustments. Results: Even with covariate adjustment, the great majority of male and female drinkers presented with zero AASM clinical features, irrespective of cannabis smoking; there was a latent class with primarily hazardous drinking (e.g., DUI), as well as a latent class whose members had experienced essentially all of the five clinical features of AASM. As compared to females with no recent cannabis use, female cannabis users were not more likely to be members of problem-laden AASM classes, whereas male cannabis users were more likely to be members of problem-laden AASM classes. Conclusions: Prior research on the latent structure of alcohol problems in the community typically has not taken into account whether these latent structures might depend upon exogenous group indicators such as sex or recent cannabis smoking. These considerations may be more important in countries where there is traditional sex role-associated variation in drinking practices and where cannabis smoking has become prevalent. Support: Analysis was supported by the following grants: R01DA016558, K05DA015799 & see WMHS web page.

### **EXAMINATION OF ETHNICITY DIFFERENCES IN RISK-TAKING BEHAVIOR WITHIN A COMMUNITY SAMPLE OF YOUTH**

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Aims: This study sought to replicate previous findings showing differences in engagement in risk-taking behaviors among Black and White youth (i.e., greater substance use among Whites and more delinquent behaviors among Blacks). Additionally, the study sought to extend this work to better understand these ethnicity differences by considering other relevant variables, including demographic variables (gender, age, biological father presence in the home, annual family income, and parental education level) as well as perceived environmental supports and threats, and risk perception. Methods: The community sample consisted of 256, 10-12 years olds (56% male, 57% White). Subjects completed the Youth Risk Behavior Survey, Tyler Environment Scale, and the Risk Perception Scale. Results: Black youth were more likely to engage in delinquency behaviors and White youth were more likely to report alcohol use. Multivariate logistic regression was used to assess the relative contribution of our variables of interest. Gender ( $\chi^2 = 16.28$ ,  $p = .0001$ ), perceived environmental threats (step  $\chi^2 = 5.12$ ,  $p = .02$ ), and ethnicity (step  $\chi^2 = 4.00$ ,  $p = .04$ ) were found to be significant predictors of engagement in delinquent behavior. For alcohol use, income (step  $\chi^2 = 14.24$ ,  $p = .0001$ ), perceived environmental threats (step  $\chi^2 = 9.61$ ,  $p = .002$ ), risk perception (step  $\chi^2 = 27.97$ ,  $p = .0001$ ), and ethnicity (step  $\chi^2 = 4.65$ ,  $p = .03$ ) were significant predictors. Conclusions: Ethnicity continued to be a significant predictor of engagement in delinquent behavior and alcohol use, even after the contribution of relevant demographic variables, perceived environmental threat, and risk perceptions, suggesting the type of risk behavior in which a youth engages is predicted by ethnicity and a combination of overlapping as well as unique risk factors specific to that behavior. Results also suggest the need for continued work to identify other factors that may explain the relationship between ethnicity and involvement in specific risk behaviors. Support: NIDA R01 DA18647

## **NALOXONE AS A STIMULUS IN DRUG DISCRIMINATION LEARNING**

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**Aims:** The characterization of the stimulus properties of the relatively nonspecific opioid antagonist naloxone has focused primarily on its activity at the mu receptor subtype. The present study extended the characterization of the naloxone cue by investigating the ability of relatively specific antagonists for mu (naltrexone; 0.10-0.56 mg/kg), delta (naltrindole; 1-18 mg/kg) and kappa (MR2266; 1.8-5.6 mg/kg) opioid receptors to substitute for naloxone. Moreover, a naloxone time-course (15, 30, 45 and 60 min) was examined to determine the temporal effects of the naloxone cue. Finally, naltrexone methobromide (1-18mg/kg) was used to determine if the discriminative stimulus effects of naloxone are mediated peripherally. **Methods:** Long-Evans female rats (n=18) received an injection of naloxone (1 mg/kg; ip) 15 min prior to 20-min saccharin access which was followed by an injection of lithium chloride (1.8 mEq; ip; n=9, Group NL) or distilled water (n=9, Group NW); this was followed by three recovery days where saline injections preceded saccharin access. **Results:** Mann-Whitney U tests revealed that Group NL drank significantly less saccharin after two conditioning cycles compared to Group NW (U = 40.5, 7.5, p = 0.05). Both naloxone and naltrexone produced dose-dependent suppression of saccharin consumption (X<sub>2</sub> = 22.957; p = 0.001; X<sub>2</sub> = 9.4; p = 0.024, respectively). Naltrindole and MR2266 did not generalize at any dose tested (all p's > .05). When naloxone was administered 15 and 30 min prior to saccharin consumption, Group NL consumed saccharin less than and or equal to consumption on conditioning, respectively. When given 45 or 60 min before saccharin, Group NL exhibited drinking comparable to controls. Naltrexone methobromide only substituted at the highest dose tested (18 mg/kg). **Conclusions:** These results suggest that naloxone's stimulus effects are centrally mediated at the mu receptor. **Support:** Supported by a grant from the Mellon Foundation to ALR.

## **GENDER AND SEXUAL RELATIONSHIP POWER AMONG OUT-OF-TREATMENT METHAMPHETAMINE USERS**

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**Aims:** This exploratory study compared demographics, drug use, HIV risk behaviors and sexual relationship power between male and female out-of treatment methamphetamine users (MA) in Denver, Colorado. **Methods:** Between November 2006 and August 2007, 58 participants were recruited using street and community outreach techniques. All eligible participants completed a structured interview. **Results:** The average age of participants was 38 years and 48% were female. The majority were White (90%) and 21% reported Hispanic/Latino ethnicity. All participants had used MA in the past month as verified by urinalysis and 72% reported injecting MA in their lifetime. Statistically significant (p<.05) gender differences were found. Women were more likely to have a pattern of unemployment over the last 3 years (46%) as compared to men (21%), however, women were more likely than men to be living in their own home/apartment (61% vs. 33%). Additionally, women reported higher rates of lifetime physical (89%) and sexual abuse (64%) as compared to men (57% and 27%, respectively). The average age of first use of MA was 23 years for women as compared to 19 for men. Women were more likely to be introduced to MA by a significant other than men (29% vs. 0%). While not significantly different, high portions of both women (71%) and men (53%) had unprotected vaginal sex in the last 30 days and almost a fifth of women (18%) and a quarter of men (23%) had used previously used syringes in the last 30 days. Unexpectedly, we found that women scored significantly higher on a measure of sexual relationship power (e.g., control and decision making in the relationship) than men. **Conclusions:** Previous studies with women suggest that power within a relationship is strongly related to sex risk behaviors. This study, however, found that women scored higher than men in terms of sexual relationship power. While the construct of power can be difficult to define, further research is needed to better understand if power is an important construct to target in developing gender specific interventions for MA using women. **Support:** NIDA DA0021522.

## **EFFECTS OF NORBNI ON THE SELF-ADMINISTRATION OF ETHANOL IN CROSS- AND IN-FOSTERED LEWIS AND FISCHER FEMALE RATS**

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**Aims:** Since kappa(!) opioid activity reportedly mediates some of alcohol's aversive effects, antagonism of ! activity should impact these effects. Accordingly, the effects of norBNI (!-antagonist) on ethanol (EtOH) self administration (SA) were assessed. Given that alcohol's effects are impacted by both genes and environment, this assessment was made in cross- and infostered LEW (L) and F344 (F) rats (that show differential sensitivity to the rewarding and aversive effects of alcohol). **Methods:** Specifically, F and L pups (n=51) were cross- or in-fostered within 24h of parturition, resulting in the following pup-dam rearing groups (n=6-8): FF, FL, LL and LF. Animals were injected with either 1 mg/kg norBNI or vehicle and then given free access to both H<sub>2</sub>O and a mixture of H<sub>2</sub>O and EtOH at increasing concentrations (2, 4, 8 & 12%). Bottles were switched daily and refilled in tandem. EtOH concentration increased



stepwise from 2 to 12% every fifth day. Results: A 2x4 ANOVA was performed on percent EtOH preference at each concentration, revealing significant effects of Treatment and Rearing Group and a Treatment x Rearing Group interaction at the 8% concentration. LSD post hoc on vehicle-pretreated animals showed that in-fostered LL animals preferred EtOH more than FF, FL and LF (nonsignificant trend - p's between 0.054 & 0.077). NorBNI pretreatment significantly increased EtOH preference in Group LF, such that its EtOH preference now resembled that of Group LL, eliminating the cross-fostering effect. Groups LL and LF now preferred EtOH more than Groups FF and FL (p's<0.05). Conclusions: The ! - system of L females may be more susceptible to modulation caused by geneenvironment interactions, as evidenced by the increase in EtOH consumption in the cross-fostered LF rats pretreated with norBNI. Further examination of the role of the ! -system in the SA of EtOH is warranted. Support: Supported by a grant from the Mellon Foundation to ALR and intramural funds from NIDDK.

### **PUBLIC HEALTH SYSTEM STRUCTURE AND ACTIVITIES AS BARRIERS TO PRENATAL CARE FOR PREGNANT WOMEN WHO USE DRUGS AND ALCOHOL**

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Aims: Background: Pregnant women who use drugs are more likely to receive little or no prenatal care. However, there is little empirical research about the barriers to prenatal care for this population. Aims: The goal of this study was to learn from pregnant women who use alcohol and/or drugs about barriers they face in accessing prenatal care as part of a larger project to develop a community-designed community awareness campaign about prenatal care for pregnant substance-using women. Methods: 20 semi-structured interviews and 2 focus groups were conducted with a racially/ethnically diverse sample of low-income pregnant and parenting substance-using (primarily methamphetamine) women in Contra Costa County, CA. Results: Many women reported going to the doctor out of concern for the health of their fetuses. This concern extended to fear of the effects of their drug use on their fetuses. The fear sometimes motivated them to seek care; it was also a reason they avoided care. In addition, the women faced many logistical and financial barriers to care, such as lack of transportation and problems obtaining health insurance and doctor's appointments. Drug use interacted with these barriers in a variety of ways. Resolving external barriers was a necessary, but not sufficient, criteria for women to attend prenatal care. Lack of trust in providers was also a barrier. Mistrust included fear of: urine tests, provider judgment, reports to Child Protective Services, and having children removed. Conclusions: The ways providers, public health practitioners, and larger systems that serve low-income women interact with pregnant substance users are barriers to care. While there are motivational barriers to care, systems barriers including health information, health insurance, logistics, and mistrust are also significant. Support: Graduate Research Training on Alcohol Problems, sponsored by the National Institute on Alcohol Abuse and Alcoholism, T32 AA07240, March of Dimes Community Award

### **GENDER DIFFERENCES IN LIFETIME EXPERIENCES OF INTIMATE PARTNER VIOLENCE AMONG HEROIN USERS IN A 25-YEAR FOLLOW-UP**

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Aims: Prior research has indicated that intimate partner violence (IPV) is pervasive among substance abusers. This study examines gender differences in lifetime experiences of IPV, including as both victim and perpetrator, among individuals with a history of heroin use. Methods: Subjects were originally sampled from methadone maintenance clinics in California in 1978-81 and are participating in a 25-year follow-up interview. The current interviewed sample (N=301) represents approximately 60% of the original study cohort. This sample consists of 163 (54%) males and 138 (46%) females; 70% are white, 28% are Hispanic, and 2% are African American. Average age at follow-up is 58.9 years for males and 54.9 years for females. Lifetime Victimization and Perpetration Scales were constructed measuring frequency and intensity of IPV; predictors were assessed in multiple linear regression models. Results: A majority of both males and females had ever been the victim of IPV (80%, 89%, respectively; p <.05) and had ever perpetrated IPV (70%, 69%, respectively; NS). Women were more likely than men to report that IPV was associated with their partner's use of cocaine (p <.01), alcohol (p <.001), or heroin (p <.001), and with their own alcohol use (p <.05). In multivariate models, lifetime victimization was positively associated with being female (p <.001), 3 or more relationships (p <.01), and higher scores on the Lifetime Perpetration Scale (p <.0001). Lifetime perpetration of IPV was positively associated with childhood exposure to family conflict (p <.05), 2 or more relationships (p <.05), parental alcohol or drug problems (p <.05), and higher scores on the Lifetime Victimization Scale (P<.001). Conclusions: Lifetime experiences of IPV as victim and as perpetrator are closely related for both men and women with a history of heroin use. Women are more likely to be victimized and to attribute IPV to their spouse's substance use. Clinical interventions need to address the intertwined nature of IPV that may endure over a lifetime among heroin users. Support: Funded by the National Institute on Drug Abuse (RO1-DA015390).

## **IMPULSIVITY AND CIGARETTE SMOKING AMONG PREGNANT WOMEN**

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**Aims:** Smoking during pregnancy is a leading preventable cause of poor pregnancy outcomes, but only about 30% of pregnant women quit smoking. The link between impulsivity and smoking during pregnancy is only beginning to be studied. Our group reported that Delay Discounting of money, a measure of impulsivity, in early pregnancy predicts who returns to smoking at 6-months postpartum among women who quit smoking after learning they were pregnant (Yoon et al., 2007). The aim of the present study was to make an initial effort to investigate the association between the Barratt Impulsiveness Scale 11 (BIS-11), a 30-item self-report impulsivity questionnaire, and smoking status among pregnant women enrolled in smoking cessation and relapse prevention treatment. **Methods:** 59 pregnant women completed the BIS-11 during the study-intake assessment. Higher scores on the BIS-11 indicate greater impulsivity. Women also completed questionnaires on demographics, smoking characteristics, the Beck Depression Inventory (BDI), and the Minnesota Nicotine Withdrawal Scale (MNWQ). Women were classified as smokers if they reported smoking in the past 7 days or had a urine cotinine level > 80 ng/mL. **Results:** 44 smokers and 15 exsmokers enrolled in cessation and relapse prevention treatment, respectively. BIS-11 scores at intake were unrelated to smoking status, but BIS-11 subscales correlated significantly ( $p < .05$ ) with demographic and smoking related variables. Nonplanning-Impulsiveness was negatively correlated with years of education, and Motor-Impulsiveness was negatively correlated with being married. Attentional-Impulsiveness was negatively correlated with cotinine level and positively correlated with BDI scores, while Perseverance was positively correlated with the MNWQ Total score. **Conclusions:** Scores on the BIS-11 were unrelated to smoking status, perhaps due to small sample size in this initial study, but were related to demographics that have been associated with cessation during pregnancy, and to smoking variables that are relevant to sustaining abstinence. Further investigation of the BIS-11 in this population of smokers is warranted. **Support:** NIDA grants T32 DA07242 and RO1 DA14028

## **THE RELATIONSHIP BETWEEN STRESS, COPING, SUBSTANCE ABUSE AND HIV-RISK BEHAVIORS AMONG AFRICAN AMERICAN WOMEN**

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**Aims:** The aim of this literature review is to examine the variables of stress and coping as moderators of HIV risk behaviors among substance abusing African American women. **Overview:** The HIV/AIDS epidemic has disproportionately affected African American women and has signaled an alarm in the health disparities research community. Numerous researchers have examined various social, cultural, and structural factors in order to understand why African American women bear such a disproportionate burden in rates of HIV/AIDS infection. Overall, the factors that seem to place African American women at the greatest risk for HIV/AIDS include injection drug use as well as high-risk sexual behaviors with risky partners who also abuse substances themselves. An emerging body of literature have begun to examine the conceptual area of stress and coping in order to understand and reduce the heightened risk for HIV among African American women. This review will explore the following questions: 1) What is the relationship between coping, substance abuse, and HIV risk behaviors among African American women? and 2) What interventions are available to help modify the coping resources of substance-abusing African American women? **Conclusions:** Studies suggest that African American women may be more likely to engage in emotion focused or avoidant coping such as drug use and denial as a way to manage chronic life stressors such as poverty and discrimination. These coping strategies, however, place them at heightened risk for HIV infection. Implications for prevention and intervention protocols are discussed.

## **EVALUATION OF GENDER DIFFERENCES IN SUBJECTIVE CRAVING AND STRESS REACTIONS TO SMOKING AND STRESS CUES IN NICOTINEDEPENDENT INDIVIDUALS**

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**Aims:** Relative to male smokers, female smokers may be less successful when attempting to quit smoking. While this difference is likely to be multiply determined, one potential contributor is differential craving and stress reactivity to smoking-related and stress-related cues. **Methods:** As part of a recently completed investigation of the effects of menstrual cycle status on smoking-related craving and smoking cessation outcome, the present human laboratory study involved a session of controlled exposure to four types of cues: 1) in vivo smoking cues, 2) in vivo neutral control cues, 3) imagerybased stressful cues, and 4) relaxing imagery control cues. Both before and after each cue exposure, female ( $n=37$ ) and male ( $n=53$ ) nicotine dependent participants provided subjective reports of smoking-related craving and affective reactions. **Results:** Results indicated that participants reported greater craving and arousal in response to smoking vs. neutral cues and greater craving, arousal, stress and unpleasantness in response to the stressful vs. relaxing imagery cues. A diminished feeling of control was also reported in response to the stressful vs. relaxing imagery cues. With respect to gender differences, females reported greater stress ( $p=0.02$ ) and greater unpleasant affect ( $p=0.01$ ) in response to stressful imagery cues. There were no gender differences in responses to smoking cues. It is noteworthy that the identified gender differences cannot be attributed to variation in menstrual cycle phase (i.e., follicular vs. luteal) since

the menstrual phase status of female participants was objectively verified and determined to be uncorrelated with the craving and affect measures. Conclusions: Thus, while this study did not yield evidence of gender differences in responsiveness to smoking cues, it did identify gender as a potential moderator of stress reactivity to stress-eliciting cues. Support: Study funded by NIDA 1P50 DA16511. Funding support also provided by GCRC grant RR01070.

### **PREDICTORS OF CONDOM USE AMONG DRUG-ABUSING WOMEN INVOLVED IN SEX TRADE IN BALTIMORE, MD**

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Aims: Despite the considerable progress made by HIV prevention efforts, the HIV epidemic continues to be a major challenge to public health, particularly in urban areas such as Baltimore. Recent work suggests that the exchange of sex for money or drugs may be an important route of HIV infection through unsafe sex practices. However, few studies have explored this association. In this study, the researchers investigated predictors for condom use by women involved in sex trade practices. Methods: We used baseline data from a subsample of 254 drug abusing women from the Baltimore area enrolled in the Neurobehavioral Study of HIV and Hepatitis to assess the relation between sex trade and the likelihood of using a condom. Results: Among the 254 women who reported heterosexual sex during their lifetime, 91 (36%) reported exchanging sex for money or drugs and 163 (64%) reported sex only with casual or steady partners that did not involve sex trade. Among women who have traded sex, the prevalence of using a condom less than three-quarters of the time with their sex-trade partners was 42%. Among women who have not traded sex, 77% reported using a condom less than three-quarters of the time with their casual or steady partners. Older age, homelessness, earlier age of first sex, and problematic alcohol use were associated with a lower likelihood of condom use among women who have not traded sex. Only older age was associated with a lower likelihood of condom use among women who have traded sex. Conclusions: The results of these analyses suggest that Baltimore women who do not practice sex trade continue to be at considerable risk for HIV contraction and other blood borne pathogens. Older age seems to be a common predictor for a lower likelihood of condom use among the entire sample of women. Although increasing HIV prevention efforts have been made to specifically target drug abusing women in sex trade, women not involved in sex trade continue to require a significant amount of attention to address their high risk sexual behavior. Support: Research Support provided by R01 DA14498 (NIDA)

### **MALE-FEMALE DIFFERENCES IN TOBACCO DEPENDENCE: COLOMBIA, 2003**

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Aims: Our research group is probing into male-female (M-F) differences in manifestations of tobacco dependence (TD) among smokers found within community probability sample surveys completed as part of the WHO World Mental Health Surveys Initiative. In this report, we focus upon epidemiological data from Colombia. Methods: Data are from an epidemiological survey completed in Colombia during 2003 (n=4426), with a diagnostic assessment based on 7 items designed to tap DSM-IV nicotine dependence constructs. An 'analyze, then summarize' approach was taken such that M-F differences are disclosed with respect to TD's individual clinical features. Results: Estimated occurrence of tobacco dependence was numerically smaller among active male smokers (3%, as compared to female smokers 6%); this wasn't a statistically robust M-F variation (p~0.05). Profiles of individual clinical features showed little evidence of M-F differences. For example, there was a statistically insignificant tendency for female smokers to have experienced smoking 'more often than intended' (p~0.05) and to have experienced withdrawal (p~0.05). Conclusions: In Colombia, TD and the clinical features of TD are just as likely to occur among female smokers as among male smokers. Potential limitations of the work include the possibility of male-female differences in response validity to the DSM-IV TD items, a topic being explored in item response theory (IRT) analyses now underway. Support: NIDA Awards R01DA016558 & K05DA015799 & see WMH web site.

### **PREGNANT WOMEN IN METHADONE MAINTENANCE: TREATMENT ENGAGEMENT AND ILLICIT DRUG USE**

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Aims: Interpersonally-focused treatment, treatment of psychiatric comorbidity, providing childcare) can significantly increase the effectiveness of methadone treatment for women. Little research has compared the presenting characteristics, treatment engagement, and treatment outcome in pregnant versus non-pregnant women. The aim of this study was to assess differences in demographics, drug use patterns, treatment engagement, and treatment outcome between pregnant women who are receiving specialty services (group sessions geared toward pregnant substance abusers) and non-pregnant women who are receiving treatment as usual (TAU). Methods: Data were collected from medical records of all women entering a methadone maintenance treatment center from 12/2006 to 10/2007. Pregnant

women who participated in specialty programming (n=30) were compared with non-pregnant women (n=31) in TAU on demographics, drug use at admission, percentage of negative urine drug screens across treatment, and number of sessions (individual and group) attended. Results: Results indicated that, compared to non-pregnant women, pregnant women in this methadone program were younger, less likely to be using opiates and cocaine at admission, and more likely to have opiate- and cocaine-negative urine drug screens during treatment. However there were no significant group differences in rates of attendance at individual treatment or weekly group sessions. Conclusions: These results suggest that pregnant women entering methadone maintenance treatment may present with different characteristics and needs that must be addressed to provide the most effective treatment. As pregnant women did not attend sessions with greater frequency than non-pregnant women, it may be that provision of treatment focused on issues relevant to pregnant substance abusers in combination with the development of a social support network with women experiencing similar challenges contributes to better treatment outcome for pregnant women. Support: Supported by Joe Young, Sr. funds from the State of Michigan.

### **PRENATAL COCAINE EXPOSURE ALTERS DEFAULT MODE AND EMOTIONAL NETWORK BRAIN ACTIVITY: FUNCTIONAL AND RESTING STATE MRI EVIDENCE**

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Aims: Prenatal cocaine exposure (PCE) is associated with arousal dysregulation (Mayes, L. 2002, Bendersky, et al. 1998), which also may be reflected in altered interaction between different streams of information processing observable via neuroimaging. Default mode and emotional arousal are two common brain activities that compete with high level cognitive activity for attentional resources. In this study, the effect of PCE on default mode and emotional arousal responses were examined with resting and functional MRI. Methods: Eleven control (age 13±1, 5M6F) and eleven PCE (age 13±0.9, 8M3F) volunteers were scanned with a 3T Siemens scanner. In the resting MRI condition, participants were instructed to simply gaze at a fixation cross. In the functional MRI task, participants were given a 2x2 working memory paradigm requiring them to respond either when "RR" was displayed (0-back condition) or when a displayed letter pair matched a previous pair (1-back condition). Distracting pictures shown between the memory task slides evoked emotion responses. Imaging analysis, performed using AFNI (<http://afni.nimh.nih.gov>), involved whole brain cross-correlation analysis for the resting MRI and multiple regression analysis for the functional MRI. Statistical significance was determined as  $p < 0.05$  per voxel for brain activation difference maps. Results: In the resting state MRI, PCE participants had stronger brain connectivity in both the default mode and emotion network as compared to the controls. Similarly, in the functional MRI, default mode activity (signal decrease with higher memory load) and emotion-associated amygdala activity were both higher in the PCE subjects. Conclusions: PCE subjects demonstrated a higher resting arousal as compared to controls. When challenged by increased cognitive demand, they also appear to maintain higher activation and show less ability to efficiently allocate and adjust mental processing resources. Support: GA Research Alliance, NIH grant RO1 DA17795

### **MARIJUANA USE, IMPULSIVITY, COPING AND GENDER IN ADOLESCENTS**

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Aims: Impulsivity and coping contribute to the initiation and maintenance of substance use by adolescents. Impulsive adolescents are more likely to initiate drug use, and they are at higher risk to develop problem use or substance use disorders (Elkins et al., 2007). Also, adolescents who cope behaviorally are at lower risk for substance use, whereas adolescents who tend to cope angrily or who tend to become helpless are at greater risk (Wills et al., 2001). The interaction of impulsivity and coping style on adolescent substance use, however, is understudied, as is the influence of gender on these variables. This research aimed to examine the relationship of these variables to adolescent marijuana use. Methods: We used data from 998 high school students who completed a survey on substance use, coping (Wills et al., 2001) and impulsivity (BIS-11, Barratt et al., 1995). Analysis employed ANOVAs and bivariate correlations. Results: Adolescents who endorsed current marijuana use were more impulsive than non-users ( $F(1, 994) = 47.86$ ;  $p < .001$ ), with no gender differences ( $p = .16$ ) and no gender by impulsivity interactions ( $p = .21$ ). Among marijuana users, impulsivity level correlated positively with helplessness ( $r = .41$ ) and substance use ( $r = .36$ ), anger ( $r = .40$ ) and avoidance ( $r = .16$ ) to cope with stress; it correlated negatively with seeking parental support ( $r = -.14$ ), and the use of behavioral ( $r = -.56$ ) or cognitive ( $r = -.19$ ) coping strategies ( $ps! .01$ ). This pattern held across genders, with one exception: male users of marijuana with higher BIS-11 scores were less likely to use peers for coping support ( $r = -.11$ ;  $p = .018$ ), whereas the use of peer support for coping was unrelated to impulsivity in female marijuana users. Conclusions: Thus, adolescent marijuana users are more impulsive than nonusers, regardless of gender. Marijuana users who were more impulsive also used substances, anger and avoidance to cope and were less likely to use behavioral or cognitive strategies. Male users who were more impulsive were less likely to use peers for support. Support: Supported by NIDA grants T32DA07238 and P50DA04921.

## **AN EXAMINATION OF PHYSIOLOGICAL REGULATION IN COCAINE EXPOSED INFANTS ACROSS THE FIRST 7 MONTHS OF LIFE**

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**Aims:** To examine direct and indirect pathways (through RSA or parenting behavior at 1 month) from prenatal cocaine exposure (PCE) to physiological regulation at 7 months of age using structural equation modeling. **Methods:** RSA was collected from 169 infants (87 cocaine-exposed, 82 nonexposed) at 1 month during 10-min of sleep and at 7 months during a 3-min baseline and during tasks designed to elicit positive (PA; a puppet show) and negative affect (NA; arm restraint). Mean RSA was calculated for sleep, baseline, PA and NA. Change scores were calculated from baseline to PA and from baseline to NA. These change scores are widely considered to be an index of physiological regulation. **Results:** In the first model, the indirect path from PCE to RSA at 7 months via 1 month RSA and parenting was tested. PCE was associated with lower levels of 1 month RSA. No associations between substance use and parenting or between alcohol and cigarette use and RSA or parenting were found. Low levels of 1 month RSA were associated with low levels of baseline RSA at 7 months and greater change in RSA during the NA task. The fit of this model was quite good ( $\chi^2(7) = 9.76, p = .20, CFI = .98, RMSEA = .05$ ). In the next model, direct paths from PCE to 7 month baseline RSA and RSA regulation were added. The fit of this model was excellent ( $\chi^2(4) = 1.30, p = .82, CFI = 1.0, RMSEA = 0.0$ ). PCE was directly associated with lower levels of both 1 and 7 month RSA and higher change in RSA during the NA task. The path from 1 month to 7 month RSA remained significant. **Conclusions:** These findings suggest that cocaine exposed infants have higher parasympathetic activity during rest and less ability to physiologically regulate themselves during periods of negative arousal. These findings also suggest that 1 month RSA only partially mediated the association between PCE and 7 month RSA and RSA regulation. **Support:** National Institute on Drug Abuse grant # 1R01 DA13190

## **GENDER DIFFERENCES IN CORTISOL REACTIVITY AMONG AFRICAN AMERICAN POLYSUBSTANCE USERS**

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**Aims:** Dysregulated Hypothalamic-Pituitary-Adrenal (HPA) response to stress has been repeatedly associated with poor substance use outcomes. Investigations of gender differences suggest that females exhibit blunted cortisol reactivity in response to stress, however research in this area has focused largely on cocaine users, with little focus on polysubstance users who are currently abstinent. The current study sought to replicate hyporesponsivity among females and to investigate gender differences in HPA axis reactivity within the context of polysubstance use and abstinence. **Methods:** Male ( $n = 72$ ) and female ( $n = 16$ ), African American polysubstance users were assessed in the first week of residential treatment. Salivary cortisol was collected pre and post psychological stressor, and at 10, 20 and 30 minutes post stress. **Results:** A repeated measures analysis of variance was conducted to examine gender differences in HPA axis response to stress. Results indicated a significant decrease in cortisol ( $F = 4.5, p < .05$ ) across genders, and a gender x cortisol interaction, suggesting a more exaggerated decrease in cortisol in females ( $F = 5.56, p < .05$ ). Women also exhibited a greater percent change from baseline at 20 minutes ( $t(94.49) = -2.65, p = .009$ ) and 30 minutes ( $t(80.53) = -2.77, p = .007$ ) post stressor. There were gender differences in self-reported response to the stressor, with women demonstrating greater changes in frustration, smoking cravings, and bodily discomfort ( $p < .05$ ). **Conclusions:** Findings indicate an overall unexpected decrease in cortisol in response to stress, with the more exaggerated decreases in women occurring in line with a greater self-reported response. Next steps include examining how specific gender differences in HPA axis response to stress relate to substance use outcomes. **Support:** DA R01 019404

## **DIFFERENCES IN RATES AND LENGTH OF INCARCERATION FOR MINORITY VS. NON-MINORITY WOMEN: A DRUG DIVERSION STUDY**

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**Aims:** As of 2005, the US Justice Department Bureau of Statistics indicated that African American females were more than twice as likely as Hispanic females and more than three times as likely as Caucasian females to have been in prison. The average length of incarceration for females reveals similar racial and ethnic differences. Although research has examined racial inequalities of imprisonment for men, little attention has been given to the same discriminatory factors for women. However, it is important to highlight such inequalities if such issues are to be rectified. The purpose of this study was to assess differences in legal characteristics between minority and non-minority women being diverted into substance abuse treatment. **Methods:** This study utilized data collected in a previous study of participants referred to a drug diversion program. Participants were women ( $N = 134$ ) who had been arrested for drug related charges prior to a pre-sentence drug diversion evaluation. Age of participants ranged between 23 to 58 years; racial composition included: 25% African American, 66% Caucasian and 9% Hispanic. Participants reported the following psychiatric characteristics: 34% were victims of family violence in childhood, 31% reported being victims of domestic violence and 57% reported having a family history of addiction. **Results:** Results showed no significant difference in the average total number of arrests across minority and non-minority groups [ $F = 0.621, p < 0.539$ ]. However, between the time of arrest and the pre-

sentence drug-diversion evaluation, significantly more African American women (62%) were incarcerated than were non-minority women [20%; Chi square=19.9,  $p<0.001$ ]. Additionally, length of incarceration showed a significant difference, with Caucasian women averaging 4 months and African American women averaging 13 months [ $F=4.9$ ,  $p<0.09$ ]. Conclusions: Results revealed significant inequalities in the treatment of minority vs. non-minority women arrested on drug-related charges. Implications of these findings are addressed. Support: Supported by Yale School of Medicine and NIDA RO1 DA018284-01.

### **ESTROGEN INTERACTS WITH MU OPIOID PEPTIDES TO MODULATE BEHAVIORAL SENSITIZATION TO COCAINE IN FEMALE RATS**

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Aims: There is substantial literature pointing to estrogen as a critical chemical signal affecting cocaine sensitization in the female. The present study was investigated if the mu opioid participates in estrogenic modulation of behavioral sensitization to cocaine. Methods: Rats were ovariectomized (OVX), half received a subcutaneous Silastic implant filled with estradiol benzoate (EB), the other half received an empty implant. A week later, they were tested for their locomotor response to cocaine (15 mg/kg, i.p.) in the presence or absence of naloxonazine (15 mg/kg, i.p.). Results: Blocking the  $\mu 1$ -opioid receptor abolished the development of behavioral sensitization to cocaine in OVX-EB rats. In contrast, in OVX rats, naloxonazine increased cocaine-induced locomotor activity on days 3 and 5, an effect that disappeared after a 2 day withdrawal period. fMRI studies revealed that the increased neural activity observed in OVX-EB rats sensitized to cocaine was also decreased by naloxonazine pretreatment. Conclusions: The present data suggests that estrogenic regulation of cocaine-induced behavioral sensitization involves the  $\mu 1$  receptor. It also provides evidence of neuroadaptations induced by estrogen during cocaine re-exposure such as enhanced neural activation in brain areas associated with learning and reward. Support: This work was supported by a SNRP grant from NINDS (U54 NS39405) a SCORE grant from NIGMS (S06 GM08224). GD, PH and GS received support from RISE Program og NIGMS (R25 GM61838)

### **EFFECTS OF NORBNI ON ETHANOL-INDUCED CONDITIONED TASTE AVERSIONS IN BOTH IN- AND CROSS-FOSTERED LEWIS AND FISCHER FEMALE RATS**

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Aims: Since kappa(!) opioid activity reportedly mediates some of alcohol's aversive effects, antagonism of ! activity should impact these effects. Accordingly, norBNI's (!-antagonist) effects on ethanol (EtOH)-induced conditioned taste aversions (CTA) were assessed. Given that alcohol's effects are impacted by both genes and environment, this assessment was made in cross- and in-fostered LEW (L) and F344 (F) rats (that display differential sensitivity to alcohol's aversive effects). Methods: F and L pups (n=48) were cross- or in-fostered within 24h of birth, resulting in the following pup-dam rearing groups (n=4-8): FF, FL, LL and LF. Prior to conditioning, animals were injected with 1 mg/kg norBNI or vehicle. They were then given 20-min access to saccharin followed by 1.25 g/kg EtOH (for a total of 4 trials). Core temperature was recorded during conditioning. Conditioning was followed by 12 two-bottle extinction trials. Results: A 4x2x4 ANOVA revealed no norBNI effects on acquisition or extinction. However, effects of Trial and Rearing Group as well as a Trial x Rearing Group interaction were evident in acquisition. Group LF drank significantly less than FF and FL on Trial 2 and less than FF, FL and LL on Trial 3. A 3x2x4 ANOVA revealed effects of Trial and Rearing Group in extinction. Group LF extinguished slower than FF and FL. Further, a 3x2x4 ANOVA revealed a slower recovery from the hypothermic effects of EtOH in L than F rats (all  $F$ 's $>2.0$ ,  $p$ 's $<.05$ ). Conclusions: The fact that norBNI failed to affect acquisition or extinction of ethanol-induced CTAs suggests that ! activity may not mediate the aversive effects of EtOH as assessed in this preparation. Interestingly, L rats appear more sensitive to cross-fostering effects in the acquisition and extinction of ethanol-induced CTAs, as well as to the hypothermic effects of EtOH. Support: Supported by a grant from the Mellon Foundation to ALR and intramural funds from NIDDK

### **THE ASSOCIATION BETWEEN EXECUTIVE FUNCTIONING AND READINESS TO CHANGE DRUG USE BEHAVIOR AMONG INJECTION AND NONINJECTION DRUG USERS IN BALTIMORE, MD**

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Aims: Many theoretical models investigating behavior change are based on an individual's recognition of and desire to change problem behaviors, such as drug use. The present study sought to evaluate the association between impairment on an executive functioning measure and readiness to change drug use behaviors. Methods: This study used baseline data from the International Neurobehavioral HIV Study, an epidemiological examination of neuropsychological and behavioral risk factors of HIV and Hepatitis A, B, and C. The present study sample included 410 injection and non-injection drug using participants from the Baltimore region that reported lifetime daily or nearly daily use of heroin and/or cocaine use and reported using either substance within one week preceding the assessment. Impaired executive

functioning was defined as performance below the 5th percentile using population norms of the Categories Completed scale of the Wisconsin Card Sorting Test (WCST). Factor analysis was performed using sixteen items from the Readiness to Change Questionnaire. Composite scores were computed for each factor by summing items associated with each factor. Linear regression models were used to assess the relationship of WCST performance on composite scores while controlling for potential confounders. Results: Four factors were identified and named Intention, Problem Recognition, Desire to Enter Treatment, and Ambivalence. Regression analyses indicated impairment on the WCST was associated with lower Intention scores ( $r = -0.55$ ,  $t = -2.17$ ,  $p < .05$ ) and lower Problem Recognition scores ( $r = -0.38$ ,  $t = -2.12$ ,  $p < .05$ ). Other notable findings were observed with recent treatment involvement, injection status, length of drug use, and gender. Conclusions: Implications regarding the recruitment and treatment of individuals with cognitive impairment and substance use disorders are discussed. Support: This research was supported by RO1 DA014498 to Dr. Bill Latimer and the Drug dependence Epidemiology Training Program T32 DA007292 (PI: Dr. Bill Latimer)

### **SEXUAL RISK FACTORS: RATES AND RELIABILITY AMONG ECSTASY USERS**

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Aims: This study aimed to assess the rates and reliability of sexual risk behavior measures by gender among a multi-site study of club drug users. Methods: As part of a multi-site NIDA-funded (DA14854-01) nosological study of club drugs, test-retest measures were collected of the revised version of the Risk Behavior Assessment for Club Drugs ([RBA-CD] NIDA, 1993). Eligible participants had used ecstasy at least 5 times throughout their life, once within the past 12 months and were at least 15 years old. Structured interviews were conducted in St. Louis, Miami, and Sydney, Australia among club drug users in 2002-2005. Descriptive statistics were conducted to provide the prevalence rates of sexual behaviors and drug dependence diagnoses based on the Substance Abuse Module (Cottler et al, 1989). Test-retest reliability analyses were conducted using Kappa coefficients for the dichotomous items and Intraclass Correlation Coefficients (ICC) for the continuous variables. Z statistics were calculated to assess significance of reliability coefficients between genders. Results: A total of 603 participants completed the RBA-CD at two time points. High proportions of this sample of club drug users met criteria for lifetime DSM-IV dependence diagnoses for alcohol, cocaine, cannabis, and ecstasy across the three study sites. The mean number of female sex partners for men was 24.8 and for females with their male sex partners was 12.7. Reliability for all 51 items of the sexual activity section of the RBA ranged from a .23-1.00, with 36 of those items resulting in moderate to high reliability (.55-1.00). There were few significant differences in reliability between gender. Few items were less reliably reported, which included reasons for condom use (.45-.82) and behaviors and attitudes while using drugs (.23-.87). Conclusions: This study found high reliability in reported sexual behaviors among a club drug-using population. Further methodological research is needed to continue improving the psychometric quality of instruments that assess HIV risk behavior. Support: This study was conducted with the support of DA14854-01 and T32 DA07313.

### **EVALUATION OF A DRUG TREATMENT PROGRAM FOR FAMILIES ENGAGED IN THE CHILD WELFARE SYSTEM**

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Aims: A program providing drug treatment to child welfare systems involved families is described and evaluated. Services are provided through nine agencies to parents whose children have been abused or neglected for whom parental substance abuse has been identified. This evaluation focuses on identifying client and family characteristics and the relationship with a variety of treatment process and outcome indicators. Methods: Administrative data were used to generate clinical and service profiles including clinical assessment and enrollment information; service utilization data including service type and dose; child welfare investigation, case processing, and resolution; and, parental employment activity. These data are and supplemented with qualitative information from key informant interviews of services providers and clients and structured client satisfaction survey. Results: Most clients were women, 1/3 are Latina, a little slightly more than 1/2; possessing a GED/diploma and 40% employed. Families received a mix of services from state substance abuse and child welfare agencies; clients served by a single agency had significantly longer lengths of stay, as compared to clients served by both systems. Using self-report and urinalysis, nearly 60% of the clients were abstinent at program discharge. Recurrence of abuse or neglect was significantly lower for families served by the AFF program. Nearly 1/2 of the children served in the program were reunified with their families. Conclusions: This program description and evaluation provides exemplary evidence of an inter-agency systems approach to identifying, engaging, and treating families with drug use. A number of relationships between client and family characteristics and service process and outcome indicators provide provocative implications for the delivery of drug treatment services to this population. Support: A number of relationships between client and family characteristics and service process and outcome indicators provide provocative implications for the delivery of drug treatment services to this population.

## **CONTEXTUAL DIFFERENCES IN SUBSTANCE USE AMONG TREATMENT-SEEKING WOMEN**

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**Aims:** While there is literature to describe rural versus urban substance users, there is little research comparing rural Appalachian women's substance use with women in non-Appalachian areas. This area of research is of growing importance given recent findings suggesting increasing rates of substance use in rural, Appalachia. This study examines differences in self-reported past year substance use among Appalachian and non-Appalachian treatment-seeking women in Kentucky. **Methods:** Baseline intake data from the 2006 Kentucky Treatment Outcome Study (KTOS) were utilized representing publicly-funded treatment programs statewide. Women accounted for 35.1% (N = 2786) of total baselines. Women's county of treatment entry was coded based on classifications from the Appalachian Regional Commission. Women in treatment in Appalachian counties accounted for 31% (N = 872). **Results:** On average, women were 32 years old (M = 31.90, SD = 8.93) and the majority were non-Hispanic white (85.4%). Multiple logistic regression analyses were used to compare substance use among women in Appalachian and non-Appalachian areas. Those entering treatment in Appalachia were less likely to use: alcohol (AOR: .75, 95% CI: .62, .90), cocaine (AOR: .46, 95% CI: .38, .55), marijuana (AOR: .73, 95% CI: .62, .87), and methamphetamines (AOR: .51, 95% CI: .40, .64), but were more likely to report past year illicit opiate (AOR: 2.1, 95% CI: 1.76, 2.51) and tranquilizer (AOR: 1.57, 95% CI: 1.32, 1.88) use, after adjustment for sociodemographic, mental health indicators and self-reported pain. **Conclusions:** These findings join a small but growing literature on the emergence of prescription drug use in Appalachia. Most of the previous research has focused on men and this study contributes important information about the substance use patterns of women in Appalachia. Given the paucity of treatment in Appalachia, the results of this study underscore the need to increase treatment availability in this population of rural women. **Support:** Kentucky Department for Mental Health and Mental Retardation

## **DESCRIBING DIFFERENCES BETWEEN NEVER SMOKERS, CURRENT SMOKERS, AND FORMER SMOKERS IN A LOW SES COMMUNITY SAMPLE**

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**Aims:** Ethnic minority groups have high rates of tobacco smoking and are less likely to quit. The present study compared characteristics of people who have never smoked tobacco products versus those who are current smokers, and from current smokers versus former smokers. **Methods:** The sample includes 1442 participants with similar low SES from two adjacent communities, with similar representation of Blacks and whites who were interviewed using a standardized questionnaire. Tobacco use was assessed using two questions: "Have you ever smoked cigarettes regularly?" and "Do you smoke cigarettes now?" Participants were classified either as current smokers, former smokers, or persons who never smoked. Covariates included race, age, gender, marital status, educational attainment, perceived stress, meeting criteria for major depression episode, perceived social support, and perceived community problems. **Results:** Half (56%) of the total sample were current smokers, 32% never smokers, and 12% former smokers. The odds of being a current smoker vs. non-smoker were lower among African Americans and higher by each of age year until the age of 45 and among those who met criteria for major depressive episode. Compared to current smokers, married individuals had higher odds of being former smokers, as well as those with higher education attainment. Individuals with less than 50 years old had lower odds of being former smokers. **Conclusions:** This study offers a unique perspective for the analysis of tobacco involvement in low SES and minority populations, which may help develop better interventions. Covariates of differences between smokers and non-smokers are not the same as those for the differences between current vs. former smokers. **Support:** NIDA, grants DA12390 & DA19805, and MD002217 from CMHHD.

## **THE EFFECT OF ESTROGEN ON CYTOKINE PRODUCTION DURING INFLAMMATORY PAIN IN OVARECTOMIZED FEMALE RATS**

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**Aims:** Estrogen attenuates the behavioral responses to inflammation-induced pain. However, the mechanism underlying estrogen's antihyperalgesic effects is not known. The aim of this study is to determine whether estrogen's analgesic effects on inflammatory pain are in part mediated through attenuation of proinflammatory or induction of anti-inflammatory cytokine levels. **Methods:** To this end, eight-week old ovariectomized (OVX) Sprague-Dawley female rats (N=24) were subcutaneously implanted with a Silastic capsule containing either 20% 17 $\beta$ -estradiol or vehicle (cholesterol). One week after implantation, naïve and formalin-treated (5% injection into the intraplantar region of the right hind paw) rats were rapidly decapitated, and serum collected after centrifugation at 2,600 rpm for 30 minutes at 4°C; C was stored at -80°C until use. TNF- $\alpha$  (a proinflammatory cytokine) and IL-10 (an anti-inflammatory cytokine) serum



levels were analyzed using the Enzyme- Linked Immunosorbent Assay (ELISA) technique. Results: Estrogen administration lowered TNF- $\alpha$  serum levels in naïve rats ( $F(1, 20)=4.401$ ;  $p=0.05$ ). However, formalin administration did not alter TNF- $\alpha$  serum levels in either hormonal treatment groups. Further, IL-10 serum levels were not altered in either naïve or formalin-administered rats, regardless of hormonal treatment. Conclusions: Taken together, our results suggest that estrogen's attenuation of behavioral responses to inflammation is in part mediated through a reduction of proinflammatory mediators that occur before nociceptive stimulation. Support: Supported by: SCORE 506-GM60654, MIDARP DA12136, and SNRP NS41073.

### **DOES CHILDHOOD ABUSE HISTORY IMPACT OUTCOMES AMONG HOMELESS YOUTH RECEIVING SUBSTANCE ABUSE TREATMENT?**

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Aims: The most recent federal study of runaway and throwaway youth found that 1.7 million youth were homeless in 1999 and prolonged abuse by family members appears to be the most common reason that youth leave home.

Evaluations of the efficacy of interventions for homeless youth with a history of childhood abuse are virtually absent. To address this gap, this study explored treatment outcome among homeless youth with and without histories of childhood abuse who received a substance abuse treatment intervention. Methods: This study compared treatment outcomes among abused ( $n=140$ ) and non-abused ( $n=110$ ) homeless youth between the ages of 14 to 22 who met criteria for substance abuse or dependence. Participants were randomly assigned to either a substance abuse treatment intervention, the Community Reinforcement Approach, or to treatment as usual, and were assessed at baseline, three and six months post-baseline. Results: Hierarchical linear modeling was used to investigate changes in the outcome variables (substance use, Beck Depression scores and total problem behaviors) and the impact of treatment, demographic characteristics, coping style, social stability, and childhood abuse on these changes. Interaction terms with gender were included assuming that different forms of abuse would impact males and females differently, which might then interact with treatment outcomes. Findings showed that outcomes differed among youth depending upon the type of abuse experienced, coping style, outcome measured, and gender. Conclusions: Although more research is needed, the current findings suggest that in order to improve substance abuse treatment outcome, the form of abuse experienced by homeless youth should be assessed. Treatment strategies may need to be tailored to the individual depending upon which type of abuse has been experienced and who the survivor of the abuse is, male or female. Support: This work has been supported by NIDA grant R01 DA13549 and CSAT grant T112503.

### **ADOLESCENT COPING AND SELF-EFFICACY TO RESIST MARIJUANA USE IN THE PRESENCE OF NEGATIVE EMOTION**

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Aims: Emotional Self-efficacy(SE)- self-efficacy to abstain from use in the presence of negative emotion has been linked to adolescent substance use. Coping skills may be important in enhancing SE to abstain from use while experiencing negative mood and these skills may vary as boys and girls differ in coping used in response to stress. Girls tend to seek relational support while boys tend towards externalizing strategies. This study aimed to test how coping skills influence boys' and girls' self-efficacy to abstain from marijuana. Methods: 251 high school students (33% of total sample,  $N=1093$ ; 50% female) reported current marijuana use on an anonymous survey measuring adolescent substance use and potential moderators of use. Teens rated the extent to which they engage in eight coping styles, such as behavioral, cognitive, and peer support. They also rated their self-efficacy to resist using when experiencing negative emotion. Linear regression analysis regressed self-efficacy on gender, the eight coping styles, and interaction effects. Results: Boys and girls did not differ in rates of use ( $p=.17$ ) or in their confidence to resist using marijuana when experiencing negative mood ( $p=.45$ ). After accounting for the relative influence of the 8 coping subscales, greater use of helpless coping was associated with lower SE to resist use ( $\beta = -.72$ ,  $p<.05$ ). Significant coping by gender interaction effects indicated that seeking peer support was related to higher SE for girls ( $\beta = .29$ ,  $p<.005$ ) and lower SE for boys ( $\beta = -.363$ ,  $p<.05$ ). Seeking parental support was related to greater SE for boys ( $\beta = .45$ ,  $p<.05$ ) but not for girls. Conclusions: Skill based coping strategies - such as behavioral coping or cognitive coping may be less related to SE to abstain when experiencing negative emotion than more interpersonal strategies. The use of certain interpersonal strategies may be protective for girls but risky for boys. Implications of these findings for treatment development will be discussed. Support: This research was supported by a project grant to S. Krishnan Sarin from a NIDA Center grant P50 DA09421.

### **LICIT SUBSTANCE USE, DEPRESSION AND TRAUMA IN PREGNANT WOMEN AT HIGH AND LOW RISK FOR PRENATAL ILLICIT DRUG**

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Aims: The purpose of this study was to examine whether pregnant women at increased risk for prenatal illicit drug use also reported higher rates of licit substance use, increased risk for depression and greater violence exposure than

pregnant women at low risk. Methods: The sample included 375 pregnant women who sought prenatal care at an urban OB/GYN clinic. All women provided informed consent and completed a 35 min. questionnaire battery at first prenatal visit. For the present study, the 4-item drug CAGE, a standardized screening instrument, was used to classify women as high risk (scores ! 2) for illicit drug use (HR, N=63) or low risk (scores < 2; LR, N=312) for prenatal illicit drug use. Other measures examined included: CAGE for alcohol, Household Survey items on tobacco, CES for Depression (CES-D), and standardized screening questions for physical abuse. Results: Demographically, the sample had a mean age of 25.7 yrs; sought prenatal care at average EGA of 16 weeks; 75% were single and over three-fourths reported the pregnancy was unplanned. HR pregnant women were twice as likely to report ever smoking daily (76%) than LR women (36%) (p<.001). They were also less likely to report cutting down on their smoking during pregnancy (80% and 91%, p <.10). HR pregnant women were nearly six times more likely to also be at risk for prenatal alcohol use (29%) than LR women (5.5%) (p<.001). Rates of depression were similar for the groups. However, HR women were nearly twice as likely to report a history of physical abuse than LR women (40% and 21%, p<.006) and they were more likely to report recent (past year) physical abuse (21% and 11%, p<.05). Conclusions: Study findings confirm that pregnant women at HR for illicit drug use are also more likely to report other behaviors associated with adverse maternal and infant outcomes (e.g., smoking, drinking, physical abuse). Data suggest OB clinical staff should target screening and intervention efforts toward this multiple-risk group of pregnant women. Support: Research was supported by NIH grants NIDA R01 DA11476 and NIAAA AA 11802.

### **CHRONIC EXERCISE DECREASES THE REINFORCING EFFICACY OF COCAINE**

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Aims: Aerobic exercise can serve as an alternative non-drug reinforcer in laboratory animals and has been recommended as an intervention in drug abuse prevention and treatment programs. Unfortunately, relatively little empirical data have been collected that specifically address the possible protective effects of voluntary long-term exercise on measures of drug self-administration. The purpose of the present study was to examine the effects of chronic exercise on sensitivity to the positive-reinforcing effects of cocaine in the drug self-administration procedure. Methods: Female rats were obtained at weaning and immediately divided into two groups. Sedentary rats were housed individually in standard laboratory cages that permitted no exercise beyond normal cage ambulation; exercising rats were housed individually in modified cages equipped with a running wheel. After 6 weeks, rats were surgically implanted with indwelling venous catheters and trained to self-administer cocaine on a fixed-ratio schedule of reinforcement. Once self-administration was acquired, cocaine was made available on a progressive ratio schedule and breakpoints were obtained for various doses of cocaine in both groups of rats. Results: Sedentary and exercising rats did not differ in the time to acquire cocaine self-administration or responding on the fixed-ratio schedule of reinforcement. On the progressive ratio schedule, breakpoints were significantly lower in exercising rats than sedentary rats when responding was maintained by both low (0.3 mg/kg/infusion) and high (1.0 mg/kg/infusion) doses of cocaine. In exercising rats, greater exercise output prior to catheter implantation was associated with lower breakpoints at the high dose of cocaine. Conclusions: These data indicate that chronic exercise decreases the positive-reinforcing effects of cocaine and support the possibility that exercise may be an effective intervention in drug abuse prevention and treatment programs. Support: This study was supported by US Public Service Grant DA14255, the Howard Hughes Medical Institute, the Duke Endowment, and Davidson College.

### **SBIRT OUTCOMES IN HOUSTON: INITIAL REPORT ON A HOSPITAL-DISTRICT PROGRAM**

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Aims: A Screening, Brief Intervention, and Referral to Treatment (SBIRT) program was implemented in the Harris County Hospital District (HCHD). This study measured changes in patients' heavy alcohol use, illegal drug use, mental problem status, and health problem status who received SBIRT services. Methods: SBIRT services were implemented at multiple HCHD Emergency, Trauma, and Community Clinic sites as the standard of care for all patients. The follow-up sample available for outcomes analyses was 1,147. Association between patients' age, gender, and other demographic characteristics with alcohol and drug usage were examined as well as changes in outcomes from admission to 6 month follow-up. Results: The follow up sample's basic demographics were similar to the total service population. For patients with AUDIT scores indicating drinking problems, the percentage of patients with any days of heavy drinking during the prior 30 days changed from 73% at admission to 26% at follow-up. Mean days of heavy drinking reduced from 7.1 days to 1.9 days per month. For patients with DAST scores indicating drug usage, 82% reported any days of drug use in prior 30 days at intake compared to 12% at follow-up. Mean days using illicit drugs went from 7.3 days at intake to .9 days per month at follow-up. Mental health problems as measured by K6 scores decreased on average from 12.5 at intake to 10.8 at follow-up. General health problems decreased on average from 3.6 at intake to 2.9 at follow-up. All were statistically significant. Conclusions: The findings are consistent with positive effects of SBIRT on patients' alcohol and drug usage and health. Differential findings for subgroups are expected to inform refinements in design and targeting of

services. Without a randomized control group, these findings are descriptive. Support: The SBIRT project is supported by a SAMHSA/CSAT grant through the Texas Department of State Health Services (DSHS), Contract #11618.

### **WILL I STAY OR WILL I GO? ROLE OF EARLY TREATMENT EXPERIENCES IN PREDICTING ATTRITION**

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Aims: Treatment effectiveness is compromised by high attrition. Elucidating predictors of attrition can inform strategies to maximize retention and the likelihood of successful outcomes. Clients' perspectives about leaving treatment are under-investigated. This study (1) Examines the role of background and psychosocial factors and of clients' early treatment experiences in predicting attrition; and (2) Explores stated reasons for attrition. Methods: Consecutive admissions to publicly-funded outpatient programs in NYC recruited within 2 weeks of admission (BL) and re-interviewed upon leaving treatment (N=250). Study domains: Demographics, clinical history, psychosocial functioning, recovery-promoting cognitions (e.g., commitment to abstinence), and treatment experiences at BL. Results: 59.8% of clients did not complete treatment. Drop-outs were 2.8 times more likely to return to drug use in the year after services ended (95%CI=1.86-4.23, p>.001). At intake, dropouts and completers did not significantly differ in clinical characteristics (e.g., dependence severity, primary substance) or in psychosocial functioning. Predictors of attrition were male gender, younger age, lower BL levels of recovery promoting cognitions, lower BL rating of likelihood of completing treatment, and less favorable program ratings - e.g., agreement with treatment plan, counselor's helpfulness, degree to fit between program and expectations of what helps deal with addiction problems. Primary reasons for leaving were: dislike of program/staff/rules (31.6%), not wanting/needing help (23.1%) and interference with responsibilities (e.g. family, school). Conclusions: Key predictors of attrition appear established and thus identifiable, very early on. Starting at admission, open dialogue with clients may identify those at-risk for attrition and point to areas where additional clinical work is needed (e.g., problem recognition, motivation enhancement; overall therapeutic engagement) to reduce attrition and foster better recovery outcomes. Support: National Institutes on Drug Abuse Grant R01DA015133

### **ALTERATIONS IN SKELETAL DEVELOPMENT FOLLOWING GESTATIONAL TOLUENE EXPOSURE**

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Aims: Toluene is an organic solvent commonly abused by inhalation among adolescents and young adults. Inhalant abusers are often women in their prime childbearing years. Toluene has an affinity for lipid rich tissue and can readily cross the placenta warranting concern about its effects on a developing fetus. Children born to mothers who abused solvents during pregnancy may exhibit characteristic symptoms of fetal solvent syndrome. One of these symptoms is thought to be skeletal malformations including malformations of the ribs and digits. Previous experiments in our lab measuring the effects of brief high dose prenatal toluene exposure in rats have resulted in rat pups with skeletal abnormalities including missing or malformed digits, limb deficits, and craniofacial abnormalities. Methods: This study examined whether repeated prenatal exposures, similar to those observed in an abuse setting, would produce a higher frequency of skeletal abnormalities, body weight, and body size differences in fetal rats as compared to those not exposed to toluene. Pregnant Sprague-Dawley rats were exposed for 15 min, twice daily, from gestational day (GD) 8 through GD20 to either air, 8000, 12,000, or 16,000 ppm toluene. Fetal skeletons were cleared of tissue, stained with Alizarin Red S and examined for abnormalities. Results: Exposure to toluene at all levels examined (8000, 12000, and 16000 ppm) significantly reduced growth and maturation including decreases in placental weights, fetal weights, and crownrump length. In addition, ossification of the extremities was significantly reduced as a result of toluene exposure at all levels. Other malformations observed during this experiment include malformed scapula, missing and extra vertebrae and ribs, and fused digits. Conclusions: While these results suggest that animals exposed prenatally to toluene may have skeletal abnormalities, the functional significance of these morphological changes to long-term health remains to be determined. Support: Supported by NIH grant DA15951 to SEB.

### **SEXUAL RISK BEHAVIORS AND USE OF METHAMPHETAMINES AND OTHER DRUGS AMONG INCARCERATED FEMALE ADOLESCENTS WITH AN STD DIAGNOSIS**

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Aims: Prior research has shown that high-risk sexual behaviors are associated with use of methamphetamines (MA) and other drugs. Yet there has been little exploration of the relationship of MA and other drug use with risky sexual behaviors among incarcerated female adolescents. The goals of this study are to identify demographic characteristics and sexual risk behaviors associated with use of MA and other drugs among incarcerated female adolescents with an STD diagnosis. Methods: Self-reported drug use, sexual risk behaviors and demographic data were examined from 478 interviews of confirmed chlamydia or gonorrhea cases diagnosed in Los Angeles juvenile hall in 2006 -2007. Results: The sample was African American (49%), Hispanic (37%), White (7%) and Other (7%). STD diagnoses were:

chlamydia (72%), gonorrhea (11%) or both (17%). Mean results were: age at arrest (16.0), age of first sexual experience (13.0) and number of lifetime sexual partners (6.0). Other sexual behaviors were: no condoms used at last sex (63%), prior pregnancy (26.2%), prior STD (25.3%), prior sexual abuse (20%), ever traded sex (17%), have children (11%), arrested for prostitution (9.3%) or drugs (7.0%), and currently pregnant (6.3%). Daily or weekly substance use was reported for any drug (51%), marijuana (36%), alcohol (21%), polydrug use (20%) and MA (15%). In multivariate analysis, MA users were more likely to be Hispanic (OR=6.30, CI: 3.6, 11.40) and report marijuana use (OR=2.00, CI: 1.18, 3.62) and less likely to report condom use at last sexual encounter (OR=.56, CI: .32, .96). Conclusions: Recognition of MA use and other drugs among incarcerated female adolescents underscores the need for interventions that address drug use and risky sexual behaviors through screening, referrals to drug treatment and post-release case management. Support: Los Angeles County Department of Public Health.

### **CHARACTERICS OF OPIOID-DEPENDENT PREGNANT WOMEN WHO ACCEPT OR REFUSE PARTICIPATION IN A CLINICAL TRIAL**

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<sup>1</sup>Wayne State U, Detroit, MI, <sup>2</sup>U of Vermont, Burlington, VT, <sup>3</sup>Johns Hopkins U, Baltimore, MD, <sup>4</sup>Thomas Jefferson U, Philadelphia, PA, <sup>5</sup>Medical U Vienna, Vienna, Austria, <sup>6</sup>Vanderbilt U, TN <sup>7</sup>Brown U., RI, and <sup>8</sup>U of Toronto, Canada  
Aims: To compare the characteristics of opioid-using pregnant women who do and do not consent to enrollment in a clinical trial of agonist medications. Methods: Data were gathered as part of the MOTHER study, a multi-site, double-blind, double-dummy clinical trial to examine the safety and efficacy of buprenorphine v. methadone in opioid-dependent pregnant women. Of 703 women initially screened for inclusion, 283 were eligible and approached to participate. Of those women eligible, 125 (44.2%) consented to trial enrollment. The 125 women who consented and the 158 who did not consent were compared on demographic characteristics, estimated gestational age (EGA), treatment history, and concomitant cocaine use. Results: Compared to non-consenting women, women who consented were significantly more likely to be White (84.6% v. 72.6%) and married (15.4% v. 9.6%; both ps<.05). Current treatment program enrollment was negatively related to consent, with 24.8% of consenting women not enrolled in a current maintenance treatment program compared to 11.5% of non-consenting women (p<.001). This finding may be due to a reluctance to disrupt their current treatment regimen. No significant differences were observed with respect to age, educational level, employment status, EGA, or concomitant cocaine use. Conclusions: Few differences were found between consenting and non-consenting women. These data show the feasibility of enrolling drug-dependent pregnant women into a complex and intensive clinical trial and is promising for future investigations involving the treatment of this high-risk population of women. Support: NIDA RO1DA 045778 015832 015764 015738 017513 018410 018417 015741

### **CO-MORBID PSYCHIATRIC AND SUBSTANCE USE DISORDERS AMONG AFRICAN AMERICAN WOMEN AT HIGH RISK FOR HIV**

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Aims: Drug use and violence contribute to serious health problems among women sex traders. This paper examines the intersection of substance dependence and psychiatric problems among a sample of women sex traders, and assesses the impact of co-occurring disorders on health service linkages. Methods: The data are drawn from an ongoing intervention trial designed to test the impact of two strengths-based case management interventions on linkages with health services among African American women sex traders in Miami. Drug-involved women sex traders are recruited through targeted sampling strategies. Results: Data collection began in May, 2007, and 125 clients have been enrolled into the study. To date, the sample has a median age of 40.1 years. Barriers to health services are common: 53.2% reported being homeless at some time during the past 3 months; 33.3% lack valid identification documents; and, 62.7% lack any health insurance. Need for services is high: 46% reported significant physical health problems, and 52% reported significant mental health problems in the 90 days prior to interview; 84.1% met criteria for substance dependence in the past year. The majority of clients display psychiatric co-morbidities, including depression, anxiety, and traumatic stress, associated with their substance use disorders. Overall, 45% of the sample has made at least one service linkage, including drug abuse treatment enrollment, mental health care and medical care. Although outcome data are preliminary, service linkage rates appear lower among drug dependent clients with co-morbid psychiatric disorders (37.8%) compared to their nonco-morbid counterparts (51.1%). Conclusions: Strengths-based case management appears to be an effective mechanism for addressing the health service needs of indigent drug-using African-American sex traders and reducing health disparities; however, drug dependent clients with co-morbid psychiatric disorders may require additional efforts to achieve needed service linkages. Support: This research is supported by Grant Number R01 DA013131 from the National Institute on Drug Abuse.

## **TRAJECTORIES OF ADOLESCENT CANNABIS USE TO PROBLEMATIC USE IN YOUNG ADULTHOOD**

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Aims: To examine the(i)association between adolescent cannabis use frequency and problematic use in young adulthood; (ii)impact on progression to problematic use of reducing/abstaining from use in adolescence. Methods: Data were collected from a 10 year longitudinal population study of 1943 Australian secondary school students. We summarized cannabis use over six adolescent surveys (14-17 years): maximum frequency, persistence (number of waves) and first wave of use. Other measures included gender, parental divorce and smoking, persistent adolescent cigarette smoking, "risky" alcohol use, depression/anxiety and antisocial behaviour. Young adult (24 years) outcomes were regular cannabis use (3+ days/week) and DSM-IV cannabis dependence. Results: 21% of adolescents (waves 1-6) had a maximum level of occasional (< weekly), 8% weekly to < daily, and 5% daily cannabis use. 8% of young adults (average age 24 years) were regular cannabis users and 6% dependent. Among the 668 adolescent users: male sex, weekly+ cannabis use and persistent cigarette smoking independently predicted problematic use outcomes at 24 years. There was variation in cannabis use over time. Adolescent cannabis users who subsequently abstained had a substantially reduced risk of later problematic use. Among weekly+ adolescent users, risk of problematic use at age 24 was not reduced by using less frequently during adolescence. Conclusions: After controlling for possible confounders, weekly + adolescent cannabis use was clearly associated with elevated risks for cannabis-related problems up to 10 years later, although occasional users were also at some risk of such outcomes. Among adolescent weekly+ users, only subsequent abstinence, but not reduction in use, lowered the risk of later problematic use. We need careful prevention and intervention messages to accurately convey the risks associated with persistent adolescent cannabis use. Support: Funded by the Australian National Health and Medical Research Council and the Australian Government Department of Health and Ageing.

## **SUBSTANCE USE IN PATIENTS WITH STDs: RESULTS FROM A NATIONAL SURVEY**

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Aims: Approximately 19 million sexually transmitted diseases(STDs) are diagnosed annually, of which 75% are diagnosed in general medical settings. We investigated the substance use patterns in patients diagnosed with STDs in the general population. Methods: We used the 2005 National Survey on Drug Use and Health to examine the prevalence and correlates of patients reporting an STD in the past year. We examined past-year alcohol use and abuse/dependence, and use of cigarettes, marijuana, non-medical prescription opioids, cocaine, intra-nasal and injection heroin. We conducted chi-square tests and unadjusted odds ratios between past-year STD and demographic and past-year substance use (SU) variables. We performed multivariable models examining the association between past-year STD and past-year SU variables, adjusting for demographic and other SU variables. Results: Of the 54,623 respondents, 1% (n=641, representing an estimated 586,328 individuals nationally) had a past-year STD. Of those with a past-year STD, 70% were women and 58% were white. The proportion of those with STDs endorsing substance use was as follows: 86% alcohol, 49% cigarettes, 32% marijuana, 14% non-medical prescription opioid, and 8% cocaine use; 22% had alcohol abuse/dependence. The characteristics most strongly associated with past-year STDs were ages 18-25 years old (OR 6.0, 95% CI 4.4-8.3), female gender (OR 2.2, 95% CI 1.7-2.8), Hispanic ethnicity (OR 7.3, 95%CI 4.2-12.8), and >12th grade education (OR 3.7, 2.2-6.2). All SU variables were associated with past year STD. After adjusting for demographic and SU variables, past-year STD was associated with alcohol use (AOR 1.8, 95% CI 1.2-2.7), alcohol abuse/dependence (AOR 2.0, 95% CI 1.4-2.8), and marijuana use (AOR 1.8, 95%CI 1.3-2.5); but not associated with cocaine or non-medical prescription opioid use. Conclusions: A diagnosis of an STD should prompt clinicians to screen for substance use, in particular alcohol and marijuana. Targeted screening and interventions should be developed for use in patients diagnosed with STDs. Support: The Robert Wood Johnson Foundation and NIDA grants: K12 DA00167, R01 DA019511, R01 DA020576-01

## **RACIAL DIFFERENCES IN THE EFFECT OF FAMILY FORMATION ON SMOKING CESSATION BY MIDDLE AGE AMONG WOMEN**

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Aims: The aims of this study are to examine the effect of family formation timing on smoking cessation among black and white women. Black women are less likely to ever smoke cigarettes when compared to white women and when they do begin to smoke, they start at a later age. But once they begin, they are less likely to quit. These smoking patterns lead to racial disparities in current smoking rates during their mid-30's. Marital and parental status has been shown to be associated with the likelihood of smoking cessation, and to vary by race. Little is known about the effect of family formation on smoking cessation among women during middle to late middle age. Methods: The National Longitudinal Survey of Women is a national representative sample of women (14-22 years of age in 1968) interviewed 22 times from 1968 to 2003. The sample were those who reported being regular smokers during at least one survey year (n=1451). Women were grouped by those who quit prior to and after 35 years of age and above. Timing of family formation was measured by the age of marriage and parenthood in relation to the age of smoking initiation. Logistic regression models

were analyzed to assess the effects of family formation timing on smoking cessation. Results: White women were more likely than black women to quit by middle age (OR 2.25 95% CI 1.61-3.15). While there was an effect of family formation timing on smoking cessation by middle age among white women, there was no effect on black women. White women who never married were more likely to quit by 35 than white women who initiated smoking after marriage (OR 2.70 95% CI 1.90-3.82). Further, white women who never had children were more likely than white women who initiated smoking after they had children to quit smoking by 35 (OR 4.80 95% CI 2.64-8.74). Conclusions: These findings show that there are racial differences in the effect of timing of family formation on smoking cessation by middle age. Future research includes examining the effect of social role strain on smoking cessation among black women as an alternative to family formation timing. Support: NDRI

### **A DIFFERENT KIND OF HUSTLE: A QUALITATIVE STUDY OF THE PROCESS OF LONG-TERM ABSTINENCE FROM HEROIN USE AMONG FEMALE EX-OFFENDERS**

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Aims: Heroin use, especially intravenous use, is associated with high rates of infectious diseases such as hepatitis, endocarditis and the HIV virus. Despite various interventions, long-term abstinence rates from heroin use continue at low levels. This presentation reviews findings from an investigation of long term abstinence as experienced by former heroin using ex-offenders. Methods: The original study sample, consisting of fifteen males and ten females was ethnically diverse: 40% African American, 44% Latino and 16% White (non-Latino). In-depth interviews were conducted with former users who had used the drug daily for at least a year; were involved with the criminal justice system for drug related charges and have remained abstinent for five years or longer. Focusing on the female sub-sample, this presentation examines various domains, including drug use histories, criminal behaviors, health status and familial interaction. Results: Results show that when addressing triggers threatening sustained abstinence, these re-entering individuals often sought the advice of "like others," whose experiences, failures and successes, provided guidance and support, strengthening the recovery efforts of both parties. This process was enhanced when these peer networks had additional factors in common, such as gender, culture and life experiences. Conclusions: Difficulties associated with successfully re-entering society post-incarceration are many. These difficulties are further compromised by the stigma and structural barriers posed by prior criminal and drug use histories. Ongoing successes experienced and shared by peer networks facilitated the sustained abstinence this group of female ex-offenders ultimately achieved. Support: Self-Funded

### **METHAMPHETAMINE USE AMONG WHITE PREGNANT WOMEN MEDICAL CO-OCCURRING DISORDERS IN A SUBSTANCE-ABUSING MEDICAID POPULATION**

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Aims: Substance use problems (SUP) have well established medical consequences. However, little is known about the rates of particular cooccurring disorders in specific sub-populations. Medicaid programs, which have high rates of members with SUP, have been under increasing pressure to control costs. Many states have done so with Managed Care Organizations (MCO) but have found it difficult to control costs in members with SUP. The purpose of this study is to characterize an MCO substance abusing population with high medical expenses. Methods: Data were collected from a Medicaid MCOs paid claims database over the course of three years for 603 members with SUP and high medical cost. Enrollees' indications of medical diagnoses were clustered into groups via Expanded Disease Categories (EDCs). Enrollees were divided equally into three strata based on 3-year total medical costs: higher cost, middle cost, and lower cost. We then compared rates of EDCs for the higher vs. lower cost groups. Results: 30% of the enrollees had a diagnosis including opioid dependence, 8% had cocaine dependence, and 4% had alcohol dependence. The mean number of EDCs in the lower cost group was 4.4 versus 9.0 in the higher cost group. Bivariate analysis revealed that for 15 of the 18 EDCs, the presence of that EDC was associated with assignment to the higher (vs. lower) cost group (all  $p < 0.05$ ). The remaining 3 EDCs (not associated with higher costs) were female reproductive ( $p = 0.117$ ), dental ( $p = 0.823$ ), and allergy ( $p = 0.160$ ). Multivariate analysis controlling for gender and age showed similar results. Further analyses will be done to determine which specific (or groups of) EDCs most contribute toward higher medical costs. Conclusions: Medicaid MCO members with substance use problems have high rates of co-occurring disorders, most of which are associated with high medical costs. Support: NIH-NIDA grant K23DA16250; CHCS grant by the RWJF; Johns Hopkins HealthCare, LLC.

### **METHAMPHETAMINE USE AMONG WHITE PREGNANT WOMEN**

W. Tompkins and W. Clark, SAMHSA, Rockville, MD

Aims: The purpose of the proposed presentation and/or poster board is to: (1) provide a comprehensive demographic description of white pregnant woman who use methamphetamine and to (2) identify correlates of methamphetamine use. The above two aims will be accomplished through the use of both descriptive and inferential statistical techniques. Data

reveal that the methamphetamine use is done predominantly by the white population. Among pregnant women who were admitted into publicly funded treatment facilities for methamphetamine use, the number of white pregnant women far outpaced the other races and ethnic groups. The admissions have more than doubled for white pregnant women from 2001 through 2005, with an increase of 105%. The data are drawn from the Treatment Episode Data (TEDS). Methamphetamine use among pregnant women is an increasing problem in the United States. Despite increases in the prevalence of methamphetamine use among white pregnant women, there is a paucity of research related to this understudied population. The existing literature demonstrates that methamphetamine use during pregnancy is associated with a number of negative health outcomes for both the fetus and the post-partum care of infants born to methamphetamine using mothers. Taken as a whole, emerging data exist to suggest that methamphetamine admissions among white pregnant woman is a problem that warrants further study and development of therapeutic interventions. Conclusions: This study will explore whether there are a number of important demographic variables associated with those white pregnant women who present for methamphetamine treatment. In addition, multivariate models will evaluate the association between a range of demographic factors and methamphetamine use to determine if there are important implications for future research and provide insights into a number of factors that may be associated with methamphetamine use. Support: The presentation is supported by U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Treatment.

### **NATIONAL MULTIDISCIPLINARY FRENCH TRAINING PROGRAM TO IMPROVE THE QUALITY OF TREATMENT FOR OPIATE ADDICTION PATIENTS AND TO MAKE A PROFESSIONAL'S CARE EASIER: OBJECTIVES AND OUTCOME**

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Aims: Background : In France, the «Buprenorphin paradox» in 1995 was to allow general practitioners to broadly prescribe drug addiction treatments without limitations in order to address the HIV epidemic. In 2007 : - 120.000 patients are receiving treatment, on an estimated 200 000 opiate dependant patients. - 16.000 doctors are prescribing alternative treatments, but only 12% of these treat 50% of the patients. - All pharmacists do not dispense available treatments. - Coordination between professionals (especially GPs and pharmacists) is poor. - Misuses exist with high dosage buprenorphin (sniff, injection) and, to a lesser extent with methadone (15.000 patients). Objectives : - Facilitate coordination between other Medicare professionals and specialized centers. - Manage misuse situations causing problems to professionals, i.e. respect of prescribed dosages: sniff and buprenorphin high dosage injections (BHD). - Address particular problems most frequently encountered like pregnancy of addicted patients and certain comorbidities (HIV or HCV infections) Methods: The favored method of training remains the inter-exchange of experiences between professionals. This enables them to voice their daily problems and to obtain valid answers. FMC-Net, using the internet, has overcome the logistical problems linked to the GP's locations and offers greater time flexibility with several sessions being available "on line" whilst giving greater interactivity and also telephone contact with an experienced trainer. Results: A review will be made of Net-FMC's 40 rounds of 2 sessions throughout France with GPs, Pharmacists and also other healthcare professionals dealing with addiction linked patients. Conclusions: This program aims to improve prescription of drug addiction treatments within the actual regulatory context. Support: Program designed by IRMG with the support of Schering Plough Lab

### **EFFECT OF WOMEN'S HIV SAFER SEX SKILLS GROUPS ON SEX-WITH-DRUG OCCASIONS: NIDA CLINICAL TRIALS NETWORK TRIAL RESULTS**

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Aims: As drug-involved women are at risk for HIV heterosexual transmission, sexual risk reduction intervention for them is crucial. This must target both sexual risk behavior and concurrent substance use. The effect of an intervention on sex-with-drug occasions is presented here. Methods: A CTN randomized trial of an evidence-based, women's HIV safer sex skills building (SSB) group versus standard HIV education (HE) was conducted in 12 community drug treatment programs. In a prior report, reduction in the primary outcome, unprotected sexual occasions (in prior 3 months), was observed in both conditions, at 3 months; at 6 months, while this decline held in SSB, there was an increase in HE, reflecting a significant difference ( $F=67.2$ ,  $p<.0001$ ). Here, intervention effect on the secondary outcome of sex with-drug-occasions is presented. Results: 465 women, sexually active at 3- month and/or 6-month follow-ups, were included in mixed effect modeling. For each woman, frequency of sex-with-drug occasions was the number of such occasions (in prior 3 months) for the drug for which this was the greatest. A significant Intervention X Time effect was obtained ( $B=-.53$ ,  $SE=.23$ ,  $t=-2.27$ ,  $p<.024$ ), reflecting a significant difference between HE and SSB predicted means at 6 months. While means for both decreased from baseline to 3 months (HE: BL = 26.92, 3M = 11.92; SSB: BL = 23.66, 3M = 8.65), at 6 months, in the SSB, this decline was maintained (Mean = 6.52), while in HE, there was an increase (Mean = 14.85). Conclusions: SSB was effective in decreasing sex-with-drug-occasions in women in drug treatment programs. While HE also produced initial decrements, only SSB maintained this decrement over time. The necessity for comprehensive skills

building, beyond information alone, in maintaining risk reduction is a common finding in HIV prevention. SSB, led by counselors, could be feasibly integrated into usual treatment. Support: CU-Partners/LI Regional Node (E. Nunes, P.I.)(NIDA U10DA 1305); HIV Center For Clinical & Behavioral Studies (E. Ehrhardt, PI.) (NIMH P30MH43520)

#### **INVESTIGATING THE ACTIVE INGREDIENTS OF MOTIVATIONAL INTERVIEWING**

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Aims: In spite of the generally good results produced by MI, the precise mechanisms of action associated with MI remain poorly understood and rarely conform to its theoretical model describing behavior change. This study investigated changes in motivational profiles of pregnant substance abusing women, half receiving MI and half receiving treatment as usual (TAU). Reported elsewhere, no main effect of treatment on later substance use was found between the MI and TAU conditions (Winhusen et al., in press). One explanation for this finding is that the MI intervention failed to mobilize the intended change processes thought to produce positive outcome. Methods: A total of 135 pregnant women were administered the 32-item stage of change tool, the URICA, and had complete data for the intake and end of treatment periods (MI: n = 62, TAU: n = 73). Results: Hierarchical multiple regressions were done to determine if there were differential pre-post relationships between the four URICA scales by treatment group. The direction and magnitude of pre-post changes in precontemplation did not differ between TAU and MI ( $p < .09$ :  $\beta$  combined = .48), and controlling for intake precontemplation scores the two groups did not differ in mean posttest precontemplation scores. In contrast, the slope for pre-post contemplation scores was significantly more positive for the TAU group ( $\beta = .71$ ) relative to the MI group, ( $\beta = .42$ ),  $p < .02$ , and MI participants reported, on average, lower contemplation scores at the end of treatment,  $p < .003$ . Finally, the slopes between pre-post scores for the action ( $\beta = .49$ ) and maintenance ( $\beta = .63$ ) scales did not differ between the TAU and MI clients. Conclusions: Unexpectedly, the TAU group reported significantly higher mean action and maintenance scores relative to the MI group at the end of treatment. Reasons for these differences are unclear but warrant future investigation. Findings offer partial support for the ability of MI to aid in the resolution of ambivalence, here characterized as contemplation. Support: NIDA Clinical Trials Network

#### **TWELVE-MONTH PREVALENCE OF SUBSTANCE USE AND SUBSTANCE USE DISORDERS IN PREGNANT AND POSTPARTUM WOMEN**

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Aims: To present, for the first time, national data on the 12-month prevalence of substance use and substance use disorders among pregnant, postpartum and non-pregnant women in the U.S. Methods: Face-to-face interviews were conducted in the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (n = 43,093). Results: Rates of any substance use disorder were significantly higher in non-pregnant women (19.9%), compared to pregnant (14.6%) and postpartum women (12%). Rates of any alcohol use (59% and 58.1 %, respectively) and any tobacco use (21.9% and 21.5, respectively) in pregnant and postpartum women were significantly lower than those observed in non-pregnant women (68.5% and 26.6%). Rates of any illicit drug use were 6.2%, 6.1% and 6.8% in pregnant, postpartum and no pregnant women, respectively, and were not significantly different. Conclusions: Although, pregnancy per se is not associated with increased risk of substance use, and substance use disorders, the prevalence of these disorders is strikingly high. Substance use by pregnant women is a leading preventable cause of adverse outcomes in their offspring. Special focus should be given to developing effective screening and intervention efforts to assist pregnant and postpartum women to reduce substance abuse, and to evaluating the effectiveness of current treatment programs and barriers to treatment for pregnant substance users. Support: Preparation of this report was supported in part by grants from the National Institute of Health: K23 DA00482, R01 DA019606 and R01 DA020783 (Dr. Blanco), K05-AA014223 and R01 DA 18652 (Dr. Hasin) and by the New York State Psychiatric Institute (Drs. Blanco, Hasin, and Olfson).

#### **D-AMPHETAMINE SELF-ADMINISTRATION IN WOMEN AND MEN**

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Aims: Results of some recent studies suggest that women and men may respond differently to the effects of stimulants such as amphetamine and cocaine. In order to assess potential sex-differences in the reinforcing effects of d-amphetamine, we conducted a retrospective-analysis of three studies that employed similar d-amphetamine self-administration procedures and used identical subject-rated drug-effect measures. Methods: Ten women and fifteen men were included in the analysis. In all studies, participants sampled placebo, low (8 to 10 mg) or high (16 to 20 mg) dose oral d-amphetamine. Following sampling sessions, participants worked for capsules containing a fraction of the previously sampled dose on a progressive-ratio schedule of reinforcement. We hypothesized that women and men would be differentially sensitive to the reinforcing effects of d-amphetamine. Two-way analysis of variance (sex and dose) and planned comparisons were used in the statistical analyses. Results: As expected, d-amphetamine functioned as a



reinforcer and produced prototypical subject-ratings and cardiovascular effects. Men self-administered a significantly greater number of capsules under the high dose condition than women. Conclusions: The results of this study suggest that men and women are differentially sensitive to the reinforcing effects of d-amphetamine. Future research should be conducted to determine if menstrual cycle phase might affect the reinforcing effects of d-amphetamine in women. Support: Supported by Grants DA 010325, 012665, and 021155 to Craig R. Rush, Ph.D.

### **CANNABIS AND OTHER ILLICIT DRUG USE PREDICT DELAYED REPRODUCTION IN MEN AND WOMEN**

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Aims: We examine the relationship between reproductive onset and history of regular smoking, nicotine dependence, cannabis use, problem use of cannabis, and other illicit drug use. Methods: Data were drawn from a young cohort of Australian twins born between 1964-1971 (3386 female and 2751 male twins). Survival analyses were conducted using Cox proportional hazards regression models predicting age at first childbirth from substance ab/use and dependence, with history of conduct disorder and educational attainment included as covariates. Results: For women, delayed reproduction is associated with history of cannabis use (HR=.71, 95% CI: .64-.80) and problem use of cannabis (HR=.74, 95% CI: .63-.88), with reduced probability at or after age 20. Delayed reproduction is also associated with other illicit drug use (HR=.67, 95% CI: .57-.80), with reduced probability at or after age 25. In contrast, and despite high comorbidity between smoking and use of cannabis and other illicit drugs, early childbearing is associated with history of regular smoking (HR=2.30, 95% CI: 1.69-3.15) and nicotine dependence (HR=1.99, 95% CI: 1.50-2.64), with increased probability before age 20. A similar pattern was found for men, but with weaker effects and without age interaction (cannabis use HR=.86, 95% CI: .75-.98; other illicit drug use HR=.83, 95% CI: .72-.95; regular smoking HR=1.55, 95% CI: 1.25-1.93). Conclusions: Findings that cannabis and other illicit substance ab/using men and especially women show overall delayed reproductive onset are striking given that early use of licit and illicit substances is a strong predictor of future substance abuse and dependence and adolescent substance use is associated with risky sexual behavior predictive of early childbearing. While underlying mechanisms remain unknown, higher rates of illicit substance ab/use among individuals without steady partners may help to explain observed delays. Support: NICHD grant HD52543 and NIAAA grants AA07728, AA1998, and AA15210

### **OVARIAN HORMONES MODULATE THE WITHIN-ANIMAL RELATIONSHIPS BETWEEN DOPAMINE CELL NUMBER, COCAINE-STIMULATED BEHAVIOR AND DOPAMINE RELEASE**

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Aims: Our laboratory has shown that female rats exhibit greater cocaine-stimulated behavior, dopamine release and dopamine cell number, than males and that these differences depend largely upon ovarian function. The purpose of the present study was to determine if ovariectomy (ovex) affects electrically-stimulated dopamine release in striatum and how these effects may be related to dopamine cell number and cocaine-stimulated behavior, within individual sham and ovexed female rats. Methods: We used a within subject design to assess all three parameters (DA cell number, DA release and cocaine-stimulated behavior) in sham (N=6) and ovexed females (N=7). We first determined locomotor behavior during habituation and following 10 mg/kg cocaine. Three hours later, each rat was anesthetized and electrically stimulated dopamine release was determined at baseline and again following 10 mg/kg cocaine. The rat was then perfused and tyrosine-hydroxylase positive cells were counted in substantia nigra (SN) and VTA. Results: Postpubertal ovex decreased DA cell number in substantia nigra and lowered dopamine release. This design proved the feasibility of serial, within animal, correlations of behavior, neurochemistry and morphology. DA neuron density in SN of all ovex and sham rats correlated significantly with certain behavioral topographies before (center time) and after cocaine (ambulations). In sham females nigral cell density was strongly correlated with cocaine-stimulated behaviors and cocaine-stimulated DA release. In ovexed rats, cocaine-stimulated behaviors were correlated with DA release elicited before and after cocaine administration. Conclusions: These results suggest that estrogen influences cocaine-stimulated responses through dopamine neuron survival as well as through activational effects on downstream mediators. Thus, nigral cell number may prove to be an understudied determinant of drug responsivity and addiction. Support: Supported by DA09079

## **OUTCOMES OF A SUBSTANCE USE AND HIV PREVENTION PROGRAM FOR INCARCERATED ADOLESCENTS**

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**Aims:** Introduction: Evidenced-based programs for substance use and HIV prevention were adapted for high-risk juveniles detained at 24-hour secure correctional facilities. Study results report outcomes of program implementation. **Methods:** Methods: Knowledge of HIV prevention behaviors, beliefs about HIV, substance use, and HIV risk-taking behaviors were assessed and compared between intervention (highly-interactive SUHIP) and control groups at baseline and 6-month follow-up. **Results:** Participants were 66 predominately African American (28%) and Latino (57%) youth, ages 14 to 19 years (mean 16.3, SD= 1.12). Males comprised 56% of the sample. The follow-up rate was 73%. No differences were found between groups at baseline. At follow-up, a significant difference was found between groups on knowledge of HIV prevention/ transmission,  $F(1, 44) = 7.46, p < .01$ . Moreover, paired samples t-tests showed significant changes for the SUHIP group but not the control group on the following items: increased knowledge scores ( $t = -2.61, df = 20, p < .02$ ), decreased erroneous beliefs regarding HIV vulnerability/ testing ( $t = -2.58, df = 20, p < .02$ ), improved attitudes related to school atmosphere ( $t = -3.31, df = 20, p < .00$ ), and a reduction in problem behaviors at school/work ( $t = 2.89, df = 20, p < .01$ ), fights ( $t = 4.42, df = 20, p < .00$ ), and with the law ( $t = 2.89, df = 20, p < .01$ ). Lastly, there were significant differences between groups at follow-up on ease of carrying/using condoms,  $F(1, 44) = 5.20, p < .03$ , and lower crystal methamphetamine use for SUHIP girls,  $F(1, 40) = 7.30, p < .01$ . **Conclusions:** Summary: Incorporation of evidence-based HIV- and substance use prevention programs in juvenile correctional facilities is feasible and can yield positive outcomes for high-risk incarcerated male and female juvenile offenders. **Support:** This research was funded by the National Institute on Drug Abuse R21 DA018578

## **TRENDS IN ADOLESCENT SUBSTANCE USE, ABUSE, DEPENDENCE, AND TREATMENT NEED BETWEEN 1998 AND 2005 IN KENTUCKY**

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**Aims:** New data from Kentucky, with its mix of Appalachian, southern-rural, and urban subcultures, provide an opportunity to examine trends from 1998 to 2005 related to prevalence of substance use, abuse and dependence, as well as treatment need in a rural state. **Methods:** A probability sample of 1607 Kentuckians (12 to 17 years old) was contacted using random-digit dialing in 2005; the survey methods matched exactly a survey done in 1998. Prevalence of tobacco, alcohol and illicit drug use; drug and alcohol abuse and dependence by DSM-IV criteria; and indicators of treatment need were collected. Data analyses were conducted following an estimation study design to develop detailed demographic distributions of prevalence estimates. **Results:** Trends in substance use between 1998 and 2005 generally reflected national trends for adolescent males and females toward less use of tobacco, alcohol, and illicit drugs. DSM-IV criteria for alcohol abuse and dependence revealed increases except for dependence among adolescent males who experienced a marked decrease in prevalence. DSM-IV criteria for drug abuse and dependence reflected reductions since 1998 for both adolescent males and females. Need for substance abuse treatment decreased, most markedly in males. **Conclusions:** These results offer indications of reduction of substance use in relation to tobacco, alcohol and illicit drugs, and a corresponding reduction in unmet treatment need for substance use problems among adolescent Kentuckians. Alcohol use is more problematic, with modest increases in prevalence of DSM-IV-defined alcohol abuse for adolescent males and females and alcohol dependence for females. Comparisons with the National Survey on Drug Use and Health are presented. **Support:** This research was supported by funding from the Kentucky Division of Mental Health and Substance Abuse.

## **TECHNOLOGICAL INNOVATIONS IN ADAPTING AN EVIDENCED-BASED HIV INTERVENTION FOR PREGNANT AFRICAN AMERICAN WOMEN IN SUBSTANCE ABUSE TREATMENT**

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**Aims:** This NIDA-sponsored study builds on a woman-focused intervention designated by the CDC as an evidenced-based HIV prevention intervention. It adapts the intervention with a technological innovation by videotaping women in recovery. Intervention efficacy is currently being pilot tested in formal substance abuse treatment settings. **Methods:** In Stage 1, focus groups were conducted with women (both HIV- and HIV+) who had used illicit drugs, had unprotected sex, and had been victimized during pregnancy. Stage 1 also included medical experts, service providers, and community advisory board members. Adaptations to the intervention were iterative based on this formative process and taping of the women. **Results:** Qualitative data identified treatment barriers for pregnant African-American women, including lack of access to prenatal care, obstacles to other health care, stigmatization, and racial prejudice among health care providers. Other important areas for adaptation included escalated intimate partner violence during pregnancy, poor communication

with partners, lack of social support, and low condom use. Preliminary Stage 2 quantitative data will also be presented from the women who are in formal substance abuse treatment and were randomized into the gender-focused intervention. Conclusions: The incidence of HIV among African-American women in the southeastern United States is particularly high. Among this population, HIV risk is compounded by illicit drug use and perpetration of violence during pregnancy as well as unsafe sex practices. These factors may result in negative consequences to both the mother and the unborn child. Innovative HIV prevention interventions need to be developed and tested rigorously to determine their efficacy with women at high risk. Segments of the innovation will illustrate the salience of the women's voices specific to African-American women in North Carolina. Barriers to recruiting this special population into the randomized trial will also be discussed. Support: Sponsored by NIDA RO1 DA020852

### **JUVENILE ARREST AS AN INDICATOR OF HIV-RELATED SEXUAL RISK BEHAVIORS AND ADULT CRIMINAL INVOLVEMENT IN A COMMUNITY SAMPLE OF SUBSTANCE-USING AFRICAN AMERICAN WOMEN**

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Aims: The current study examined whether African American drug using women with a juvenile arrest engaged in higher rates of HIV-related sexual behaviors and adult criminal involvement than their counterparts without a juvenile arrest. Methods: The sample consisted of 740 African American out-of-treatment female drug users recruited for two community-based HIV prevention studies in St. Louis. The sample was stratified into: women arrested before age 18(n=74); women with a first arrest after age 18(n=391); and women with no history of arrest(n=275). We hypothesized that women with a juvenile arrest (JA: before 18) would exhibit greater HIV risk through unprotected sexual activity, number of sex partners in the past 4 months, and trading sex to get drugs or alcohol than women with a later arrest (LA: after age 18) and women with no arrest(NA); women with a JA would exhibit greater criminal involvement through income from prostitution and from other illegal activity in the past 12 months than women with LA and women with NA. Results: Women with JA or LA were more likely to trade sex to get drugs/alcohol than women with NA,  $X^2(2, N = 740) = 82.26, p < .01$ . ANOVA revealed a significant difference in the mean number of sex partners across groups,  $F(2, 267) = 3.98, p < .05$ . Women with a JA were significantly more likely to have more sex partners than women with NA. Multinomial logistic regression analyses revealed that women with LA were 2 times less likely (OR=2.05) to always use a condom than women with NA. Women with a JA were > 2 times more likely (OR=2.56) and women with a LA were over 4 times more likely to receive income from prostitution than women with NA. Women with JA were nearly 4 times more likely (OR=3.82) and women with LA were >2 times more likely to receive money from other illegal activity (OR= 2.50) than women with NA. Conclusions: Having an arrest history may serve as a marker for greater HIV-sexual related risk behaviors and greater involvement in criminal behavior among African American female drug users. Support: NIDA DA11622, NIAA AA12111

### **TREATMENT OF ATTENTION-DEFICIT HYPERACTIVITY DISORDER AND SUBSEQUENT CIGARETTE SMOKING AND SUBSTANCE USE DISORDERS IN ADOLESCENT GIRLS**

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Aims: Controversy remains as to the effect of stimulant treatment (Tx) on the development of substance use disorders (SUD) and cigarette smoking; particularly on girls with ADHD. To this end, we evaluated the risk of stimulant tx for ADHD, on SUD and nicotine dependence in a prospective study of girls with ADHD. Methods: We conducted a case-controlled, five year follow up study of adolescent girls with and without ADHD. Psychiatric and SUD diagnoses were made by blinded structured interviews. We modeled time to onset of SUD and smoking as a function of lifetime stimulant tx history Results: In all, 114 subjects with ADHD (mean age at follow-up of 16.2 yrs) had complete medication and substance abuse data of which 82% had a lifetime history of stimulant tx. There were no differences in risk factors for SUD between the naturalistically tx and untx groups other than a family history of ADHD. Controlling for family history of ADHD, we did not find any increased risks for cigarette smoking or SUD associated with stimulant tx. In contrast, we found significant protective effects of stimulant tx on the development of subsequent SUD (N = 113; HR = 0.27 (0.125 0.60),  $c^2=10.57, p=0.001$ ) and cigarette smoking (N = 111; HR = 0.28 (0.14 0.60),  $c^2=10.05, p=0.001$ ). We found no effects of the time of onset or duration of stimulant tx on development of subsequent SUD or cigarette smoking (dependence) in ADHD subjects. Likewise, we found no effect of stimulant tx on duration of SUD in subjects that developed SUD. These results maintained significance when controlling for conduct disorder. Conclusions: Stimulant tx does not increase and appears to reduce risk for cigarette smoking and SUD in adolescent girls with ADHD. Follow up studies should confirm if this effect persists into adulthood. Support: DA R01 DA14419 & K24 DA016264 from the National Institutes of Health, Bethesda, MD

## **GENDER DIFFERENCES IN HIV RISK: RESULTS FROM A RANDOMIZED CLINICAL TRIAL**

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**Aims:** Examine gender differences in HIV risk behavior among heroin-dependent adults enrolled in a randomized clinical trial comparing interim methadone treatment with waiting list. **Methods:** Mixed model analyses were used to determine gender differences on selected items from the TCU AIDS Risk Assessment measure in 319 adult heroin-dependent participants who were randomly assigned on a 3:2 basis to interim methadone treatment or wait list conditions and were assessed at baseline and 4- and 10-month follow-ups. Interim methadone treatment consisted of daily observed methadone dose; counseling was available only for crises. **Results:** There was a significant gender x Condition x time interaction for the number of times participants reported sharing dirty needles ( $p = .023$ ). All groups reported a decrease over time, although males in the control group showed the least change while females in the control showed the greatest change. There was also a significant gender x Condition x time interaction for participants' reported ability to control their risky drug use activities ( $p = .012$ ). In terms of sexual risk behaviors, examination of gender effects (regardless of Condition or time) revealed significant gender differences for the following items: men were more likely to have sex without a condom ( $p < .001$ ); women were more likely to have a partner who injects drugs ( $p = .02$ ); and men were more likely to have sex without a condom while high ( $p = .004$ ). **Conclusions:** Findings suggest there are considerable gender differences in HIV drug and sex risk behaviors among heroin-dependent adults. However, there did not appear to be a significant reduction in HIV risk behavior associated with interim maintenance. **Support:** NIDA RO1DA13633, R.P. Schwartz, PI

## **DEVELOPMENTAL EPIDEMIOLOGY AND PREVENTION OF DRUG DISORDERS AND HIV SEXUAL RISK BEHAVIOR**

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**Aims:** We report on the prevention of drug disorders and HIV sexual risk behaviors from 1st grade through age 19-21 in an epidemiologically defined population in Baltimore public schools. We previously reported the impact of a universal classroom-based intervention, the Good Behavior Game (GBG) on drug disorders through young adulthood. This paper investigates how early aggressive, disruptive behavior relates to sexual practices (initiating vaginal, anal, and oral sex, multiple sex partners, STI's) and investigates the sequencing of drug use and sexual practices. GBG was directed at improving teacher's classroom behavior management and reducing aggressive, disruptive behavior, an antecedent of problem outcomes including drug abuse and risky sexual behavior. **Methods:** The trial involved 41 1st and 2nd grade classrooms in 19 schools. Schools were matched and randomized. Within schools teachers were randomized. Students were balanced across classrooms. **Results:** Early aggressive, disruptive behavior was related to later HIV sexual risk behavior: to anal sex (males;  $p < .001$ ); having multiple sex partners (males;  $p < .001$ ) and STIs (females;  $p < .001$ ). GBG impact includes a reduction in anal sex (GBG vs. controls,  $p = .005$ ) and the number of sexual partners (GBG vs. controls;  $p = .04$ ) among high risk males and the number or reported STIs among all males ( $p = .003$ ). Drug use was related to high risk sexual practices; e.g., using alcohol or illegal drugs before age 15 was related to having multiple sex partners (males and females;  $p = .001$ ) and insertive anal sex (males;  $p = .01$ ). Analyses are ongoing of the inter-relationships over time of drug use and high risk sexual practices. **Conclusions:** Early aggressive, disruptive behavior led to drug disorders and risky sex behaviors. GBG targeted early aggressive disruptive, behavior and reduced both drug disorders and HIV sexual risk behaviors. Discussion will focus on further analyses of paths and mechanisms. **Support:** NIMH R01s MH 42968 and MH 40859 with NIDA supplements

## **NEONATAL TOBACCO EXPOSURE IN OPIOID-MAINTAINED PREGNANT WOMEN — IMPACT AND CONSEQUENCES**

B. Winklbaur<sup>1</sup>, A. Baewert<sup>1</sup>, R. Jagsch<sup>3</sup>, K. Rohrmeister<sup>2</sup>, C. Aschbach-Jachman<sup>1</sup>, K. Thau<sup>1</sup> and G. Fischer<sup>1</sup>, <sup>1</sup>Department of Psychiatry and Psychotherapy, Medical University of Vienna, Vienna, Austria, <sup>2</sup>Department of Neonatology, Medical University of Vienna, Vienna, Austria and <sup>3</sup>Department of Clinical, Biological and Differential Psychology, Faculty of Psychology, Vienna, Austria

**Aims:** It is well known that smoking during pregnancy implicates not only serious risks for the mother but also for the child's health. This study compares the influence of nicotine exposure on neonates born to mothers maintained on methadone, buprenorphine or oral slow-release morphine (SROM). **Methods:** The study examines 139 opioid maintained pregnant women and their neonates. Based on maternal self-reports, participants were divided into two groups: Women who reported a low cigarette consumption of ten or less cigarettes per day (56.8%) and those with heavy consumption of 20 or more cigarettes (43.2%). Neonatal outcome measures were assessed using Finnegan Score to determine neonatal abstinence syndrome (NAS). **Results:** The mean age of the women was 26 years. Sixty-three of the participants (45.4%) were maintained on SROM, 54 (38.8%) on methadone, and 22 (15.8%) received buprenorphine. Based on our results, a significantly higher number of neonates born to mothers treated with buprenorphine did not require NAS treatment ( $p < 0.001$ ). Heavy cigarette consumption was associated with significantly lower neonatal birth weight ( $p < 0.001$ ),

significantly smaller birth length ( $p=0.017$ ) and tended to produce smaller head circumference ( $p=0.054$ ). In addition, we found significant effects of tobacco consumption on the severity of NAS ( $p=0.030$ ). Regarding concomitant consumption of opioids ( $p=0.537$ ), cocaine ( $p=0.248$ ), amphetamines ( $p=0.903$ ) or benzodiazepines ( $p=0.086$ ) no significant differences between heavy or low nicotine consumption have been revealed. Conclusions: Heavy tobacco consumption in opioid maintained pregnant women leads to several detrimental medical and developmental consequences for the newborn. Special offers for the treatment of nicotine dependence need to be integrated into programs for opioid dependent pregnant women. Support: -

### **PREVALENCE OF VIOLENCE AND SUBSTANCE USE AMONG FEMALE VICTIMS OF INTIMATE-PARTNER VIOLENCE**

P. Wupperman, P. Amble, S. Devine, H. Zonana, S. Ciskowski and C. Easton, Yale University School of Medicine, New Haven, CT

Aims: In order to improve understanding of the complex dynamics involved in intimate-partner violence (IPV), this study explored violence and substance use in the female partners of men entering treatment for both IPV and substance-related problems. Methods: Acts of IPV were assessed via self-report and partner-report from each partner at baseline. Female partners who agreed to participate ( $N = 22$ ) were interviewed by phone. Due to the strong association between substance use and violence, we also investigated the men's ( $N = 75$ ) reports of their own and their partners' substance use at pre and post-treatment. Analyses: Two-way contingency analyses were conducted to compare men's vs. women's reports of violent acts committed by self and by partner, as well as men's vs. women's reported substance use at baseline and treatment completion. Results: Female partners were equally likely as men to engage in substance use the week prior to treatment. However, female partners were reportedly more likely than men to use substances during the last week of treatment, due to a reported increase in use during the male partners' treatment. Regarding violence, 59% of female IPV victims reported engaging in mild violence, and 63.6% reported engaging in severe violence. By contrast, only 27% of male batterers reported that their female partners had engaged in mild violence, and only 14.7% reported that their partners had engaged in severe violence. Conclusions: Results suggest that women in relationships with men in treatment for substance abuse and IPV are in need of their own treatment. Results do not indicate how much of the IPV committed by female partners was utilized at their own initiative versus in self-defense or retaliation for violence received. Even so, this violence has the potential to lead to increased conflict, which may result in increased harm to both women and their families. Implications of these findings and potential targets for treatment are discussed. Support: DA 007238-17 and DA018284-01

### **AGE AND SEX ALTER SENSITIVITY TO COCAINE-CONDITIONED REWARD IN RATS**

E. Zakharova, I. Kichko, G. Leoni and S. Izenwasser, Psychiatry, U Miami Miller School of Medicine, Miami, FL  
Aims: Human and animal laboratory studies show that females and males respond differently to drugs and that drug administration during adolescence leads to different behavioral effects than during adulthood. While it is known that adult female rats are more sensitive to the behavioral effects of cocaine than adult males, it is not known if the same effect of sex exists during adolescence. In the present study, sensitivity to the conditioned reward of cocaine was evaluated in male and female adolescent and adult rats using a conditioned place preference (CPP) paradigm. The hypothesis was that females would respond differently to cocaine than males and that the differential responses would be age-specific. Methods: Adolescent (PND 34) and adult (PND 66) male and female rats were trained and tested for the development of CPP to multiple doses of cocaine. On the first day, a pre-test was done to determine initial preference to both sides of the chamber. This was followed by 3 days of training, with saline administered in the preferred side of the test chamber in the morning and cocaine in the non-preferred side in the afternoon. On day 5, a post-test was done to determine if preference had changed as a result of the training. Each training and test session was 30 min. Results: Adolescent male and female rats established CPP at lower doses of cocaine than adult male and female rats, respectively. In addition, female rats developed CPP at lower doses of cocaine than males, regardless of age. Thus, both age and sex altered the conditioned reward associated with cocaine with the order of sensitivity being adolescent females > adult females > adolescent males > adult males. Conclusions: These data show that adolescents are more sensitive to the conditioned rewarding properties of cocaine than adults. However, females respond to lower doses of cocaine compared to males, regardless of age. Thus, sex and age are factors that predetermine sensitivity to the rewarding effects of cocaine. A better understanding of this differential regulation may lead to sex- and age-specific preventions and treatments for cocaine abuse. Support: NIDA grants DA24584 and DA15119

### **GENDER DIFFERENCES IN PREVALENCE, RISK AND CLINICAL CORRELATES OF SMOKING COMORBIDITY IN SCHIZOPHRENIA IN A CHINESE POPULATION**

X.Y. Zhang<sup>1,2</sup>, D.F. Zhou<sup>2</sup>, G.Y. Wu<sup>1</sup>, T.A. Kosten<sup>1</sup> and T.R. Kosten<sup>1</sup>, <sup>1</sup>Psychiatry, Baylor College of Medicine, Houston, TX and <sup>2</sup>Psychiatry, Peking University, Beijing, China

Aims: The prevalence of smoking in patients with schizophrenia is substantially higher than a variety of comparison populations, including those with other severe mental illnesses. This study examined gender-specific relationships

between smoking and schizophrenia, which have previously received little systematic study. Methods: This case-control study included patients with a DSM-IV diagnosis of schizophrenia (n=510) and a representative sample of the normal population (n=793). The Fagerstrom Test for Nicotine Dependence (FTND) was used to assess nicotine dependence. Smoking and its relationship to retrospectively assessed measures of the course of schizophrenia were evaluated by patient-rated and clinician administered questionnaires. Results: When compared with normal control subjects, schizophrenia patients had significantly higher prevalence of ever daily smoking (55.9% vs 49.7%; OR=2.1), current daily smoking (51.4% vs 40.9%; OR=4.3) as well as heavy smoking (62.2% vs 32.7%, OR=3.9) among current daily smokers. As in the general population (54.6% vs 7.7%), more men than women with schizophrenia (75.5% vs 3.5%) were current smokers. However, the risk of smoking was greater for men with schizophrenia (odds ratio=7.35) than for women with schizophrenia (odds ratio=2.77), compared with the general population. The prevalence of those who had quit smoking was significantly lower in schizophrenia than in controls (p<0.01). Smoking was associated with a history of alcohol use and family history of smoking in men with schizophrenia and with a family history of schizophrenia in women with schizophrenia. Conclusions: This study suggests that there are gender differences in the prevalence, risk, and clinical correlates of smoking in schizophrenia. The magnitude of these gender-specific differences is substantial and warrants further prospective study. Support: This study was funded by the Stanley Medical Institute Foundation (03T-459, 05T-726) (XYZ), and the MIRECC and National Institute on Drug Abuse K05-DA0454

### **SEX DIFFERENCES IN THE DEVELOPMENT OF COCAINE-INDUCED STEREOTYPED BEHAVIOR**

L. Zhou<sup>2,3</sup>, W.L. Sun<sup>1,3</sup>, J. Liu<sup>2</sup>, Y.X. Liang<sup>2</sup>, M. Timothy<sup>2</sup>, K. Weierstall<sup>1,3</sup>, A.C. Minerly<sup>1,3</sup>, S. Jenab<sup>1,3</sup> and V. Quinones-Jenab<sup>1,3</sup>, <sup>1</sup>Psychology, Hunter College, New York, NY, <sup>2</sup>Biology, Hunter College, New York, NY and <sup>3</sup>Graduate Center of The City University of New York, New York, NY

Aims: Sex differences in behavioral response to cocaine administration have been reported; female rats are more sensitive to cocaine-induced behaviors than males. This study aimed to determine if acute and chronic cocaine treatment persistently induce higher stereotyped behavior in female than male along different length of treatment. Methods: To this end, male and female Fischer rats were randomly divided into three groups: saline, acute- and chronic-cocaine treatments. Saline groups received daily administration (i.p.) of saline. Acute-cocaine treated groups received saline administration throughout the experimental time course and the last day received a single cocaine treatment of 15 mg/kg. In the chronic-cocaine groups, rats received daily administration of cocaine (15 mg/kg) throughout 2, 5, or 14 days. Stereotyped behavior was videotaped for 45 seconds each at 15, 30, and 45 minutes after administration. The videotapes were analyzed for stereotypic activity by three trained observers, who were blind to the animal's treatment conditions using a modification of the Daunais and McGinty rating scale. Results: Overall, cocaine increased stereotyped behavior in both male and female rats. Across treatments, female rats exhibited higher stereotyped behavior to cocaine when compared to males. Longer pre-treatment with saline, produced more robust sexual dimorphic responses to acute-cocaine administration than shorter saline pre-treatment. Male rats exhibited higher stereotyped behavior after 5-day cocaine treatment than 2-day or 14-day, which is consistent with their sensitization in locomotor activity. However, female rats did not develop sensitization to stereotyped behavior after chronic cocaine administration. Conclusions: Taken together, these data suggest that female rats are more sensitive in response to cocaine than males. Support: This research was supported by SCORE 506-GM60654, MIDARP DA 12136, and SNRP NS 41073.

### **DEMOGRAPHIC VARIABLES ASSOCIATED WITH PRESCRIPTION OPIOID ABUSE AND DIVERSION DETECTED BY THE RADARS® SYSTEM**

A.E. Zosel<sup>1,2</sup>, E. Campagna<sup>1</sup>, J. Bailey<sup>1</sup> and R. Dart<sup>1,2</sup>, <sup>1</sup>Rocky Mountain Poison & Drug Center, Denver Health, Denver, CO and <sup>2</sup>University of Colorado Health Sciences Center, Denver, CO

Aims: To identify socio-economic factors that influence the incidence of PO AD. Methods: The RADARS® System is a surveillance network comprised of 4 signal detection systems (SDS): key informant (data are obtained primarily from clinicians treating drug abuse [KI]), drug diversion (police departments and drug task forces [DD]), poison center (exposures reported by the public and physicians [PC]) and opioid treatment programs (anonymous patient questionnaires [OTP]). Demographic information was obtained from the 2000 Census. PC data 2003 to present, OTP 2005 to present and KI data 2002 to present were analyzed using negative binomial regression. DD data 2002 to present were analyzed using linear mixed modeling. Results: Population within a 3 digit zip code, drug availability (as purchased from Verigan LCC), and female proportion of the population had a significant positive association with number of cases in each SDS. Household size had a significant negative association with number of cases. Median household income and white race had a significant positive association in some SDS. Population density, median age, and percent of population with a bachelor's degree were negatively associated in some SDS. Association of number of cases with time, working proportion of population, divorced status, and high school education or equivalent differed between SDS. Conclusions: In this analysis several demographic factors consistently have a significant positive association with PO AD. Drug availability, population and female gender have a significant positive association in each SDS. These findings may help guide intervention and education efforts to attenuate the problem of PO AD in the United States. Support: RMPDC operates the RADARS System and provides data to industry, regulatory agencies and researchers on a subscription basis.

## **CALL FOR ABSTRACTS**

### **NIDA'S WOMEN & SEX/GENDER JUNIOR INVESTIGATOR TRAVEL AWARDS FOR CPDD 2009**

There is accumulating evidence that the antecedents, consequences, and mechanisms of drug abuse and dependence are not identical in males and females and that sex/gender may be an important variable in treatment and prevention outcomes. To foster research on women and sex/gender differences in all areas of drug abuse research, both human and animal, the National Institute on Drug Abuse (NIDA) encourages the submission of abstracts on this topic for the 2009 annual meeting of the College on Problems of Drug Dependence (CPDD).

Special NIDA travel awards of up to \$750 will be available to 25-30 junior investigators whose CPDD abstract on women or sex/gender differences is accepted for either a poster or oral session at the 2009 annual meeting in Reno/Sparks, Nevada, June 20-25, 2009.

#### **ELIGIBILITY:**

- Graduate and medical students, post-doctoral students, medical residents, and investigators who are no more than five years past the doctoral degree or residency are eligible.
- Applicant **MUST** be first author on the CPDD abstract.
- Minority investigators and male investigators are especially encouraged to apply.
- Federal employees are ineligible.
- Priority may be given to those who have not previously received this award or held an R01.

#### **APPLICATION PROCEDURES FOR 2009 (ELECTRONIC SUBMISSION OF APPLICATIONS):**

- Follow the CPDD instructions for abstract submission. Then send an e-mail to Dr. Samia Noursi at [snoursi@nida.nih.gov](mailto:snoursi@nida.nih.gov) in the following format and with the required attachments:
- E-mail Subject Line: 2009 CPDD Women & Sex/Gender Jr. Travel Awards Application
- A copy of the abstract that you submitted to CPDD.
- Your curriculum vitae (list all NIH grant support if applicable). Please include your institution/work address, telephone number and e-mail address.
- A cover letter stating (1) your eligibility, (2) your interest in continuing to pursue research on women and/or sex/gender differences, and (3) your career goals.

#### **DEADLINE FOR APPLICATIONS: SAME AS CPDD ABSTRACT DUE DATE. CHECK CPDD WEBSITE.**

For additional information about this annual award, contact:

Dr. Cora Lee Wetherington - telephone 301-435-1319; [wetherington@nih.gov](mailto:wetherington@nih.gov), or

Dr. Samia Noursi - telephone 301-594-5622; [snoursi@mail.nih.gov](mailto:snoursi@mail.nih.gov)





**NIDA** NATIONAL INSTITUTE  
ON DRUG ABUSE



## ADVANCING NOVEL SCIENCE IN WOMEN'S HEALTH RESEARCH (ANSWHR)

### Program Announcements PAS-07-382 (R03) & PAS-07-381 (R21)

The National Institute on Drug Abuse (NIDA) is pleased to partner with the NIH Office of Research on Women's Health (ORWH) in release of two PASs (Program Announcements with set aside funds) calling for Advancing Novel Science in Women's Health Research (ANSWHR). Research has established the importance of studying issues specific to women, and the scientific and clinical importance of analyzing data separately for females and males. The purpose of these two PASs is to promote innovative, interdisciplinary research that will advance new concepts in women's health research and the study of sex/gender differences.

**Mechanisms of Support.** The following two parallel support mechanisms will be utilized:

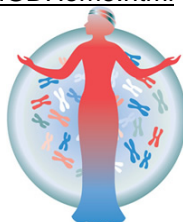
- ▶ The NIH **Small Research Grant (R03)** award mechanism will support PAS-07-382. This mechanism supports discrete, well-defined projects that realistically can be completed in two years and require limited levels of funding. Budget for direct cost is up to \$50,000 per year (maximum \$100,000 direct costs over a 2 year period). The R03 is not renewable.
- ▶ The NIH **Research Exploratory/Developmental Research Grant (R21)** award mechanism will support PAS 07-381. This mechanism is designed to encourage exploratory or developmental research allowing investigators to conduct research on innovative ideas or develop concepts or technologies. Direct costs are limited to \$275,000 over a two-year period, with no more than \$200,000 in direct costs allowed in any single year. The R21 is not renewable.

**Submission/Receipt Dates:** October 16, 2008 and October 16, 2009

**Anticipated Start Dates:** July 1, 2009 and July 1, 2010

#### For additional information

- on PAS-07-382 (R03), please visit: <http://grants1.nih.gov/grants/guide/pa-files/PAS-07-382.html>
- on PAS-07-381 (R21), please visit: <http://grants1.nih.gov/grants/guide/pa-files/PAS-07-381.html>
- on these announcements, contact Dr. Cora Lee Wetherington ([wetherington@nih.gov](mailto:wetherington@nih.gov); 301-435-1319) or Dr. Samia Noursi ([snoursi@nih.gov](mailto:snoursi@nih.gov); 301-594-5622)
- on other NIDA funding opportunities, visit NIDA's homepage at <http://www.nida.nih.gov>
- Visit the Women and Sex/Gender Differences site on NIDA's homepage at <http://www.drugabuse.gov/WHGD/WHGDHome.html>







## WOMEN AND SEX/GENDER DIFFERENCES FUNDING OPPORTUNITY ANNOUNCEMENTS

- NOT-DA-07-006: Notice Regarding the Availability of Competitive Supplements to Study Sex/Gender Differences in Drug Abuse (<http://grants.nih.gov/grants/guide/notice-files/NOT-DA-07-006.html>), released Dec 15, 2006.
- PA-07-329: Women and Sex/Gender Differences in Drug and Alcohol Abuse/Dependence (R01), (<http://grants.nih.gov/grants/guide/pa-files/PA-07-329.html>), released Mar 15, 2007.
- PA-07-330: Women and Sex/Gender Differences in Drug and Alcohol Abuse/Dependence (R03) (<http://grants.nih.gov/grants/guide/pa-files/PA-07-330.html>), released Mar 15, 2007.
- PA-07-331: Women and Sex/Gender Differences in Drug and Alcohol Abuse/Dependence (R21) (<http://grants.nih.gov/grants/guide/pa-files/PA-07-331.html>), released Mar 15, 2007.

For additional information:

- on these announcements, contact Dr. Cora Lee Wetherington ([wetherington@nih.gov](mailto:wetherington@nih.gov); 301-435-1319), or Dr. Samia Noursi ([snoursi@nih.gov](mailto:snoursi@nih.gov); 301-594-5622)
- on other NIDA funding opportunities, visit NIDA's homepage at <http://www.nida.nih.gov>
- visit the women and sex/gender differences site on NIDA's homepage at <http://www.drugabuse.gov/WHGD/WHGDHome.html>



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