

**COLLEGE ON
PROBLEMS OF
DRUG DEPENDENCE**



Focus on
Women & Gender Differences
Mini-Program

June 14-19, 2003
Sheraton Bal Harbour Beach Resort
Bal Harbour, Florida, USA

Provided by

NIDA NATIONAL INSTITUTE
ON DRUG ABUSE

National Institutes of Health – Department of Health & Human Services

PREFACE

Accumulating evidence suggests that the antecedents, consequences, and mechanisms of drug abuse and addiction are not identical in males and females and that gender is an important variable in treatment and prevention. To foster research on women and gender differences in all areas of drug abuse research (both human and animal), since 1999, the National Institute on Drug Abuse (NIDA) has encouraged the submission of College on Problems on Drug Dependence (CPDD) abstracts on this topic for the annual meeting. The response has been very gratifying as evidenced by the numerous presentations on this topic in this year's CPDD program. NIDA is pleased to provide you with this special version of the CPDD program that highlights the program schedule for presentations related to women, gender differences and drug use. Additionally, at the end of this "mini-program," we have provided the abstracts for these presentations. We hope that this mini-program will be useful for those conducting research in this area, and for those who have not become involved in gender-based research, we hope that this mini-program will suggest ways in which incorporating this perspective can advance your research program.

To support junior investigators pursuing research careers on women and gender differences, special NIDA Travel Awards have been granted annually since 1999. Each year these competitive travel awards have been given to up to 30 junior investigators (students and investigators who are less than five years past the doctoral degree or residency) conducting research on this topic whose CPDD abstract is accepted for either a poster or oral session. NIDA congratulates this year's travel awardees. A listing of the awardees along with the title of their presentation is found on the following pages.

To those of you who are junior investigators and engage in research in the area of women and gender differences, or are interested in pursuing research in this important area, NIDA will again sponsor the CPDD Women & Gender Junior Investigator Travel Awards for the 2004 CPDD meeting in San Juan, Puerto Rico, June 12-17, and we encourage you to apply (see the announcement on the last page).

For additional information on NIDA's research program on women's health and gender differences, contact Dr. Cora Lee Wetherington at telephone 301-443-1263 or at wetherington@nih.gov.

TABLE OF CONTENTS

CPDD 2003 Women & Gender Junior Investigator Travel Awardees	iii
CPDD 2003 Women & Gender Junior Investigator Travel Awardees' Research Presentations	iv
<u>WOMEN & GENDER RESEARCH:</u>	
Oral Communications I	1
Poster Session I	2
Symposium V	4
Oral Communications IV	4
Oral Communications VII	5
Oral Communications VIII	5
Oral Communications IX	5
Poster Session II	6
Late-Breaking Research News	10
Oral Communications X	11
Poster Session III	12
Oral Communications XI	14
Oral Communications XII	15
Oral Communications XIII	16
Oral Communications XIV	16
Poster Session IV	18
Oral Communications XV	21
Oral Communications XVI	21
Oral Communications XXI	22
ABSTRACTS	23
Women & Gender Junior Investigator Travel Awards Information for 2004	84

CPDD 2003 Women & Gender Junior Investigator Travel Awardees

Arpana Agrawal

Virginia Commonwealth University

Jeffery C. Batis

Wayne State University

Kelly A. Carrigan, Ph.D.

University of North Carolina, Chapel Hill

Christine C. Cloak, Ph.D.

Brookhaven National Laboratory

Amy M. Duhig, Ph.D.

Yale University School of Medicine

Kathryn L. Hamilton

University of Minnesota

Sarah H. Heil, Ph.D.

University of Vermont

Mary M. Heitzeg, Ph.D.

University of Michigan

Tzipora Kuba

Hunter College of the City University of New York

Elizabeth Lapoczka

University of Michigan Medical School

Joshua A. Lile, Ph.D.

University of Kentucky College of Medicine

Charles W. Mathias, Ph.D.

University of Texas Health Science Center at Houston

Alessandra Milesi-Halle

University of Arkansas for Medical Sciences

Maria Mouratidis, Psy.D.

VA Connecticut Healthcare System

Jo Cara Pendergrass, M.S.

Medical College of Wisconsin

Michele L. Pergadia, Ph.D.

Washington University School of Medicine

Jennifer M. Phillips

Uniformed Services University of the Health Sciences

Juliette K. Roddy, Ph.D.

Wayne State University

Lori E. Ross, Ph.D.

St. Joseph's Healthcare

Stephanie L. Rock, Ph.D.

Indiana University

Deborah Scharf

University of Pittsburgh

Gregory R. Simpson

American University

Erin C. Stoffel

Washington State University

Adriana M. Tucci

Federal University of Sao Paulo

Karen A. Tucker, Ph.D.

Yale University School of Medicine

Carmella Walker

Albert Einstein College of Medicine of Yeshiva University

Alexander Y. Walley, M.D.

San Francisco General Hospital Medical Center

Amy M. Windham, Ph.D.

The University of Miami School of Medicine

Helen Z. Wu, Ph.D.

University of Texas Medical Branch

Xiang-Y. Zhang, Ph.D.

Yale University School of Medicine

Molly E. Zimmerman

University of Cincinnati College of Medicine

CPDD 2003 Women & Gender Junior Investigator Travel Awardees' Research Presentations

Arpana Agrawal	Cannabis and other illicit drugs: comorbid use and abuse/dependence in male and female twins (Page 11)
Jeffery C. Batis	Abuse patterns of gestational toluene inhalation and early postnatal development in rats (Page 2)
Kelly A. Carrigan, Ph.D.	Sex differences in immune alterations in mice deficient in the vesicular monoamine transporter gene (VMAT2) (Page 21)
Christine C. Cloak, Ph.D.	Sex differences in neuropsychological function and brain morphometry in methamphetamine users (Page 14)
Amy M. Duhig, Ph.D.	Effects of acute tobacco abstinence on cognitive performance in adolescent female and male smokers (Page 5)
Kathryn L. Hamilton	Prenatal opiate exposure differentially affects acoustic startle responding (ASR) and thermal nociception in male and female rats (Page 2)
Sarah H. Heil, Ph.D.	Influence of voucher amount in the treatment of male and female cocaine-dependent outpatients (Page 13)
Mary M. Heitzeg, Ph.D.	fMRI study of sex differences in impulse and emotion modulation in children of alcoholics (Page 14)
Tzipora Kuba	Effects of estrogen and progesterone on hyperalgesia responses in ovariectomized rats (Page 4)
Elizabeth Lapoczka	Sex differences in Sprague Dawley rats in response to morphine and other opioids: mu receptor binding and G protein activation (Page 16)
Joshua A. Lile, Ph.D.	The effect of gender on the discriminative stimulus and subject-rated effects of d-amphetamine in humans (Page 14)
Charles W. Mathias, Ph.D.	Age at first drink among women and behavioral impulsivity (Page 18)
Alessandra Milesi-Halle	Sex-related differences in the pharmacokinetics of (+)-methamphetamine (METH) and (+)-amphetamine (AMP) (Page 22)
Maria Mouratidis, Psy.D.	Sex-differences in the assessment of depression in a substance abusing population (Page 9)
Jo Cara Pendergrass, M.S.	Sex-related differences in amygdala response to emotional visual stimuli (Page 8)
Michele L. Pergadia, Ph.D.	Familial associations between cigarette use and panic severity in adolescent female twins (Page 15)
Jennifer M. Phillips	Gender x age interactions in effects of nicotine on body weight and elevated plus maze performance in rats (Page 2)
Juliette K. Roddy, Ph.D.	An economic analysis of gender differences in addiction: the case of smoking with a proxy for addictive stock (Page 19)
Lori E. Ross, Ph.D.	Pharmacotherapy for nicotine, alcohol and opiate dependence in women: a critical review (Page 20)
Stephanie L. Rock, Ph.D.	The impact of gender and personality on decision making in drug abusers (Page 7)
Deborah Scharf	Are women less able to quit smoking with bupropion than men? A

**CPDD 2003 Women & Gender
Junior Investigator Travel Awardees'
Research Presentations**

Gregory R. Simpson	pooled analysis of published trials of bupropion SR TM (Page 18) A concurrent assessment of the rewarding and aversive effects of morphine (Page 2)
Erin C. Stoffel	Sex differences in locomotor effects of morphine (Page 16)
Adriana M. Tucci	Gender differences regarding comorbidities and childhood trauma in alcohol/drug dependent patients in Brazil (Page 9)
Karen A. Tucker, Ph.D.	Gender differences in cerebral hypoperfusion among cocaine dependent patients with depression (Page 15)
Carmella Walker	Gender differences in adolescent smoking: a mediation test (Page 14)
Alexander Y. Walley, M.D.	Women methadone clients are less knowledgeable about hepatitis C treatment (Page 3)
Amy M. Windham, Ph.D.	Gender differences in the association between family structure in childhood and illicit drug use and drug disorders in adulthood: a prospective study (Page 15)
Helen Z. Wu, Ph.D.	Determinants of Ecstasy use in young, low-income women (Page 1)
Xiang -Y. Zhang., Ph.D.	Neonatal isolation alters maintenance of intravenous cocaine self-administration but not operant responding for food in adult male and female rats (Page 17)
Molly E. Zimmerman	Sex differences in stress responsivity in stimulant dependent women and men and controls: a pilot study (Page 14)

Sunday, June 15, 2003

Oral Communications I

Caribbean

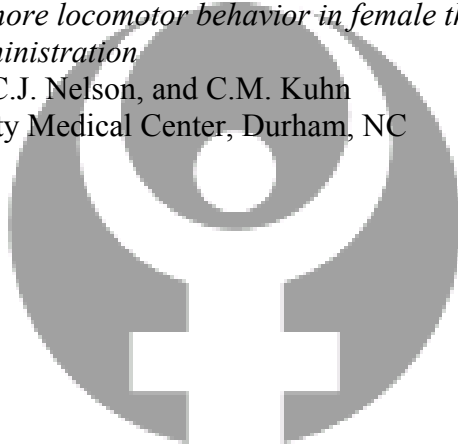
1:30 – 4:00 PM

THE IRONY OF ECSTASY

Chairs: Kathryn A. Cunningham and Richard De La Garza

1:45 *Determinants of ecstasy use in young, low-income women*
Z.H. Wu, A.B. Berenson, J.J. Grady and C.R. Breitkopf
University of Texas Medical Branch, Galveston, TX

3:45 *MDMA induces more locomotor behavior in female than male rats after acute and repeated administration*
Q.D. Walker, C.J. Nelson, and C.M. Kuhn
Duke University Medical Center, Durham, NC



Monday, June 16, 2003

POSTER SESSION I

Nautilus Exhibit Hall

7:30 – 9:30 AM

**Set up time begins Sunday 1:00 P.M.
Must be removed by Monday 12:00 P.M.**

MARIJUANA AND CANNABINOIDS

- 6 *Marijuana dependence and abuse symptom profiles in U.S. men and women*
R.J. Neuman, J.D. Grant, A.A. Todorov, R.K. Price, and K.K. Bucholz
Washington University School of Medicine, St. Louis, MO
- 7 *Cannabis abuse and suicidality in a longitudinal study: A gender comparison*
W.H. Kuo
Medical and Health Research Association of New York City, New York, NY

GHB, TOLUENE, BENZODIAZEPINES

- 13 *Abuse patterns of gestational toluene inhalation and early postnatal development in rats*
J.C. Batis, J.H. Hannigan, R.T. Abner, and S.E. Bowen
Wayne State University, Detroit, MI

OPIOIDS: ANIMAL PHYSIOLOGY AND BEHAVIOR

- 26 *Prenatal opiate exposure differentially affects acoustic startle responding and thermal nociception in male and female rats*
K.L. Hamilton, A.C. Harris, S.B. Sparber, J.C. Gewirtz, and L.M. Schrott
University of Minnesota, Minneapolis, MN
- 35 *A concurrent assessment of the rewarding and aversive properties of morphine*
G.R. Simpson and A.L. Riley
American University, Washington, DC

NICOTINE: ANIMAL STUDIES

- 46 *Gender x age interactions in effects of nicotine on body weight and elevated plus maze performance in rats*
J.M. Phillips, B.M. Elliott, M.M. Faraday, and N.E. Grunberg
Medical & Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD
- 53 *Analyzing the acquisition of drug self-administration using growth-curve models*
S.T. Lanza, E.C. Donny, L.M. Collins and R.L. Balster
FPG Child Development Institute, Chapel Hill, NC, Johns Hopkins School of Medicine, Baltimore, MD, and The Methodology Center, University Park, PA

HIV/IMMUNE

- 88 *The effect of behavioral couples therapy on the degree of indirect risk exposure to HIV among wives of substance-abusing men*
C. Hoebbel & W. Fals-Stewart
Research Institute on Addictions, University at Buffalo, The State University of New York, Buffalo, NY

Monday, June 16, 2003

- 90 *Gender differences in sex partner choice by IVDUs*
R. Pickens, D. Miles, M. Hampton and D. Svikis
Virginia Commonwealth University, Richmond, VA
- 96 *Court-referred women are sicker: Analysis of health disparities between court- and community-recruited women in a community HIV prevention study*
C. Meeks, LB. Cottler, A. Ben-Abdallah and JE. Sullivan
Washington University School of Medicine and St. Louis City Municipal Courts, St. Louis, MO
- 97 *Women methadone clients are less knowledgeable about hepatitis C treatment*
A.Y. Walley, M. White, Y. Song, M. Kushell, and J.P. Tulsy
University of California, San Francisco, CA
- 103 *The effect of increased recruitment efforts on rates of high-risk behavior in a community-based HIV prevention study of substance-using women*
L.B. Cottler, A. Ben-Abdallah, C. Meeks and E. Spitznagel
Washington University School of Medicine, St. Louis, MO
- 104 *Gender matching, not ethnic matching, desired for HIV post-test counseling*
C. Woodstock Striley and L.Cottler
Washington University School of Medicine, St. Louis, MO
- 105 *Depression, gender and drug use are associated with health status among HIV-infected marginally housed individuals living in San Francisco*
E.D. Riley, A.W. Wu, A.R. Moss, R.A. Clark, and D.R. Bangsberg
University of California at San Francisco, San Francisco, CA

TREATMENT OF DRUG ABUSE

- 118 *A comparison of the Addiction Severity Index and the Life History Calendar in assessing addiction and related factors among women: A methodological issue*
C.A. Lewandowski and T.J. Hill
Wichita State University, Wichita, KS
- 120 *Welfare support received by individuals seeking substance abuse treatment*
M. Ackerman, K. Dugosh, C. Foltz, D. Carise, and A.T. McLellan
Treatment Research Institute, University of Pennsylvania, Philadelphia, PA
- 124 *12-Step attendance and commitment during and after inpatient and outpatient drug treatment by gender*
J.S. Tonigan and W.R. Miller
CASAA Clinical Research Branch, University of New Mexico Center on Alcoholism, Substance Abuse and Addictions, Albuquerque, NM
- 135 *From research laboratory to clinical practice: Do modest incentives improve engagement in drug abuse treatment?*
D. Langhorst, D. Svikis, K. Schaefer and R. Mejia
Virginia Commonwealth University, Richmond, VA

Monday, June 16, 2003

- 136 *Understanding gender differences and similarities in private substance abuse treatment services: An organizational analysis*
S.M. Tinney, H.K. Knudsen, J.A. Johnson and P.M. Roman
University of Georgia, Athens, GA

Symposium V

Atlantic

(No abstracts are available for these presentations)

9:30 AM – 12:00 PM

SEX DIFFERENCES IN THE ADDICTED BRAIN: NEUROIMAGING STUDIES OF COCAINE- AND ALCOHOL-DEPENDENT MEN AND WOMEN

Chairs: Bryon Adinoff and Nora D. Volkow

- 9:30 *Gender differences in brain metabolism during alcohol intoxication*
Gene-Jack Wang
Brookhaven National Laboratory, Upton, NY
- 10:00 *Sex differences in cocaine's cerebral and vascular effects: Therapeutic implications*
Marc J. Kaufman
Harvard Medical School, Brain Imaging Center, McLean Hospital, Belmont, MA
- 10:30 *Differing limbic sensitivity to a pharmacologic stimulus in cocaine-addicted men and women: Focus on the orbitofrontal cortex*
Bryon Adinoff
University of Texas Southwestern Medical Center and VA North Texas Health Care System, Dallas, TX
- 11:00 *Gender differences on neuroimaging studies in the psychostimulant user*
Linda Chang
Brookhaven National Laboratory, Upton, NY
- 11:30 *Discussant*

Oral Communications IV

Intracoastal

9:30 AM – 12:00 PM

OPIATE FOR THE MICE (& RATS & MONKEYS)

Chairs: Eduardo Butelman and M.C. Holden Ko

- 11:15 *Effects of estrogen and progesterone on hyperalgesia responses in ovariectomized rats*
T. Kuba, L.M. Kemen, M. Kraish, C.E. Inturrisi, S. Jenab¹ and V. Quinones-Jenab
Hunter College, City University of New York, and Weill Medical College of Cornell University, New York, NY

Monday, June 16, 2003

Oral Communications VII

Caribbean

3:00 – 5:30 PM

OPIATE FOR THE MISSES (& MISTERS)

Chairs: Staci A. Gruber and Lisa A. Marsch

4:15 *The antinociceptive responses of opioid-dependent and opioid-naïve individuals to experimentally induced pain*

S.F. La Vincente, J.M. White, F. Bochner, A.A. Somogyi, W. Ling
University of Adelaide, Australia, and UCLA Integrated Substance Abuse
Programs, Los Angeles, CA

Oral Communications VIII

Intracoastal

3:00 – 5:30 PM

ABSTINENCE MAKES THE URGE GROW STRONGER

Chairs: Keith W. Easterling and Maxine L. Stitzer

3:00 *Effects of acute tobacco abstinence on cognitive performance in adolescent female and male smokers*

A. Duhig, D. Cavallo, R. Wu, S. McKee, T.P. George and S. Krishnan-Sarin
Yale University, New Haven, CT

Oral Communications IX

Crystal I/II

3:00 – 5:30 PM

AN OUNCE OF PREVENTION

Chairs: Marilyn E. Carroll and Marc N. Potenza

4:30 *Community influences on high-risk behaviors: Can zip code predict behaviors?*

C.E. Mennes, C.C. Meeks, C. Ostella, A.B. Abdallah, and L.B. Cottler
Washington University School of Medicine, St. Louis, MO

Tuesday, June 17, 2003

POSTER SESSION II

Nautilus Exhibit Hall

7:30 – 9:20 AM

Set up time begins Monday 1:00 P.M.

Must be removed by Tuesday 12:00 P.M.

PERINATAL DRUG EXPOSURE

- 4 *Is prenatal tobacco exposure a risk factor for obesity in preadolescent offspring?*
M.D. Cornelius, L. Goldschmidt, C. Larkby, and N. Day
University of Pittsburgh School of Medicine, Pittsburgh, PA
- 5 *Utility of the CAGE smoking questionnaire in a sample of perinatal smokers*
K. Schaefer, B. Perry, J. Ferrante, K. Reid, R. Mejia and D. Svikis
Virginia Commonwealth University, Richmond, VA
- 6 *Cotinine cutpoints during pregnancy and postpartum: Do they need to be different?*
J. Plebani-Lussier, S.H. Heil and S.T. Higgins
University of Vermont, Burlington, VT
- 7 *Voucher-based incentives for abstinence from cigarette smoking in pregnant and postpartum women*
S.T. Higgins, S.H. Heil, L. Solomon, J. Plebani-Lussier, M.E. Lynch, L. McHale, L. Simpson and P. Glassman
University of Vermont, Burlington, VT
- 8 *Comparing the perceived value of vouchers, gift certificates, and cash incentives in pregnant drug-dependent women*
J. Rosado, H. Jones, M. Stitzer and V. Vaidya
Johns Hopkins University School of Medicine, Baltimore, MD
- 9 *The effects of substance abuse on maternal attributions of an infant's cry*
S. Truman, N. Suchman, and L. Mayes
Augsburg College, Minneapolis, MN, Yale University School of Medicine, and Yale Child Study Center, New Haven, CT
- 10 *Emotionally responsive parenting: New intervention for drug-dependent mothers*
N. Suchman, M. Altomareb, F. Mollerb, A. Sladec, and L. Mayes
Yale University School of Medicine, The APT Foundation, and Yale Child Study Center, West Haven, CT
- 11 *A mixed method analysis of methamphetamine use, pregnancy, and parenting*
A.S. Hernandez, A.M. O'Brien and M.-L. Brecht
UCLA Integrated Substance Abuse Programs, Los Angeles, CA
- 12 *Mood disorders affect drug treatment success of pregnant drug-dependent women*
H. Fitzsimons, M. Tuten and H.E. Jones
Johns Hopkins University School of Medicine, Baltimore, MD

Tuesday, June 17, 2003

- 13 *Cocaine-using mothers who cease drug use have much less psychopathology and their prenatally exposed kids have relatively better cognitive status by age 9*
P.R. Marques, L.O. Teti, J.L. Pokorni, D.G. Branch, H.R. Kirk, and T. Long
Pacific Institute for Research and Evaluation, Calverton, MD, and
Georgetown University Child Development Center, Washington, DC
- 14 *Cognitive factors predict treatment retention among drug-dependent women in a day treatment program*
M.C. Acosta and D.L. Haller
Virginia Commonwealth University, Richmond, VA
- 15 *Patient readiness for change and residential treatment retention*
K.R. Reid, W.B. Kissin, K. Schaefer, N. Haug, and D.S. Svikis
Virginia Commonwealth University, Richmond, VA, Westat, Rockville, MD,
and University of California San Francisco, San Francisco, CA
- 16 *Validation of patient placement criteria for opioid-dependent pregnant women treated in a medically monitored intensive inpatient setting*
M.L. Copersino, L. Keyser-Marcus, L.M. Jansson, M.L. Velez, W.B. Kissin
and D.S. Svikis
Johns Hopkins University School of Medicine, Baltimore, MD, Virginia
Commonwealth University, Richmond, VA, and Westat, Rockville, MD
- 17 *Characteristics of substance-abusing pregnant women sexually abused during pregnancy*
M. Velez, D. Svikis, H. Chilcoat, L. Jansson, V. Walters, J. Bryant, I.D.
Montoya, J. Campbell
Johns Hopkins University School of Medicine and School of Nursing,
Baltimore, MD, Virginia Commonwealth University, Richmond, VA and
NIDA, Rockville, MD
- 18 *The Violence Exposure Questionnaire: Test-retest reliability for a new measure of victimization in pregnant drug-dependent women*
L. Keyser-Marcus, M. Velez and D. Svikis
Virginia Commonwealth University, Richmond, VA, and The Johns Hopkins
University School of Medicine, Baltimore, MD
- 19 *Methodological issues when screening drug-dependent women for victimization: What measure should we use and when should we use it?*
D. Svikis, M. Velez, S. Scholle, L. Keyser-Marcus and H. Jones
Virginia Commonwealth University, Richmond, VA, and Johns Hopkins
University School of Medicine, Baltimore, MD

SEX-DIFFERENCES

- 21 *The impact of gender and personality on decision-making in drug abusers*
S.L. Rock, J.C. Stout, P.R. Finn, J.R. Busemeyer
Indiana University, Bloomington, IN

Tuesday, June 17, 2003

- 22 *Sex-related differences in amygdala response to emotional visual stimuli*
J.C. Pendergrass, R.J. Erwin, T.J. Ross, H. Garavan, E.A. Stein and R.C. Risinger
Finch University of Health Sciences/The Chicago Medical, North Chicago, IL, NIDA Neuroimaging Branch, Baltimore, MD, and Medical College of Wisconsin, Milwaukee, WI
- 23 *Motivations and expectations surrounding entry into drug treatment among needle exchange program attenders*
E.T. Golub, E.D. Pilibosian, S. Huettner, C. Latkin, L. Cornelius, D. Bishai, and S.A. Strathdee
Johns Hopkins University, and University of Maryland School of Social Work, Baltimore, MD
- 24 *Gender differences in predictors of motivation*
E.C. Katz, R.P. Schwartz, E. Weintraub, and B.S. Brown
Friends Research Institute, Inc., and University of Maryland Medical School, Baltimore, MD
- 25 *Women report greater quality of life than men at intake to outpatient treatment for drug dependence*
S.M. Alessi and N.M. Petry
University of Connecticut Health Center, Farmington, CT
- 26 *Rapid effects of cocaine on estradiol and LH in female rhesus monkeys during the follicular phase of the menstrual cycle*
N.K. Mello, J.H. Mendelson, S.S. Negus, M. Kelly
Alcohol and Drug Abuse Research Center, McLean Hospital/Harvard Medical School, Belmont, MA
- 27 *Sex differences in the behavioral response to cocaine are modulated by monoaminergic circuitry*
E.D. Festa, S.J. Russo, T. Niyomchai, L.M. Kemen, S. Jenab, and V. Quinones-Jenab
Hunter College, CUNY, New York, NY
- 28 *Sex and age differences in the behavioral responses to acute methylphenidate*
A.C. Swann, P.B. Yang, N. Dafny
University of Texas-Medical School at Houston, TX
- 29 *Sex & age differences in the long-term effects of repeated exposure to methylphenidate*
N. Dafny, P.B. Yang, A.C. Swann
University of Texas-Medical School at Houston, TX
- 30 *Cross-sensitization of methylphenidate and amphetamine: Implications of sex and dose differences in drug abuse*
P.B. Yang, A.C. Swann, N. Dafny
University of Texas-Medical School at Houston, TX

Tuesday, June 17, 2003

PAIN/ANALGESIA

- 60 *Gender and aberrant drug-related behavior in patients with chronic pain*
A.D. Wasan and R.N. Jamison
Brigham and Women's Hospital, Harvard Medical School, Boston, MA
- 64 *Capsaicin-induced hyperalgesia and mu opioid-induced antihyperalgesia in male and female F344 rats*
A.C. Barrett, E.S. Smith and M.J. Picker
University of North Carolina, Chapel Hill, NC
- 66 *Sex differences in temporal summation*
L.M. Lomas, E.S. Smith and M.J. Picker
University of North Carolina at Chapel Hill, Chapel Hill, NC
- 67 *Role of gonadal Hormones in nociception and buprenorphine antinociception in female rats*
M.J. Picker and J.M. Turner
University of North Carolina at Chapel Hill, Chapel Hill, NC

CLINICAL DIAGNOSTICS

- 77 *Four-year trends in women and men presenting for substance abuse treatment in the Drug Evaluation Network System*
K.M. Eyrich, D. Carise, and A.T. McLellan
The University of Pennsylvania, School of Medicine, Treatment Research Institute, Philadelphia, PA
- 79 *Short-term reliability of women's addendum to the ASI*
R. Mittal, M. Gutman, and A.T. McLellan
Treatment Research Institute, Philadelphia, PA

COMORBIDITY

- 90 *Gender differences regarding comorbidities and childhood trauma in alcohol/drug-dependent patients in Brazil*
A.M. Tucci, F. Kerr-Corrêa, and M.L.O.S. Formigoni
UNIFESP/EPM, and UNESP/Botucatu, São Paulo, Brazil
- 91 *Associations between gender and psychiatric and substance use disorders and use of treatment services in needle exchange*
E.R. Disney, J.M. Peirce, K. Kindbom, J. Blucher, D. Bleiler, M. Kidorf and R.K. Brooner
Johns Hopkins University School of Medicine, Baltimore, MD
- 92 *Sex-differences in the assessment of depression in a substance-abusing population*
M. Mouratidis, J. Poling, A. Oliveto, T. Kosten
Yale University School of Medicine, New Haven, and VA CT Healthcare System, West Haven, CT

Tuesday, June 17, 2003

93 *Findings from the methamphetamine treatment project: Weight concerns and depression in females*

R. Willis and M. Hillhouse

UCLA Integrated Substance Abuse Programs, La Jolla, CA

94 *Does gender moderate the efficacy of desipramine in depressed cocaine-dependent outpatients?*

D.C. Levin, J.L. Rothenberg, D. McDowell, and E.V. Nunes

Columbia University, College of Physicians and Surgeons, and New York State Psychiatric Institute, New York, NY

TREATMENT OF OPIOID DEPENDENCE

129 *Route of heroin administration impacts post-detoxification relapse prevention outcome*

M. Tuten, H.E. Jones, M. Stitzer

Johns Hopkins University School of Medicine, Baltimore, MD

EPIDEMIOLOGY

133 *Gender differences among cocaine-dependent outpatients in the Valencian community, Spain*

M. Castellano, B. Pérez-Gálvez, J. Martínez-Raga, G. Haro, J.C. Valderram, C. Schütz, and G. Cervera

S. Psiquiatria, H. Clinico, University of Valencia, Valencia, Spain, and Friedrich-Wilhelms-University, Bonn, Germany

149 *Correlates of homelessness in a sample of women arrestees in California*

J. Steinberg and C. Grella

UCLA Integrated Substance Abuse Program, Los Angeles, CA

LATE-BREAKING RESEARCH NEWS

Atlantic

9:20 – 10:20 AM

Chair: Scott E. Lukas

10:14 *Who attends specialized women-only treatment: Similarities and differences between mothers in women-only and mixed-gender programs in Washington State*

W.B. Kissin, R.P. Orwin, C.E. Grella and T.J. Garfield

Tuesday, June 17, 2003

Oral Communications X

Intracoastal

10:30 AM – 1:00 PM

THE OTHER MJ: MARIJUANA AND CANNABINOIDS

Chairs: Scott Rawls and Sandra P. Welch

12:15 *Cannabis and other illicit drugs: Comorbid use and abuse/dependence in male and female twins*

A. Agrawal, M.C. Neale, C.A. Prescott, and K.S. Kendler

Virginia Institute for Psychiatric and Behavioral Genetics, Medical College of Virginia, VCU, Richmond, VA



POSTER SESSION III

Nautilus Exhibit Hall

7:30 – 9:30 AM

Set up time begins Tuesday 1:00 P.M.

Must be removed by Wednesday 12:00 P.M.

OPIOIDS: CLINICAL STUDIES AND TREATMENT

- 11 *Attitudinal differences between women and men entering methadone treatment*
D.J. Kayman, M. Goldstein, S. Deren
National Development and Research Institutes and Center for Drug Use and
HIV Research, New York, NY
- 12 *Sexual behavior change following initiation of methadone maintenance
treatment*
D.A. Calsyn, E.A. Wells, A.J. Saxon and T.R. Jackson
VA Puget Sound Health Care System, University of Washington School of
Medicine, University of Washington Social Work, Evergreen Treatment
Services, Seattle, WA
- 16 *Quality-of-life improves after opioid maintenance initiation*
R. Jagsch, H. Eder, R. Ortner, A. Pfeiffer, U. DeCordoba, A. Primorac, and G.
Fischer
Institute of Clinical and Health Psychology, University of Vienna, Austria
University of Psychiatry, Vienna, Austria

DRUG INTERACTIONS AND POLYDRUG ABUSE

- 26 *Psychometric utility of the Childhood Trauma Questionnaire with female street-
based sex workers*
C.L. Villano, C. Cleland, A. Rosenblum, L. Nuttbrock, C. Fong, M. Marthol,
S. Magura, and J. Wallace
National Development & Research Institutes, Inc., and FROST'D, New York,
NY
- 33 *Ovarian hormones modulate levels of GABA after acute cocaine administration*
T. Niyomchai, S.J. Russo, E.D. Festa, D. Ferguson, V. Luine, S. Jenab, V.
Quinones-Jenab
Hunter College of CUNY, New York, NY

TREATMENT OF STIMULANT ABUSE

- 82 *Sexual and injection risk behaviors in the CSAT Methamphetamine Treatment
Project: Effects of treatment*
G.P. Galloway, A. Lu, M. Iguchi, R. Lord, V. Gulati and The
Methamphetamine Treatment Project
New Leaf Treatment Center, UCLA Integrated Substance Abuse Programs,
RAND Drug Policy Research Center, Montana State University, Billings,
MO, and Matrix Institute on Addictions, Los Angeles, CA

- 92 *Influence of voucher amount in the treatment of male and female cocaine-dependent outpatients*
S.H. Heil, S.T. Higgins, G.J. Badger, R. Dantona, R. Donham, and S. Horn
University of Vermont, Burlington, VT

CRIMINAL JUSTICE

- 110 *Early findings from the Colorado Women's Prison Project comparing risk behavior histories of young and mature female offenders*
M.L. Schoeneberger, J.Y. Sacks, H. Wexler and S. Sacks
National Development & Research Institutes, Inc., Center for the Integration of Research and Practice, New York, NY

PREVENTION

- 115 *Modeling women's substance use and lawbreaking behavior*
S. Golder
Columbia University School of Social Work, New York, NY
- 116 *Utilization of preventative health care services among women who are injection drug users, chronic drug users and non-users*
K. Pierre, M. Comerford, D. Chitwood, D. Koo, J. Sanchez, and Y. Li
University of Miami, Coral Gables, FL
- 117 *Engaging substance-abusing mothers who are in the child welfare system: Findings from the ON TIME Study*
S.M. Boles, N.K. Young, Y. Hser, and B. Whitaker
Integrated Substance Abuse Programs, University of California, Los Angeles, and Children and Family Futures, Irvine, CA
- 119 *The isolation of the isolated: Drug use and employment in southeast rural and northern inner city settings*
E.J. Brown and E. Dunlap
University of Central Florida School of Nursing, Orlando, FL, and National Development and Research Institutes, New York, NY
- 120 *Prediction of neglectful and abusive parenting in young-adult mothers from antisocial behavior and substance use disorder*
M.G. Dunn, A.C. Mezzich, and K. Day
University of Pittsburgh, Pittsburgh, PA
- 121 *Adolescent onset substance use disorder in women: Personality and maltreatment as predictors of physical health in young adulthood*
A. Mezzich, K. Pajer, S. Parks, M. Dunn, and K. Day
University of Pittsburgh, Pittsburgh, PA
- 122 *Profiles of childhood trauma among street-recruited female sex traders*
J. Bogetto, P. Greco, C. Meeks, C. Ostella and L. Cottler
Washington University School of Medicine, St. Louis, MO

Wednesday, June 18, 2003

Oral Communications XI

Caribbean

9:30 AM – 12:00 PM

GENDER BENDER

Chairs: Joshua Lile and Mehmet Sofuoglu

- 9:30 *Gender differences across measures of physiology in those with alcohol dependence or PTSD during a cold pressor task*
S.D. LaRowe, A.L. McRae, K.T. Brady, and M.A. Timmerman
Center for Drug and Alcohol Programs and Charleston Alcohol Research Center, MUSC, Charleston, SC
- 9:45 *fMRI study of sex differences in impulse and emotion modulation in children of alcoholics*
M.M. Heitzeg, R.A. Zucker, and J.K. Zubieta
University of Michigan, Ann Arbor, MI
- 10:00 *Gender differences in adolescent smoking: A mediation test*
T.A. Wills, C. Walker, J. Resko, M. Ainette and D. Mendoza
Albert Einstein College of Medicine of Yeshiva University, Bronx, and Adelphi University, Garden City, NY
- 10:15 *Effects of progesterone treatment on cocaine response in male and female cocaine users*
M. Sofuoglu, E. Mitchell, T.R. Kosten
Yale University, New Haven and VA Healthcare System, West Haven, CT
- 10:30 *The effect of gender on the discriminative stimulus and subject-rated effects of d-amphetamine in humans*
J.A. Lile, W.W. Stoops, and C.R. Rush
University of Kentucky College of Medicine, Lexington, KY
- 10:45 *Sex-differences in neuropsychological function and brain morphometry in methamphetamine users*
C. Cloak, L. Chang, K. Patterson, C. Grob, E. Miller and T. Ernst
Brookhaven National Laboratory, Upton, NY, Harbor-UCLA Medical Center Torrance, and UCLA School of Medicine, Los Angeles, CA
- 11:00 *Sex differences in stress responsivity in stimulant-dependent women and men and controls: A pilot study*
M.E. Zimmerman, R.A. Maxwell, and R.M. Anthenelli
University of Cincinnati College of Medicine, Cincinnati, OH
- 11:15 *Gender differences in response to high-dose naltrexone in dual alcohol and cocaine dependence*
H.M. Pettinati, K.M. Kampman, D.W. Oslin, K. Lynch, F. She, J. Jowers, and M. McAllister
U. of PA School of Medicine, and Veterans Affairs Medical Center, Philadelphia, PA

Wednesday, June 18, 2003

11:30 *Gender differences in cerebral hypoperfusion among cocaine-dependent patients with depression*

K.A. Tucker, P.C. Gottschalk, and T.R. Kosten

Yale University School of Medicine and VA Connecticut Healthcare System,
West Haven, CT

11:45 *Gender differences in the association between family structure in childhood and illicit drug use and drug disorders in adulthood: A prospective study*

A.M. Windham and H. Chilcoat

University of Miami School of Medicine, Miami, FL, and NIDA, Bethesda,
MD

Oral Communications XII

Intracoastal

9:30 AM – 12:00 PM

STAND UP AND BE COUNTED: EPIDEMIOLOGY STUDIES

Chairs: Kathleen Bucholz and Valerie L. Johnson

9:30 *Early cognitive, emotional and behavioral precursors to adolescent substance use in young girls*

A. Hipwell, H. Raskin White, M. Stouthamer-Loeber, K. Keenan and R. Loeber

University of Pittsburgh, PA, and State University of New Jersey, Piscataway,
NJ

9:45 *Familial associations between cigarette use and panic severity in adolescent female twins*

M.L. Pergadia, A.C. Heath, K.K. Bucholz, E.C. Nelson, D.F. Klein, P.A.F. Madden

Washington University School of Medicine, St. Louis, MO, and Columbia
University, New York, NY

10:00 *Developmental trajectories of marijuana problems over a 20-year period: Differences in birth cohort, gender and risk factors*

V.L. Johnson and R.J. Pandina

Rutgers University Center of Alcohol Studies, Piscataway, NJ

10:15 *Perinatal drug use in California: 1991-1998*

E.L. Wolfe, T. Davis, J. Guydish

University of California, San Francisco, CA

11:15 *Substance use among a medical student sample*

D.V. Deas, K. Burroughs, N.G. Johnson, K. Mughelli, S. Thomas, K. May, K. Brady

Center for Drug and Alcohol Programs, Medical University of South
Carolina, Charleston, SC

Wednesday, June 18, 2003

- 11:30 *Caregiver-infant interaction in at-risk dyads*
A.L. Vogel, C.E. Morrow, A. Windham, K.L. Hanson, and E.S. Bandstra
University of Miami, Miami, FL, and Johns Hopkins University, Baltimore
MD

Oral Communications XIII

**Intracoastal
2:00 – 4:30 PM**

MIXING IT UP: POLYDRUG STUDIES

Chairs: Lance R. McMahon and Richard S. Schottenfeld

- 3:15 *Sex-related differences in smoked marijuana effects as a function of nicotine patch pretreatment*
E.M. Kouri, M.M. Gross, E.M. McCarthy, and S.E. Lukas
Behavioral Psychopharmacology Research Laboratory, McLean Hospital/
Harvard Medical School, Belmont, MA

Oral Communications XIV

**Caribbean
2:00 – 4:30 PM**

IF $XX \neq XY$, THEN Y NOT?

Chairs: Nicholas E. Goeders and Steven Negus

- 2:00 *Sex differences in locomotor effects of morphine*
E.C. Stoffel, J.L. Clark, and R.M. Craft
Washington State University, Pullman, WA
- 2:15 *Sex differences in opioid antinociception in twelve rat strains: Importance of the relative effectiveness of the opioid*
J.M. Turner, A.C. Barrett, L.M. Lomas, E.S. Smith and M.J. Picker
University of North Carolina at Chapel Hill, Chapel Hill, NC
- 2:30 *Sex differences in Sprague Dawley rats in response to morphine and other opioids: Mu receptor binding and G-protein activation*
E.M. Lapoczka, M. Falgout, T.J. Cicero and J.R. Traynor
University of Michigan, Ann Arbor, MI, and Washington University, St.
Louis, MO
- 2:45 *Gender and menstrual cycle effects on progressive ratio measures of cocaine- and food-maintained responding in cynomolgus monkeys*
M.E. Roth, N.K. Mello, S.S. Negus, and J.H. Mendelson
McLean Hospital, Harvard University, Belmont, MA
- 3:00 *Sex differences in cocaine-induced activity and anxiety*
R.L. Peltier, J. Greene and N.E. Goeders
Louisiana State University Health Sciences Center, Shreveport, LA

Wednesday, June 18, 2003

- 3:15 *Sex differences during withdrawal from 'binge' cocaine self-administration in rats*
W.J. Lynch and J.R. Taylor
Yale University School of Medicine, New Haven, CT
- 3:30 *Gonadal hormones regulate conditioned place preference for cocaine and monoamines in female rats*
S.J. Russo, E.D. Festa, S.J. Fabian, S. Jenab, and V. Quinones-Jenab
Hunter College of CUNY, New York, NY
- 3:45 *Plasma cocaine and metabolite levels and locomotor activity across the postpartum period in female rats, including a comparison with males*
M.P. Wansaw and J.I. Morrell
Rutgers University, Newark, NJ
- 4:00 *Sex-dependent effects of neonatal isolation on acquisition of cocaine and food self-administration in adult rats*
H. Sanchez, X.-Y. Zhang, and T.A. Kosten
Yale University School of Medicine, New Haven, CT
- 4:15 *Neonatal isolation alters maintenance of intravenous cocaine self-administration but not operant responding for food in adult male and female rats*
X.-Y. Zhang, H. Sanchez, and T.A. Kosten
Yale University School of Medicine, New Haven, CT

POSTER SESSION IV

Nautilus Exhibit Hall

7:30 – 9:30 AM

Set up time begins Wednesday 1:00 P.M.

Must be removed by Thursday 12:00 P.M.

ALCOHOL: PREVENTION, EPIDEMIOLOGY, TREATMENT

- 1 *Subjective and behavioral responses to visual and olfactory stimuli of alcohol*
K.A. Perkins, M. Ciccocioppo, L. Jacobs, T. Doyle, and A. Caggiula
University of Pittsburgh, Pittsburgh, PA
- 4 *Social-contextual predictors for polydrug abuse among college students*
L. Simons, S. Deihl, L. Wright, and B. Schatz
Widener University, Chester, PA
- 6 *Age at first drink among women and behavioral impulsivity*
C.W. Mathias, D.M. Dougherty, D.M. Marsh, and M. Lee
Neurobehavioral Research Laboratory and Clinic, University of Texas Health
Science Center at Houston, Houston, TX
- 7 *Links between binge-drinking behavior and a restrained eating pattern in female
social drinkers*
S.C. Han, S.E. Beck, F.R. Levin, and S.M. Evans
Columbia University and NYS Psychiatric Institute, New York, NY
- 8 *Behavioral couples therapy for female patients with alcoholism: Effects on
drinking behavior and relationship adjustment*
C. A. Stappenbeck and W. Fals-Stewart
Research Institute on Addictions, University at Buffalo, The State University
of New York, Buffalo, NY
- 9 *Alcohol abuse, intimate partner violence, and restriction: Reports from inner-
city battered women*
C.S. Lewis, M. Chu, S. Griffing, R.E. Sage, T. Jospitre, L. Madry, B.J. Primm
Urban Resource Institute, Brooklyn, NY

NICOTINE: CLINICAL STUDIES

- 26 *Risk factors for nicotine dependence among smokers*
D. Burgermeister
Wayne State University, Detroit, MI
- 29 *Are women less able to quit smoking with bupropion than men? A pooled
analysis of published trials of bupropion SR*
D. Scharf and S. Shiffman
University of Pittsburgh, Pittsburgh, PA

- 30 *Gender differences in motivation to quit smoking among alcohol-dependent patients in treatment*
R.A. Martin, D.J. Rohsenow, S.M. Colby, and P.M. Monti
Brown University and Providence Veterans Affairs Medical Center,
Providence, RI
- 31 *An economic analysis of gender differences in addiction: The case of smoking with a proxy for addictive stock*
J. Roddy
Wayne State University, Substance Abuse Research Division, Detroit, MI
- 32 *Gender differences in nicotine replacement therapy use among alcohol-dependent patients in treatment*
J.J. Larence, R.A. Martin, D.J. Rohsenow, P.M. Monti, and S.M. Colby
Brown University and Providence Veterans Affairs Medical Center,
Providence, RI
- 35 *A randomized controlled trial of community-financed, voucher-based reinforcement therapy for smoking cessation in women receiving community-based drug treatment*
L. Amass, J.B. Kamien, C. Reiber, and T.S. Samiy
Friends Research Institute, Inc., and University of California Los Angeles
Integrated Substance Abuse Programs, Los Angeles, CA
- 36 *Smoking stage of change is associated with retention in a smoke-free residential drug treatment program for women*
D.L. Haller, D.R. Miles and K.L. Cropsey
Virginia Commonwealth University, Richmond, VA
- 42 *Smoking practices among opioid-dependent individuals presenting for emergency medical services*
A. Haas, J. Sorensen, C. Lin, K. Delucchi, K. Sporer and S. Hall
University of California San Francisco and San Francisco General Hospital,
San Francisco, CA

ADOLESCENT/YOUNG ADULT DRUG ABUSE

- 44 *Male-female differences, religious and socializing activities, and tobacco opportunities in the context of the adolescent behavioral repertoire*
C.Y. Chen, C.M. Dormitzer, U. Gutierrez, K. Vittetoe, and J.C. Anthony
Bloomberg School of Public Health, The Johns Hopkins University,
Baltimore, MD
- 45 *Juvenile arrest and the onset of illegal drug use*
Y.F. Chan, C.L. Storr, and J.C. Anthony
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Thursday, June 19, 2003

- 46 *Genetic and environmental influences on substance initiation, use, and problem use in adolescents*
S.H. Rhee, J.K. Hewitt, S.E. Young, R.P. Corley, T.J. Crowley, and M.C. Stalling
Institute for Behavioral Genetics, University of Colorado, and University of Colorado Health Sciences Center, Boulder, CO
- 51 *Regular marijuana use in college females inhibits response to motivational intervention to reduce risky drinking*
S.D. Ceperich, K.S. Ingersoll, S.M. Brocksen, and M.D. Nettleman
Virginia Commonwealth University, Richmond, VA
- 52 *Comparing high-risk youth and parents' perceptions of family environment and peer relations as influences on the youths' substance use*
C. Fong, S. Magura, A. Rosenblum, C. Norwood, D. Casella, P. Curry, J. Skinner, D. Pierce
National Development and Research Institutes, and Health Force: Women and Men Against AIDS, New York, NY
- 63 *Substance abuse and depressive symptoms in Costa Rican adolescents*
C.P. Obando, W. Kliwer, and L. Murrelle
Virginia Commonwealth University, Institute on Alcoholism and Drug Abuse, Richmond, VA
- 64 *Gender issues and adolescent substance treatment outcomes*
G. Subramaniam, M. Stitzer, P. Clemmey, C. Voss and M. Fishman
Johns Hopkins University, Baltimore, and Potomac Healthcare Foundation, Rockville, MD
- 66 *Early drug use and risk of suicide ideation and attempts in an epidemiological sample followed from first grade into young adulthood*
H.C. Wilcox, J.C. Anthony
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

STIMULANTS: BEHAVIORAL STUDIES IN ANIMALS (II)

- 94 *U-69593 decreases cocaine-induced locomotor activity in estrogen-treated rats*
A. Puig-Ramos, W.J. Bruckman, G.S. Santiago, and A.C. Segarra
School of Medicine and Biology Department, Rio Piedras, University of Puerto Rico, San Juan, PR

COMMENTARY

- 136 *Pharmacotherapy for nicotine, alcohol and opiate dependence in women: A critical review*
L.E. Ross, G. Koren and M. Steiner
Women's Health Concerns Clinic, St. Joseph's Healthcare, Hamilton, Centre for Addiction and Mental Health, and Hospital for Sick Children, Toronto, Canada

Thursday, June 19, 2003

- 143 *School- and home-based treatment for adjudicated youth and their families*
N. Mai, D.W. Watson, and L. Bisesi
Friends Research Institute, Inc. and UCLA Integrated Substance Abuse
Programs, Los Angeles, CA

Oral Communications XV

Intracoastal

9:30 AM – 12:00 PM

INJECTION INFECTION AND DRUG/IMMUNE INTERSECTION

Chairs: Steven Batki and Toby Eisenstein

- 10:00 *Sex differences in immune alterations in mice deficient in the vesicular monoamine transporter gene (VMAT2)*
K. Carrigan, L. Dykstra, T. Saurer, M. Beaulieu, D. Lysle, and M. Caron
University of North Carolina, Chapel Hill, and HHMI/Duke University,
Durham, NC
- 11:45 *Comorbidity and HIV risk behaviors among Hispanic drug users residing in Puerto Rico*
R.R. Robles, J.C. Reyes, H.M. Colon, C.A. Marrero, and H. Sahai
Center for Addiction Studies, Universidad Central del Caribe, School of
Medicine, Bayamon, PR

Oral Communications XVI

Intracoastal

9:30 AM – 12:00 PM

RIGHT ON CUE

Chairs: Bernard Le Foll and Jennifer Tidey

- 10:15 *Retrospective study: Influence of cycle on craving to cigarette cues*
T. Franklin, R. Ehrman, P. Gariti, N. Sciortino, C.P. O'Brien, and A.R.
Childress
University of Pennsylvania and Veteran's Administration Hospital of
Philadelphia, Philadelphia, PA
- 10:45 *Dissociating the primary reinforcing and reward-enhancing effects of nicotine: Analysis of sex, dose and drug contingency on operant responding in rats*
N. Chaudhri, A.R. Caggiula, E.C. Donny, M.A. Gharib, S. Booth, L.
Clements, K.A. Perkins, and A.F. Sved
University of Pittsburgh, Pittsburgh, PA, and The Johns Hopkins School of
Medicine, Baltimore, MD

Thursday, June 19, 2003

Oral Communications XXI

Caribbean

1:45 – 4:15 PM

HALF-LIFE IS NOT THE WHOLE STORY: PHARMACOKINETICS

Chairs: John E. Mendelson and S. Michael Owens

2:45 *Sex-related differences in the pharmacokinetics of (+)-methamphetamine and (+)-amphetamine*

A. Milesi-Hallé, H.P. Hendrickson, and S.M. Owens

University of Arkansas for Medical Sciences, Little Rock, AR



ABSTRACTS

Welfare support received by individuals seeking substance abuse treatment

M. Ackerman, K. Dugosh, C. Foltz, D. Carise, and A.T. McLellan

Treatment Research Institute, University of Pennsylvania, Philadelphia, PA

The Drug Evaluation Network System (DENS) was used to investigate the proportion of individuals receiving welfare support among patients entering substance abuse treatment programs. DENS is an ongoing electronic data collection system that uses the Addiction Severity Index (ASI) to provide information on patients entering substance abuse treatment programs in 42 US cities. A linear trend was tested ($Z = 5.02$, $p < .00001$) and a significant downward trend over time in the proportion of people receiving welfare was identified. In the first quarter of 1999, 29% of this population reported receiving some type of welfare within the past thirty days. However, by the fourth quarter of that year, only 11% reported some welfare support. This percentage increased to 17% in the first quarter of 2000, then varied slightly from 19% in 2001, to 16% in 2002. 30.2% of the women presenting for treatment were on welfare, while only 11.2% of the men presenting for treatment were on welfare. Among welfare recipients across the four years, 61.0% were female, 71.0% identified themselves as African American, 46.8% had completed less than 12 years of education, 36.5% had only completed high school or received their GED, and 16.6% received some education beyond high school or a GED. Among the entire population checking into treatment across the four years, 36.7% were female, 53.4% identified themselves as African American, 39.6% had completed less than 12 years of education, 39.1% had only completed high school or received their GED, and 21.3% received some education beyond high school or a GED.

Cognitive factors predict treatment retention among drug-dependent women in a day treatment program

M.C. Acosta and D.L. Haller

Virginia Commonwealth University, Richmond, VA

Retention in outpatient drug-free treatment is poor. Both environmental barriers and treatment characteristics may contribute to dropout, particularly in drug dependent women. This study examined the impact of cognitive factors on treatment retention. One hundred and seven drug dependent women enrolled in day treatment. Participants were mostly African American (82%) with a mean age of 28.69 years ($SD = 4.8$). Most participants (62%) had at least a high school education, two-thirds (66%) were court-involved, and all met formal DSM-III-R criteria for one or more substance use disorders. Crack cocaine was the primary drug of abuse (87%); however, 89% of patients were polydrug abusers. Cognitive abilities, as measured by the Shipley Institute of Living Scale (SILS), were assessed at intake, and retention for each participant was calculated in weeks. General IQ scores ranged from 54-112, with a mean of 84.5 ($SD = 13.4$). SILS IQ scores significantly predicted treatment retention, after controlling for severity of substance use, legal problems, employment problems, and psychiatric symptoms ($B = .33$, $P < .01$); the higher a woman's general IQ score, the longer she was retained in treatment. Results indicate that drug dependent women with lower intelligence levels are less likely to complete a day treatment program. We have comparable data on 82 drug dependent women in an inpatient treatment program. Future analyses will include examining the impact of cognitive factors on retention in residential treatment, as well as exploring the differential impact of cognitive factors between day treatment and residential treatment programs. Tailoring treatment programs to the cognitive levels of participants may be particularly important when working with drug dependent women. Supported by the National Institute on Drug Abuse (R18-DA06094).

Cannabis and other illicit drugs: Comorbid use and abuse/dependence in male and female twins

A. Agrawal, M.C. Neale, C.A. Prescott, and K.S. Kendler

Virginia Institute for Psychiatric and Behavioral Genetics, Medical College of Virginia, VCU, Richmond, VA

The comorbid use of cannabis and other illicit drugs and their comorbid abuse/dependence is a growing public health concern. Current prevention protocol is based on a gateway model of drug use. We used data

from 1191 male and 934 female same sex twin pairs to examine thirteen genetically informative models of comorbidity. These include the conventional gateway model, the correlated liabilities model as well as models based on unidirectional and bidirectional causation, multiformity, independent disorders, alternate forms and random co-occurrence. Models were fit separately for comorbid use and abuse/dependence in both sexes using the structural equation modeling software package Mx. The correlated liabilities model provided the most suitable fit to the data for comorbid use of cannabis and other illicit drugs and also for comorbid abuse/dependence in males. In the females, we had limited power to distinguish the correlated liabilities model from a reciprocal causation model for abuse/dependence. The second best fitting model for drug use was the extreme multiformity model which suggests that heavy use of cannabis increases the risk for use of other illicit drugs. For abuse/dependence, the reciprocal causation model provided the second best fit. This model presents a causal relationship between the liability to abuse/dependence of cannabis and other illicit drugs. There was no evidence for the conventional gateway model. These results imply that the relationship between cannabis and other illicit drugs is not phenotypic as depicted by a gateway model where use of cannabis increases the risk of using other illicit drugs. The comorbidity stems from a biological predisposition with correlated genetic and environmental influences. Thus, prevention programs that aim to curb cannabis use may not be successful at controlling the subsequent use or abuse/dependence of other illicit drugs.

Women report greater quality of life than men at intake to outpatient treatment for drug dependence

S.M. Alessi and N.M. Petry

University of Connecticut Health Center, Farmington, CT

Life satisfaction is rarely assessed in drug abuse treatment settings, but gender differences evident in other clinical settings are instrumental to treatment planning and outcome evaluations. The present study was conducted to assess quality of life in 142 drug-dependent outpatients at intake to treatment. The Quality of Life Inventory (Frisch et al., 1992) measures satisfaction with life across 17 explicitly defined domains, and an overall score is also derived that takes into account both the importance of the domain to the individual as well as personal satisfaction in that area. Results indicate that women presented to treatment with higher quality of life than men. Women had greater scores on the overall scale and 13 domains: Community, Creativity, Friendship, Home, Learning, Love Relationship, Neighborhood, Philosophy of Life, Recreation, Relationship with Children, Relationship with Relatives, Self-Regard, and Social Service. The association between gender and quality of life on all but Creativity remained significant after controlling for the effects of age and severity of drug and alcohol, employment, legal, and family problems as measured by the Addiction Severity Index. Incorporating quality of life assessments into treatment evaluations of drug abusing patients may allow a more comprehensive characterization of treatment needs and goals. Women and men may differ in the areas they consider important and adjusting the focus of treatment accordingly may improve retention and outcomes.

A randomized controlled trial of community-financed, voucher-based reinforcement therapy for smoking cessation in women receiving community-based drug treatment

L. Amass, J.B. Kamien, C. Reiber, and T.S. Samiy

Friends Research Institute, Inc., and University of California Los Angeles Integrated Substance Abuse Programs, Los Angeles, CA

The deleterious effects of cigarette smoking impact nearly 60 million Americans and tobacco-related illness remains the United States' leading cause of premature and preventable mortality. Voucher-based reinforcement therapy (VBT) is an effective behavioral strategy for reducing drug, alcohol and cigarette use that has not been widely studied in pregnant and parenting female substance abusers. Preliminary data from an ongoing, randomized controlled clinical trial of VBT for reducing cigarette smoking in urban, minority, low income, pregnant, postpartum and parenting substance abusers in two South Central Los Angeles community treatment programs are described. One third of a planned 90 women have been randomized to date for this 30 week study. They average 33 years old, have given birth about 5 times each, have smoked for about 19 years, and at intake had a mean carbon monoxide breath level of 17 ppm and smoked about 9.5 cigarettes/day. Two VBT conditions are being compared to a control group. In the VBT conditions, participants earn 10-point vouchers on a fixed-ratio 1 schedule of reinforcement for providing breath

carbon monoxide levels \leq 8 ppm or carbon monoxide levels \leq 8 ppm and urine samples negative for illicit drugs during 3 data visits per week. Each voucher point can be exchanged for about \$2 worth of goods or services in on-site clinic stores stocked entirely by donations from corporations and the local community. Outcome measures of carbon monoxide levels, salivary cotinine, attendance, voucher earnings and spending patterns, during the study and at 9 and 12 month follow-ups will be discussed. Early results suggest that carbon monoxide levels decreased relative to baseline by about 30 to 40% in the experimental groups compared to a 10% decrease in the control group. Our study suggests that community-sponsored VBT programs may be an effective and feasible approach to providing relatively high magnitude, voucher-based reinforcement therapy for substance abuse treatment. Supported by DHHS grant R01DA13638 from the National Institute on Drug Abuse.

Capsaicin-induced hyperalgesia and mu opioid-induced antihyperalgesia in male and female F344 rats

A.C. Barrett, E.S. Smith and M.J. Picker
University of North Carolina, Chapel Hill, NC

Although previous studies indicate that male rodents are generally less sensitive to nociceptive stimuli and more sensitive to opioid antinociceptive agents than females, the majority of these studies have employed tests of phasic, short-lasting pain. Most clinical pain, in contrast, is prolonged, and can be associated with inflammation and hyperalgesia. The purpose of this study was to use a capsaicin model of chronic pain to compare hyperalgesia and mu opioid-induced antihyperalgesia in F344 male and female intact and gonadectomized rats. In a 45°C warm water tail-withdrawal procedure, capsaicin injected into the tail produced dose-dependent hyperalgesia in intact males and females, and the dose required to produce a comparable magnitude and duration of hyperalgesia was 3.0-fold higher in males (3.0 micrograms) than females (1.0 microgram). These sex differences were modulated by gonadal hormones, as gonadectomy increased the potency of capsaicin in males and decreased its potency in females. In tests of antihyperalgesia, morphine, buprenorphine and dezocine were either co-injected with capsaicin in the tail or injected s.c. in the back, with doses of capsaicin selected in males (3.0 micrograms) and females (1.0 microgram) to ensure comparable baseline levels of hyperalgesia. Although all three opioids produced antihyperalgesia when co-injected in the tail and s.c., there were no sex differences in their potency or effectiveness. That morphine was at least 10-fold more potent in males and females when injected in the tail vs. s.c. suggests that the effects of locally administered morphine are mediated, at least in part, by peripheral opioid receptors. The present findings contrast with the marked sex differences obtained in opioid antinociception in tests of phasic pain, and suggest that the chronicity of the pain may be a critical factor in determining sex differences in opioid sensitivity. Furthermore, these findings with morphine are consistent with previous findings documenting potent antihyperalgesia at peripheral opioid sites, and extend these findings to females. (Supported by NIDA grants DA10277 and DA15273)

Abuse patterns of gestational toluene inhalation and early postnatal development in rats

J.C. Batis, J.H. Hannigan, R.T. Abner, and S.E. Bowen
Wayne State University, Detroit, MI

In the United States, inhalant abuse trails only alcohol, marijuana and nicotine, yet the teratogenic potential of inhaled organic solvents has not been thoroughly examined. Recent evidence indicates that inhalant abuse during pregnancy causes a particular constellation of symptoms that has been labeled Fetal Solvent Syndrome. In a preclinical model of fetal solvent effects, timed pregnant rats (Sprague-Dawley) were exposed for 15 min, twice daily to toluene (a commonly abused inhalant), in concentrations of 8,000 parts per million (ppm) or 12,000 ppm or to air. All exposures took place in a 36-L static exposure chamber. Rats were exposed from gestation day 8 (GD8) to GD20. After parturition, litters were culled to 10 pups/litter, keeping 5 males and 5 females where possible. Pups were tested from postnatal day 4 (PD4) to PD21 in a standard developmental test battery including weight gain, negative geotaxis, surface righting, grip strength and age of attaining various ontogenic milestones (i.e., pinnae detaching, incisor eruption and eye opening). Pups exposed to 12,000 ppm toluene in utero weighed significantly less than the control pups at all ages tested. The 8,000 ppm dose pups also weighed less than the controls, although the difference did not reach significance. Delays or deficits were noted for all of the tests of biobehavioral development except surface

righting. The severity of the deficits varied by gender, with some being exhibited by one gender (e.g., delayed eye opening in males; weaker grips and poorer negative geotaxis in females), and others by both (e.g., weight). The pattern of exposure used in this experiment, which models human abuse exposure, demonstrates that even brief, high-dose prenatal exposure to toluene causes growth restriction and developmental delays in rats, and is consistent with an animal model of fetal solvent effects. (Supported in part by NIDA grants DA015951, and DA15095).

Profiles of childhood trauma among street-recruited female sex traders

J. Bogetto, P. Greco, C. Meeks, C. Ostella and L. Cottler
Washington University School of Medicine, St. Louis, MO

Sex trading-- the giving or sharing of sexual favors in exchange for drugs, alcohol, food, clothes or something else of value--puts women at risk for a number of poor health and societal conditions. We had the opportunity to evaluate early childhood traumas as a predictor of sex trading in our ongoing NIAAA and NIDA funded HIV prevention studies of street recruited at-risk heavy drinking/drug using women. To date, among the 639 primarily African American women interviewed, 48% have reported a history of sex trading, as described above. Sex traders (ST) tended to be older, less educated, more likely to be married with children, and more likely to have spent one or more nights in jail compared to non-sex traders (NST). Although STs were no more likely than their NST counterparts to report a history of physical violence before age 15, they were more likely to report early sexual trauma in the form of being forced to have sex (31% vs. 22%), being forced to touch someone else's genitals (37% vs. 24%), and being forced to be touched by someone else (43% vs. 31%), before the age of 15. They were also more likely to have been raped after age 15 (59% vs. 32%). Perhaps the effect of this early trauma is best exhibited in the high rates of adult antisocial behaviors among STs (90% vs. 70%). Controlling for all other variables, sex trading was predicted by adult antisocial behavior, rape after age 15, lower educational status, and older age. Surprisingly, the early traumas themselves did not predict, in a statistical sense, later sex trading. Implications on these results and how they can be woven into our prevention messages are discussed.

Engaging substance-abusing mothers who are in the child welfare system: Findings from the ON TIME Study

S.M. Boles, N.K. Young, Y. Hser, and B. Whitaker
Integrated Substance Abuse Programs, University of California, Los Angeles, and Children and Family Futures, Irvine, CA

The Orange County Needs-based Treatment Intervention for Mothers' Engagement (ON TIME) was created to (1) respond to the new and faster time lines created by welfare and child welfare legislation, and (2) to test the effectiveness of outreach, intervention, engagement, and re-engagement strategies using motivational interviewing techniques with women involved in the child welfare system. The evaluation of the 238 enrollees included: (1) assessing the systems' implementation; (2) evaluating outcomes relative to changes in self-reported client functioning; and (3) comparing the treatment and child welfare status of the participants with a comparison group of women who did not meet program criteria in the year prior to its implementation. Data were collected at intake, during treatment, and at 3 and 9 months post-intake. Results indicate that ON TIME was successfully implemented and achieved positive outcomes for more than two hundred substance-abusing mothers in the child welfare system and as implemented, the program achieved several forms of closer collaboration among the major parties at the child welfare-treatment-family court intersection. Over half of participants (52%) were Caucasian and one-third Latina. Approximately 43% did not complete high school, 44% were never married and 80% reported being a victim of physical abuse. Treatment outcomes measured by ASI composite scores showed significant decreases in all domains, particularly in the psychiatric, family, and employment areas. At 18 months after inception of the CPS case, children of ON TIME participants were significantly more likely to be in family reunification programs (33% versus 6%) and less likely to be adopted, in a long-term foster placement or permanent guardianship (29% versus 57%).

The isolation of the isolated: Drug use and employment in southeast rural and northern inner city settings

E.J. Brown and E. Dunlap

University of Central Florida School of Nursing, Orlando, FL, and National Development and Research Institutes, New York, NY

Barriers to employment exist for black women in rural areas and inner cities; cocaine use introduces additional barriers to finding employment. Data were analyzed from 137 women who used drugs: 112 from New York City and 25 from rural North Florida. Both subgroups had a similar age range of 18 to 55 years. Education varied by setting; 22 of the inner city women had some college, 13 graduated from high school, and 77 dropped out while nine of the rural women completed high school and 16 dropped out. Both ethnographic studies used qualitative interviews and participant observation as primary data collection methods. Transcriptions from both subgroups were coded and analyzed for recurrent themes associated with employment. Results indicated a complex interplay between isolation and economic situations in rural and urban settings. Women appeared trapped in geographical areas with little hope of escape. Three common themes emerged between both subgroups: 1) subculture behavior patterns which had a negative impact on employment, 2) employment in menial jobs, which lack security and benefits, and 3) frequent change of employment. Two themes, limitation of farm labor and a lack of transportation were barriers to employment among the rural subgroup only. On average, more women in the rural setting worked in comparison with those from the inner city. Drug use appeared to have similar influences on work-related behavior patterns of both subgroups, causing resulted in frequent job loss, short periods of employment, and frequent re-employment. Women from both areas reported a lack of drug treatment and job training.

Risk factors for nicotine dependence among smokers

D. Burgermeister

Wayne State University, Detroit, MI

Three categories of smokers were classified according to smoking status: 1) never smoked daily (NSD); 2) daily, non-nicotine dependent (nND); and 3) daily, nicotine dependent (ND). The purpose of the study was to examine the differences among male and female smokers according to the following three risk factors for smoking: 1) lifetime history of depression; 2) expectancy that smoking will reduce negative affect; and 3) exposure to adverse childhood experiences. Hypothesis: 1) lifetime depression, expectancy for negative affect reduction, and exposure to adverse childhood experience will vary according to smoking status; 2) lifetime depression, expectancy for negative affect reduction, and exposure to adverse childhood experience will vary according to gender. Procedure: Questionnaires completed by 300 male and female smokers with a mean age of 23 years and who attended college. Results: There were significant differences among smokers on lifetime depression (ND>NSD& nND); expectancy for negative affect reduction (ND>NSD>nND); and exposure to adverse childhood experiences (ND>NSD). There was no support for gender differences. Conclusion: The three psychosocial factors constitute significant risk for nicotine dependence in both men and women.

Sexual behavior change following initiation of methadone maintenance treatment

D.A. Calsyn, E.A. Wells, A.J. Saxon and T.R. Jackson

VA Puget Sound Health Care System, University of Washington School of Medicine, University of Washington Social Work, Evergreen Treatment Services, Seattle, WA

Objectives: Methadone maintenance has been associated with sexual risk reduction. Less is known about changes in sexual behaviors not associated with risk reduction. Methods: In a clinical trial evaluating intensity of services, 81 heterosexual men and 63 heterosexual women remained in treatment for at least six months. Comprehensive assessments covering the prior six months were conducted at treatment entry and six months later. Participants were compared across time periods on sexual behaviors. Results: Most men remained at low sexual risk by maintaining abstinence (13.6%), monogamy (39.5%), or changed to the lower risk of abstinence (3.7%) or monogamy (9.9%) from having multiple partners. Most women remained at low sexual risk by maintaining abstinence (14.3%), monogamy (50.8%), or changed to the lower risk of abstinence (4.8%) or monogamy (11.1%). Having multiple partners during both time periods

were 9.9% of men and 6.3% of women, while 11.1 % of men, but no women moved from lower risk to having multiple partners. Participants monogamous with the same partner during both time periods were used to examine frequency of engaging in the various sexual behaviors (see Table 1). Of special note is the increase in cunnilingus for both men and women. Table 1. Frequency of various sexual behaviors of monogamous participants

Frequency	None (%)	< Weekly (%)	Weekly (%)	>Weekly (%)	Behavior	Men	Initial 6 mo.	Initial 6 mo.	Initial 6 mo.	Initial 6 mo.	Intercourse	0.0	3.1	32.4	28.1	32.4	25.0	31.3	43.8																	
Fellatio	46.9	37.5	21.9	31.3	12.5	15.6	18.8	15.6	Cunnilingus	93.8	62.5	3.1	18.8	3.1	9.4	0.0	9.4	Women	Intercourse	3.1	0.0	31.3	37.5	31.3	34.4	34.4	40.6	Fellatio	34.4	25.0	25.0	40.6	25.0	21.9	15.7	12.5
Cunnilingus	90.6	25.0	6.3	31.3	3.1	31.3	0.0	15.6																												

Sex differences in immune alterations in mice deficient in the vesicular monoamine transporter gene (VMAT2)

K. Carrigan, L. Dykstra, T. Saurer, M. Beaulieu, D. Lysle, and M. Caron
University of North Carolina, Chapel Hill, and HHMI/Duke University, Durham, NC

Vesicular monoamine transporters (VMAT's) are proteins responsible for packaging cytoplasmic monoamines such as norepinephrine, dopamine, and serotonin into secretory vesicles. VMAT2 plays a critical role in determining the amount of monoamine stored in vesicles and available for synaptic release. Given that amphetamines induce monoamine release from vesicles loaded by VMAT2, recent attention has focused on the role of VMAT2 in the conditioned rewarding, locomotor, and neurotoxic effects of amphetamines using heterozygous VMAT2 knock-out mice. Interestingly, the role of VMAT2 in the immunomodulatory effects of amphetamines has not been explored. In an initial set of experiments designed to determine the feasibility of using VMAT2 mice in immunological experiments, male and female heterozygous (VMAT2^{+/-}) mice (n=4) and wild type (WT) littermate controls (n=4) were sacrificed and assessed for mitogen stimulated splenic lymphocyte proliferation and natural killer cell activity. The results show that male heterozygous (VMAT2^{+/-}) mice display significantly suppressed T cell proliferation and enhanced B cell proliferation relative to both WT controls and female VMAT2^{+/-} mice. Additionally, both male and female VMAT2^{+/-} animals exhibit lower splenic natural killer cell cytolytic responses than WT controls. Moreover, female mice of both genotypes have greater natural killer cell activity than males. These findings show that VMAT2 transgenic mice are a suitable model for future investigation of the role of VMAT2 in amphetamine induced immunomodulation and suggest that sex may be an important modulator of the relationship between VMAT2 and immune function. Supported by DA02749(LAD) and DA12511(MGC).

Gender differences among cocaine-dependent outpatients in the Valencian community, Spain

M. Castellano, B. Pérez-Gálvez, J. Martínez-Raga, G. Haro, J.C. Valderram, C. Schütz, and G. Cervera
S. Psiquiatria, H. Clinico, University of Valencia, Valencia, Spain, and Friedrich-Wilhelms-University, Bonn, Germany

The Valencian Community, with slightly over 4 million residents is the third largest region in Spain. A total of 4144 (86.1%) male and 663 (13.9%) female outpatients treated in the 34 Unidades de Conductas Adictivas (Outpatient Units) treated in the Valencian Community, Spain between January 1999 and December 2001 were compared in order to get a better understanding of the treatment needs of both group of patients in light of the emerging epidemic of cocaine dependence in The Spanish East Coast. The two groups were compared on socio-demographic characteristics, substance use histories, and other related clinical variables. Female patients were significantly younger on admission (p<0.002), although were using less years (p<0.001); they were also significantly more likely to be non-married (p<0.001), to have a drug-dependent partner (p<0.001), to have had previous non-drug related psychiatric treatments (p<0.001). Males were more likely to have experienced legal problems (p<0.001) and to be currently employed (p<0.001). There were no differences in HIV or hepatitis C status, or in the preferred route of cocaine administration. Women in our setting have variables generally identified as poor prognostic factors, which may reflect their specific treatment requirements.

Regular marijuana use in college females inhibits response to motivational intervention to reduce risky drinking

S.D. Ceperich, K.S. Ingersoll, S.M. Brocksen, and M.D. Nettleman

Virginia Commonwealth University, Richmond, VA

Many college women routinely engage in risky drinking that puts them in danger of multiple negative consequences including unprotected intercourse and unwanted pregnancy. Project BALANCE is a randomized trial of a motivational intervention targeting risky drinking and ineffective contraception in young women attending a large, urban, public university in the East. Participants are moderate to heavy drinkers who are sexually active, not pregnant or desiring pregnancy, and not adequately using contraception. Two-hundred participants complete an assessment battery with half randomized to a one-session Motivational Interviewing-based intervention focused on providing feedback on target behaviors and personality factors. Of 127 women randomized so far, 67% have used marijuana in the past year with half that group using twice or more per week. In preliminary analysis at one-month outcome, regular marijuana users continued heavy drinking as measured by number of drinks per week ($t = 2.69$; $p = .009$) and number of binges ($t = 3.36$; $p = .001$) compared to sporadic users or abstainers of marijuana. No significant differences were found for contraception use. We estimate providing results for 150 women at one-month follow-up and for 100 women at four-month follow-up. Additionally, we will present outcomes for women using other illicit drugs such as hallucinogens (27% used in past year) and cocaine (22% used in past year). Results suggest marijuana use may mediate effects of interventions to reduce risky drinking. Implications to be discussed include tailoring alcohol interventions for light/nonusers vs. heavy marijuana users in this population, and the clinical utility of assessing twice weekly marijuana use in risky drinking college females. Project Balance is funded by the CDC, grant number MM-0044-02/02.

Juvenile arrest and the onset of illegal drug use

Y.F. Chan, C.L. Storr, and J.C. Anthony

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Studied via both retrospective and prospective self-report methods, earlier onset of illegal drug use is followed by a more malignant course with greater cumulative risk of drug problems, but a validity threat is present because self-report is used to evaluate both age at initiation of use and the course of the drug problems. If early onset drug use truly is linked with a more malignant course of drug experience, we should be able to see that individuals who eventually show objectively measured signs of a malignant course have started to use drugs at an earlier age. Here, we examine this possibility with an epidemiological sample followed since primary school and re-assessed as they entered young adulthood. We use juvenile arrest records as an objective indicator of which youths had been arrested by age 18 and self-report data on age at first use of an illegal drug (marijuana, cocaine, methamphetamines, heroin, MDMA and hallucinogens). The population under study consists of 2311 first-graders followed to young adulthood. The results are based on the 75% of the sample who have been assessed to this date. For males and females separately, we estimated time to first drug use using survival analysis methods, and then the analysis was repeated for subgroups defined by sex (male-female) and by objectively determined arrest history (arrest for any juvenile offense). Kaplan Meier estimates for the risk of first drug use indicate males tend to initiate illegal drug use at an earlier age than their female peers. Additionally, Kaplan Meier estimates indicate subgroup differences when stratified on sex and arrest history (Log rank and Wilcoxon tests: $p < 0.05$). Males with arrest histories were more likely to have started drug use at an earlier age as compared to males without arrest histories, females with an arrest, and females without arrest histories. The evidence is consistent with previous studies and strengthens previous observations linking early onset drug use to a more malignant course of drug experience, with removal of the validity threat: self-report methods necessarily must be used to assess age of onset of drug use, but here administrative arrest records have been used to measure which youths got into trouble with the law and were arrested by age 18. Supported by NIDA DA09897, DA04392, and MH38725.

Dissociating the primary reinforcing and reward-enhancing effects of nicotine: Analysis of sex, dose and drug contingency on operant responding in rats

N. Chaudhri, A.R. Caggiula, E.C. Donny, M.A. Gharib, S. Booth, L. Clements, K.A. Perkins, and A.F. Sved

University of Pittsburgh, Pittsburgh, PA, and The Johns Hopkins School of Medicine, Baltimore, MD

Recent evidence from our laboratory suggests that nicotine supports behavior by acting as a mild, primary reinforcer and by enhancing the value of other reinforcing stimuli (Donny et al, accepted pending revision). Here, we further investigate these properties in two ways. First, we examined potential sex differences in the primary reinforcing effects of nicotine across a range of doses in male and female rats. Second, we compared the dose-effect functions produced for the reward-enhancing effects of nicotine and self-administered nicotine using male rats. In Exp. 1 male and female rats acquired nicotine self-administration (NIC SA) across a range of NIC doses (0.01, 0.03, 0.06 and 0.09 mg/kg/inf.; iv., freebase), during which NIC infusions were presented without additional drug-paired stimuli. After acquisition, we paired a compound visual stimulus (VS: onset of a 1-sec cue light and offset of a chamber light for 1-min) that had previously been shown to have reinforcing properties, with NIC to determine if the VS differentially affected responding by males and females. Self-administration of NIC alone was similar in males and females except females responded more than males at the highest dose. Adding a drug-paired VS significantly increased responding in both sexes at 0.03 and 0.06, but not 0.15 mg/kg/inf. This increase was greater for females than males at 0.06 mg/kg/inf. In Exp. 2, male rats acquired responding for the VS with either contingent (paired) or non-contingent (yoked) NIC (0.01, 0.03, 0.06 and 0.09 mg/kg/inf.). Consistent with previous data, there was no difference in lever-pressing between groups at 0.03 mg/kg/inf. Levels of responding were also identical at 0.06 and 0.09 mg/kg/inf. However, lever-pressing for the VS in the presence of non-contingent NIC was significantly lower than contingent NIC at 0.01 mg/kg/inf. Together these data concur with our working hypothesis that nicotine supports behavior by two, dissociable processes. They indicate a modest primary reinforcing effect of NIC across a range of doses in male and female rats, and demonstrate the ability of non-contingent NIC to enhance responding for a reinforcing stimulus across a range of NIC doses.

Male-female differences, religious and socializing activities, and tobacco opportunities in the context of the adolescent behavioral repertoire

C.Y. Chen, C.M. Dormitzer, U. Gutierrez, K. Vittetoe, and J.C. Anthony

Bloomberg School of Public Health, The Johns Hopkins University, Baltimore, MD

Aim: Connections between the adolescent behavioral repertoire and drug experiences have been explored in several studies, but few have examined the behavioral repertoire as a whole. In this study, we extend this focus to the earliest stage of drug involvement, i.e., drug opportunity, and examine possible male-female differences in a young person's first chances to try tobacco, within the context of a more general multidimensional adolescent behavioral repertoire. **Methods:** A total of 7,543 adolescents with no prior tobacco opportunity or use, and 973 adolescents with recent-onset tobacco opportunities are identified within the Panama, Central American and Dominican Republic (PACARDO) Survey, conducted in 1999-2000. 'Recent-onset' means having the first opportunity for tobacco use no more than 2 years before the assessment. Adolescent behavior repertoire was assessed via 25 items in Johanson's Behavioral Repertoire Self-Rating questionnaire (BRSR), with eight-response categories. The Generalized Linear Model with Generalized Estimating Equations (GLM/GEE) was used to estimate this relationship, with adjustment for possible confounders. **Results:** After statistical adjustment for age, father's education, private school attendance, contextual influences (e.g., deviant peer affiliation and family attention), and four other dimensions of the behavioral repertoire, the higher levels of socializing behavioral repertoire were found to be associated with first occurrence of tobacco exposure opportunity, particularly in females (aOR=3.6, 95% CI: 2.6-5.2). Adolescents involved in higher levels of the religious behavioral repertoire were overall less likely to experience a first exposure opportunity to tobacco in the past year. However, this independent inverse association was found only for females, not for males. **Discussion:** Here, we find evidence that adolescent tobacco opportunities (a necessary pre-condition for tobacco use) are determined, in part, by behavioral repertoire. The associations between socializing and religious behavioral repertoire with the first exposure opportunity to tobacco seem to vary by sex. Prospective research of these cross-sectional

observations will help to clarify whether the observed associations have causal or preventive significance.
Acknowledgments: NIDA RO1DA10502.

Sex-differences in neuropsychological function and brain morphometry in methamphetamine users

C. Cloak, L. Chang, K. Patterson, C. Grob, E. Miller and T. Ernst

Brookhaven National Laboratory, Upton, NY, Harbor-UCLA Medical Center Torrance, and UCLA School of Medicine, Los Angeles, CA

The potentially neurotoxic effects of methamphetamine (MA) have been demonstrated by several imaging modalities. However, less is known concerning potential sex differences in the long-term effects of MA on cognitive function and brain structures in humans. 22 adults with a history of MA-dependence (10 male, 12 female) and 22 age, sex, and education matched control subjects (10 male, 12 female) were given a series of neuropsychological tests to assess memory, psychomotor speed, and executive functioning, as well as a structural MRI. A two-way ANOVA for drug status and gender was used to analyze the results. The MA group performed poorer on two tests of higher cognition [Stroop Interference ($p=0.04$); Symbol Digit ($p=0.004$)], and was slower on several computerized reaction time based tests ($p=0.05$). On the delayed recall portion of the auditory verbal learning test (AVLT), a trend for a drug-by-gender interaction ($p=0.07$) was observed. While no sex-difference was observed in the controls, male MA users ($p=0.03$) remembered fewer words than the female MA users. Volumetric analysis of the MRIs showed regional differences in the MA group. The left globus pallidus ($p=0.03$) and left putamen ($p=0.04$) were significantly larger in the MA group. Other striatal and cerebellar regions showed similar trends. In addition, the right thalamus had a significant ($p=0.04$) gender by drug interaction while both left and right putamen had a similar trend ($p=0.2$). In each case, post-hoc t-tests showed no significant gender differences in the control group, while the MA males had larger volumes than the females and the male controls. The putamen also showed trends ($p=0.2$) for correlations with multiple AVLT tests and the Stroop Interference test. In both the neuropsychological tests and the volumetric measures, male MA users were more abnormal than the female users. This study provides further evidence for sex-differences in MA-mediated neurotoxicity both at the structural and functional levels. (Support: T32 DA07316 & R01 DA12734)

Validation of patient placement criteria for opioid-dependent pregnant women treated in a medically monitored intensive inpatient setting

M.L. Copersino, L. Keyser-Marcus, L.M. Jansson, M.L. Velez, W.B. Kissin and D.S. Svikis

Johns Hopkins University School of Medicine, Baltimore, MD, Virginia Commonwealth University, Richmond, VA, and Westat, Rockville, MD

The American Society of Addiction Medicine (ASAM) Patient Placement Criteria (PPC) rate biopsychosocial severity on six dimensions to guide patient placement in appropriate levels of safe and cost-effective care. These five levels of service intensity range from Early Intervention to Medically-Managed Intensive Inpatient Treatment, with further gradations within each level. While potentially useful in guiding treatment placement, there is a need for empirical data to validate PPC with substance abusing sub-populations with increasingly greater degrees of specificity. The present study retrospectively assessed the validity of treatment placement criteria for one-hundred-and-fifty-two ($N=152$) opioid dependent pregnant women consecutively admitted to a medically monitored intensive inpatient (ASAM Level III.7) setting. Preliminary analyses examined Addiction Severity Index scores in representation of ASAM biopsychosocial severity criteria for women who completed treatment ($n=123$) or who left against medical advice (AMA; $n=15$). These results suggest that sixty-seven percent (67%) of women who left AMA received an inappropriately high level of service intensity at treatment entry. The relationship between retention and biopsychosocial severity at intake will be further examined and discussed in regard to validity of treatment placement criteria.

Is prenatal tobacco exposure a risk factor for obesity in preadolescent offspring?

M.D. Cornelius, L. Goldschmidt, C. Larkby, and N. Day

University of Pittsburgh School of Medicine, Pittsburgh, PA

Recent evidence indicates a higher prevalence of obesity in adults whose mothers smoked during

pregnancy. In this ongoing prospective study, teenage mothers were interviewed about their tobacco and other drug use during pregnancy. Their children were examined at birth and at six years, and are now being examined at age 10. These preliminary analyses represent data on the first 123 of 400 10-year-old offspring. During pregnancy, the average age of the mothers was 16 (13-18); 70% were African-American. In the first trimester, 50.8% were smokers, 50.4% were drinkers, and 18% used marijuana. Use of these substances was 61.8%, 13.8%, and 5.7%, respectively, in the third trimester. At the ten year assessment, the average age of the children was 10.2 years (9.8-11.6), average weight was 87.2 pounds (54-153), and height was 56.3 inches (50-63). The following growth measures were assessed: weight, height, head circumference, skinfold thickness, body mass index (BMI), and ponderal index. After controlling for covariates of substance use and growth, prenatal tobacco exposure during the first trimester significantly predicted heavier weight ($t = 2.24$); BMI ($t = 2.43$); and ponderal index ($t = 2.01$). The effect size for weight increase was 0.7 pounds per cigarette exposure per day. Earlier analyses from this cohort showed a significantly negative relationship between prenatal tobacco exposure from all three trimesters and reduced growth outcomes at birth. By age six, prenatal tobacco exposure was significantly associated with increased skinfold thickness. In this analysis, we report that during preadolescence, several other obesity indices are significantly related to prenatal tobacco exposure. More research is needed to understand the etiological role of prenatal tobacco exposure and obesity. Acknowledgment: Supported by NIDA grant (DA09275, PI: M. Cornelius).

The effect of increased recruitment efforts on rates of high-risk behavior in a community-based HIV prevention study of substance-using women

L.B. Cottler, A. Ben-Abdallah, C. Meeks and E. Spitznagel
Washington University School of Medicine, St. Louis, MO

“No scientific inquiry can be better than its raw data” (Gordis, 1979). Since raw data come from respondents, participation levels of respondents figure prominently in epidemiological studies; however, high response rates require considerable recruiting efforts and are time-consuming and expensive. If the non-responders are disproportionately sicker or healthier than responders, the prevalence estimates of risk factors and outcomes could be biased. Because our on-going study set no a priori limit on contact attempts or on the time interval for recruiting subjects, we have an opportunity to evaluate characteristics of high levels of effort for enrolling street-recruited female substance abusers for our NIDA and NIAAA HIV prevention studies. Among our sample of 638 women, 82% are African American, 67% have never been married, and 48% have reported sex trading. Between 1 and 46 baseline contacts, net of street outreach contacts, have resulted in 5% of the sample being enrolled after 1 contact, 57% being recruited within 6 attempts and 95% within 19 attempts (mean=7.53 phone/face-to-face contacts). Contact attempts for all sociodemographic variables, recent sex trading, bingeing, having an injection drug using sexual partner, and a recent history of psychiatric illness were evaluated with Poisson and negative binomial multiple regression models for their association with recruitment efforts. Characteristics found to be statistically significantly associated with increased contact efforts included: younger age, trading sex, and the absence of both a history of a physical illness and PTSD. Finally, to understand the effect that recruitment efforts had on different estimates of sex trading, illness and PTSD, we ran regressions with contact attempts rounded down to differing maximum levels to determine a cutoff point for contact efforts. The threshold at which investigators could stop efforts without compromising estimates of behaviors will be presented, yielding practical information for research investigators.

Sex & age differences in the long-term effects of repeated exposure to methylphenidate

N. Dafny, P.B. Yang, A.C. Swann
University of Texas-Medical School at Houston, TX

Females are reportedly more sensitive than males to psychostimulants such as cocaine, amphetamine, and caffeine. Yet, sex differences in the behavioral responses to chronic treatment of the psychostimulant methylphenidate (Ritalin) have not been extensively investigated. Methylphenidate (MPD) is a common drug prescribed to treat attention deficit/hyperactivity disorder (ADHD), a behavioral disorder that begins in childhood and frequently persists into adulthood. Despite its common usage, variations in the effects of MPD among young and adult users, in addition to sex differences, are not well understood. The aims of this

study were to determine whether prior exposure to MPD in young male and female rats increased their sensitivity to the drug when they became adult rats and to investigate whether there were age and sex differences in the behavioral responses of these animals to chronic MPD. Young male (n=52) and female (n=48) Sprague-Dawley (SD) rats were randomly divided into two main groups: (1) received 0.6, 2.5, or 10 mg/kg, i.p., MPD for 6 consecutive days and a MPD rechallenge as young and as adults and (2) received saline as young and 0.6, 2.5, or 10 mg/kg, i.p., MPD for 6 consecutive days and a MPD rechallenge as adults. Changes in locomotor activity and stereotypic behavior were recorded and analyzed. Results showed that young female rats sensitized to repeated treatment of 2.5-mg/kg MPD, while young male rats failed to sensitize to repeated injections of all three MPD doses. Prior exposure to MPD in male and female young rats resulted in sensitized responses to the drug when they reached adulthood, particularly at the 0.6 and 2.5 mg/kg doses. Furthermore, naïve adult female rats showed sensitization to chronic treatment of 0.6-mg/kg MPD, while naïve adult male rats displayed sensitization to chronic treatment of 2.5-mg/kg MPD. In general, females showed greater sensitivity to chronic treatment of MPD than males. Supports: NIDA-DA14441-01A1(P.B.Y.) & Pat Rutherford Chair in Psychiatry; methylphenidate was a gift from Mallinckrodt.

Substance use among a medical student sample

D.V. Deas, K. Burroughs, N.G. Johnson, K. Mughelli, S. Thomas, K. May, K. Brady
Center for Drug and Alcohol Programs, Medical University of South Carolina, Charleston, SC

Few studies have systematically explored the extent of substance use among medical student populations. This information may be helpful for addressing physician impairment and its related consequences. The purpose of this study was to explore the extent of substance use and its related consequences in a medical student sample. The Core Survey, the Obsessive Compulsive Drinking Scale (OCDS) and the Deas-Marijuana Obsessive Compulsive Scale (Deas-MOCS) were administered to students at a southeastern medical school (n=243). The sample was predominately Caucasian and the average age was 25+4.20. The sample was comprised of 47.8% females and 52.2% males. The student's classification included: freshman (22.5%), sophomore (20.2%), junior (32.4%) and senior (24.9%). Few students in this sample reported illicit substance use. The rates of use for marijuana, cocaine and opiates were 10.4%, 1.2% and 0% respectively. There was no significant difference in marijuana use by classification, race or gender. Tobacco was reported by 16.2% of the sample and males smoked significantly more than females. Alcohol was the most common substance of use and students drank on average 3.73 drinks/week. Binge drinking was endorsed by 52.6% of the sample and 23.7% endorsed problem drinking. There was no significant difference in drinking days by classification, however binge drinking depended on classification ($X=16.91$, $p=.001$). African American medical students drank significantly less than other racial groups ($F(2,242)=8.63$, $p=.0002$). Males drank significantly more than females and significantly more males were binge drinkers as well as problem drinkers. Overall, illicit substance use is not a major problem in this sample of medical students, however almost one-fourth of the sample endorse problem drinking and many experience alcohol related problems. Alcohol specific education and interventions should be explored in this sample as a means of decreasing future physician impairment.

Associations between gender and psychiatric and substance use disorders and use of treatment services in needle exchange

E.R. Disney, J.M. Peirce, K. Kindbom, J. Blucher, D. Bleiler, M. Kidorf and R.K. Brooner
Johns Hopkins University School of Medicine, Baltimore, MD

This study examined gender differences in prevalence of psychiatric and substance use disorders and prior use of treatment services among opioid-dependent participants in the Baltimore Needle Exchange Program. New registrants (270 men, 138 women) were administered the Structured Clinical Interview for the DSM-IV and the Risk Assessment Battery. Overall, women and men exhibited similar rates of substance use disorder, and similar rates of any comorbid psychiatric disorder ($M = 57\%$). Gender was associated with type of psychiatric diagnosis. Women had a higher rate of Axis I disorder than men ($p < .05$), including a higher rate of anxiety (23% vs. 12%, $p < .01$) and mood (34% vs. 24%, $p < .05$) disorders. Men had a higher rate of antisocial personality disorder (47% vs. 18%, $p < .001$). Women reported higher rates of HIV high-risk sexual behaviors than men ($p < .01$). A clear gender pattern also emerged regarding treatment

involvement. Women more than men reported a history of psychiatric and drug abuse treatment and use of social services; exposure to these services was not associated with better functioning. These findings support the need to enhance the ability of drug abuse treatment settings to assess and treat psychiatric disorders common in women and men, and to maximize the benefits of psychiatric and social services to patients. Support: NIDA Grant R01 DA12347-01.

Effects of acute tobacco abstinence on cognitive performance in adolescent female and male smokers

A. Duhig, D. Cavallo, R. Wu, S. McKee, T.P. George and S. Krishnan-Sarin
Yale University, New Haven, CT

Adolescent smoking is a serious health concern of epidemic proportions; however, to date, we know very little about what maintains adolescents' smoking. This study is the first and largest controlled study, conducted in an inpatient setting, to assess cognitive changes during abstinence from tobacco in adolescent smokers versus nonsmokers. It was hypothesized that compared to nonsmokers, smokers would demonstrate greater cognitive deficits over time across cognitive tasks. Participants were 37 smokers (21 male, 16 female) and 43 nonsmokers (17 male, 26 female), ages 14-18 years. All subjects participated in a 48-hour tobacco abstinence session conducted at the Children's Clinical Research Center of Yale-New Haven Hospital. Cognitive changes were assessed using the Hopkins Verbal Learning Test (HVLT; Brandt, 1991), an auditory verbal learning task, and 8 tasks from the Walter Reed Performance Battery (Thorne et al., 1985), assessing simple and complex attention, concentration, short- and long-term memory, and spatial memory. All tasks were administered repeatedly during the abstinence period. Preliminary analyses on subsets of data obtained at 1-hour and 38-hours after initiation of abstinence were conducted using a series of 2 (smoking status) x 2 (sex) x 2 (time) repeated measures ANOVAs. On simple reaction time and complex attention/incidental learning tasks, significant smoking status x time interactions were found; smokers' performance worsened over time, while nonsmokers' performance improved over time (p 's < .05). On a complex attention/mental arithmetic task gender differences were found; female smokers were significantly less accurate than female nonsmokers (p < .01); males did not show this pattern of results. On the HVLT, smokers and nonsmokers had similar scores on total and delayed recall and learning. However, female smokers experienced significant time-dependent decreases during abstinence in recognition when compared with female nonsmokers (p < .01); male smokers and nonsmokers did not show this decline. These preliminary data not only suggest that withdrawal from nicotine has a negative impact on certain cognitive abilities in adolescent smokers in general, but also that nicotine withdrawal may be cognitively more detrimental to female adolescent smokers. (Supported by R01-HD31688, M01-RR06022, and P50-DA13334).

Prediction of neglectful and abusive parenting in young-adult mothers from antisocial behavior and substance use disorder

M.G. Dunn, A.C. Mezzich, and K. Day
University of Pittsburgh, Pittsburgh, PA

Maternal antisocial behavior (ASB) and substance use disorder (SUD) are related to neglectful and abusive parenting. SUD mothers are at a particularly high risk for neglecting and/or abusing their offspring because ASB is highly co-morbid with SUD. The aim of this prospective study was to determine the relative contribution of ASB and SUD to neglectful and abusive parenting independently, controlling for the temporal stability of ASB and SUD. The sample ($n=128$) consisted of three groups of young mothers (age 19-23) who were diagnosed with SUD ($n=93$) in adolescence (age 14-18) and control mothers who were either diagnosed with conduct disorder ($n=9$) or had no DSM diagnoses ($n=18$). At baseline assessment (age 14-18) the average age was 16, education was 9 years, whereas at follow-up (age 19-23) the average age was 21, and education was 12 years. The results of longitudinal analyses showed that ASB at age 14-18 predicted both neglect (Beta=.24; $p=.017$) and abuse (Beta=.28; $p=.005$) at age 19-23. Cross-sectional analyses revealed that ASB, assessed concurrently with parenting at age 19-23, is also significantly related to both neglect (Beta=.23; $p=.015$) and abuse (Beta=.28; $p=.004$). Furthermore, when controlling for its temporal stability, current ASB (age 19-23) remained the only significant predictor of neglect (Beta=.20; $p=.043$) and abuse (Beta=.23; $p=.030$). In conclusion, these findings indicate that, in contrast to SUD, ASB is a significant predictor of neglectful and abusive parenting in women. Therefore, intervention with

adolescent-onset SUD women should also include assessment and treatment of ASB in an effort to prevent child neglect and/or abuse.

Four-year trends in women and men presenting for substance abuse treatment in the Drug Evaluation Network System

K.M. Eyrich, D. Carise, and A.T. McLellan

The University of Pennsylvania, School of Medicine, Treatment Research Institute, Philadelphia, PA

Knowledge of the characteristics of the population presenting for substance abuse treatment is critical for appropriate service provision. Populations (and needs) change over time. The purpose of this study was to examine trends in the women and men presenting for substance abuse treatment. Four years of data (1999-2002) from the Drug Evaluation Network System (DENS) were used in these analyses. In the DENS study, staff at 40 substance abuse treatment sites (including inpatient/residential, outpatient, intensive outpatient, and methadone maintenance modalities) located in seven major metropolitan areas in the United States administered a computerized version of the Addiction Severity Index (ASI) to all clients presenting for treatment during intake. For these analyses, composite scores for each domain of the ASI were examined by year for each gender. Separate analyses were conducted for each gender because significant differences were detected in the composite scores on all seven domains. For women, trend changes were found between 1999 and 2000 and between 2001 and 2002. Between 1999 and 2000 a significant increase was detected in the legal domain, and significant decreases were detected in the psychiatric and employment domains. Between 2001 and 2002 significant decreases were found in the drug, alcohol, psychiatric, and medical domains. No differences were detected in the family/social domain. For men, trend changes were detected between all years. Between 1999 and 2000 significant increases were found in the drug, legal, and family/social domains. Between 2000 and 2001 significant increases were detected in the alcohol and employment domains, and significant decreases were detected in the drug, psychiatric, and medical domains. Between 2001 and 2002 a significant increase was found in the employment domain, and significant decreases were found in the drug, alcohol, psychiatric, and medical domains. In the presentation, specific items driving the differences for each gender will be discussed.

Sex differences in the behavioral response to cocaine are modulated by monoaminergic circuitry

E.D. Festa, S.J. Russo, T. Niyomchai, L.M. Kemen, S. Jenab, and V. Quinones-Jenab

Hunter College, CUNY, New York, NY

Cocaine, a psychostimulant, has been shown to increase locomotor behaviors in rats by altering monoaminergic transmission. It has been demonstrated previously that female rats have a more robust behavioral response to cocaine administration. Neurobiological mechanisms underlying these differences remain unclear. The purpose of the present study was to determine whether sex differences in monoaminergic activity is modulating the observed behavioral disparities. Male and female Fischer rats were administered cocaine or saline and locomotor/stereotypic behavior was monitored. High performance liquid chromatography was used to determine monoamine content using post mortem tissue. Overall, female rats had greater cocaine-induced activity at doses of 15, 20, and 30 mg/kg. Both male and female rats showed an increase in total dopamine within the dorsal striatum following cocaine administration. However, female rats showed significant reductions in dopamine and its metabolites in the nucleus accumbens whereas males did not. These results suggest that sex differences in the behavioral responses to cocaine administration are explained, in part, by intrinsic differences which regulate monoaminergic circuitry in the brain. These findings have important implications regarding potential treatments for cocaine abuse. This work was supported by PS-CUNY, RCMI RR-03037, NIDA DA12136, SCORE 506-GM60654 and SNRP NF-39534.

Mood disorders affect drug treatment success of pregnant drug-dependent women

H. Fitzsimons, M. Tuten and H.E. Jones

Johns Hopkins University School of Medicine, Baltimore, MD

Introduction: This study examined the impact of co-morbid Axis I disorders on current psychosocial functioning and drug treatment outcomes of pregnant drug-dependent women. Methods: Participants

(n=94) were enrolled in the Center for Addiction and Pregnancy and completed the Structured Clinical Interview for DSM-IV (SCID) and Addiction Severity Index (ASI), during a 7-day residential stay. Women were categorized into 3 groups using SCID diagnoses: 1) any current mood disorder (MD n=22), 2) any current anxiety disorder (AD n=26) or 3) absence of any current mood/anxiety disorder (ND n=46). Results: Groups were similar on age, gestational entry age, years of education and race. MD and AD groups had higher ASI psychiatric and family/social composite scores than the ND group ($p < .05$). The MD group had a higher rate of illicit drug positive urine samples than the ND group (68% vs 39%). Conclusion: These findings highlight the need to: identify women with Axis I disorders, recognize the relapse risk imposed by mood disorders and tailor drug treatment to address these issues. Supported by R01 DA12403.

Comparing high-risk youth and parents' perceptions of family environment and peer relations as influences on the youths' substance use

C. Fong, S. Magura, A. Rosenblum, C. Norwood, D. Casella, P. Curry, J. Skinner, D. Pierce
National Development and Research Institutes, and Health Force: Women and Men Against AIDS, New York, NY

Hypotheses/Aims. This study determines: (1) the extent of agreement between high risk youth and their parents on perceptions of the quality of the family environment and the youths' peer relations, (2) joint effects of youth and parent perceptions of these attributes on the youths' substance use. Number of Subjects: 85 youth-parent pairs, involving 56 parents, all in families with HIV+ adults. Procedures. Parallel scales were administered to youths and parents to rate parental permissiveness, parental detachment, deviant peer network and poor social skills. Dissimilarity index = absolute difference between parent and youth scale scores. Youths reported any use of cigarettes, alcohol or illicit drugs; index from 0 (no use) to 3 (used all 3). Statistical Analysis. Correlations and ordinary least squares regression; all statistics below are significant at $p < .05$, 1-tailed. Results: Youths - mean age 11.7, 51% male, 57% African-Am., 31% Hispanic. 28% of youths reported substance use (20% cigarette, 22% alcohol, 8% illicit drugs). Parents - mean age 40, 88% female, 89% HIV+. Pairwise comparisons of youth vs. parent perceptions - parental detachment ($r=0.36$), other n.s. Youth substance use vs. dissimilarity scores - parental permissiveness ($r=0.27$), parental detachment ($r=0.20$), and deviant peers ($r=0.28$). Four regressions were run, with child substance use as dependent variable (DV) and each dissimilarity score and its component attributes as independent variables (IV). High correlations among IVs called for stepwise method. One regression showed the strongest effect for the parental permissiveness dissimilarity score ($b=0.18$), other regressions showed the strongest effects for youth perceptions. Four regressions to test for the interaction of youth and parent perceptions on substance use showed significance for the deviant peer interaction effect ($b=0.29$), other interactions n.s. Importance of Findings: Results indicate that research studies intended to explain youth substance use should incorporate parents', not just youths', perceptions of risk factors. Funded by: National Institute of Child Health and Human Development grant # R01 HD37350.

Retrospective study: Influence of cycle on craving to cigarette cues

T. Franklin, R. Ehrman, P. Gariti, N. Sciortino, C.P. O'Brien, and A.R. Childress
University of Pennsylvania and Veteran's Administration Hospital of Philadelphia, Philadelphia, PA

Recently, it has been posited that female smoking behavior is influenced more than male smoking behavior, by internal and external smoking cues. Smoking pleasure is reduced more and smoking is decreased in women compared to men when olfactory cues are blocked. Menstrual cycle may contribute to some of the observed sex differences; desire for a cigarette, withdrawal and depression are greater during the luteal phase of the cycle (premenstrual). Thus, we hypothesized that craving to smoking-related cues might be elevated in females and further, that these increases might be even greater during the luteal phase. To test this hypothesis, we re-examined previously collected cue exposure data. Self-report measures of 'craving', 'intent to smoke', 'high' and 'withdrawal' were collected from subjects prior to, and immediately following exposure to videos of smoking-related scenes. The study included 69 male and 41 female treatment-seeking subjects who smoked >15 cigarettes per day for >10 years. Seventeen of the female subjects were in the follicular phase (FFemales) and 24 were in the luteal phase (LFemales) of the menstrual cycle. Baseline craving scores were not different in males, FFemales and LFemales. Also, change scores were not different between groups on questions probing 'intent to smoke', 'high' or 'withdrawal'. Contrary to our

expectations, overall, males and females did not differ in their level of cue-induced craving, however FFemales reported significantly less cue-induced craving than either males or LFemales ($P < .05$). These data suggest that the probability of success in quitting may be higher during the follicular phase when craving to cues is attenuated.

Sexual and injection risk behaviors in the CSAT Methamphetamine Treatment Project: Effects of treatment

G.P. Galloway, A. Lu, M. Iguchi, R. Lord, V. Gulati and The Methamphetamine Treatment Project
New Leaf Treatment Center, UCLA Integrated Substance Abuse Programs, RAND Drug Policy Research Center, Montana State University, Billings, MO, and Matrix Institute on Addictions, Los Angeles, CA

The Methamphetamine Treatment Study is an eight-site randomized clinical trial designed to compare the Matrix Model of treatment for methamphetamine dependent individuals with “Treatment As Usual” at each site. Data on sexual and injection risk behaviors were collected at treatment entry, end of treatment, and at follow-up using the Texas Christian University AIDS Risk Assessment. Of the 1016 subjects, 55% were female, 60% Caucasian, 17% Hispanic, 17% Asian or Pacific Islander, 3% Native American, 2% African-American; and their mean age was 32.8 (SD 8.0) years. The number of past-month sexual partners was lower by 0.19 (s.d. 1.15) at the six-month follow-up than at baseline (paired t-test, $df = 752$, $t = -4.45$, $p < 0.0001$). Other risk measures at the six-month follow-up were unchanged: frequency of unprotected sex with a non-primary partner, frequency of unprotected vaginal plus anal intercourse, frequency of sharing “dirty” injection equipment, and number of injection equipment sharing partners. Matrix Model v. “Treatment As Usual” differences and pre-post comparisons at end of treatment and at 12 months will also be tested. Supported by grants TI 11410, TI 11411, TI 11425, TI 11427, TI 11440, TI 11441, TI 11443, and TI 11484 from the Center for Substance Abuse Treatment. Contents are solely the responsibility of the authors and do not necessarily represent the official views of the agency.

Modeling women's substance use and lawbreaking behavior

S. Golder

Columbia University School of Social Work, New York, NY

Hypothesis/Study Aims: To address gaps in the literature related to women's substance use and lawbreaking, this research tested four related models of the hypothesized relationship between trauma, adult attachment, cognitive and emotional processing, illicit substance use, risk behavior, and criminal justice involvement. Species/Number of Subjects: 239 female humans. Procedures: Data for this study were taken from a longitudinal study of pregnant and parenting adolescents. The sample initially consisted of 239 pregnant unmarried teenagers, under age 18; by the 10_ year post-partum interview, the last interview for which data collection was complete when this project was undertaken, approximately 95% of the eligible sample was located and interviewed. Statistical Analysis: Structural equation modeling, employing maximum likelihood estimation, was used to test the hypothesized models. Missing data was imputed through the use of full maximum likelihood estimates via Mplus. Results: Overall the findings lent support to the hypotheses advanced in this research that patterns of emotional dysregulation influenced by past trauma and attachment security, are a significant contributor to women's illicit substance use specifically, and to their risk behavior generally. Importance of Findings: These findings move beyond the available descriptive documentation of the co-occurrence of trauma, women's substance use (and related risk behavior) and involvement in the criminal justice system by providing an empirically supported, theoretically guided explanation of the relationships among these factors. Findings suggest that a potential significant interventive focus, when trying to reduce women's substance use and related risky behavior, is that of emotional processing, particularly as it occurs in reaction to stressful life events. In addition, the findings indicate that not all women who experience an adolescent pregnancy will engage in elevated levels of risk behaviors as adults and subsequently become involved in the criminal justice system in numbers greater than those found in the general population. This suggests that preventive efforts would do well to identify and target the higher-risk group of adolescent mothers for the earliest possible interventions.

Motivations and expectations surrounding entry into drug treatment among needle exchange program attenders

E.T. Golub, E.D. Pilibosian, S. Huettner, C. Latkin, L. Cornelius, D. Bishai, and S.A. Strathdee
Johns Hopkins University, and University of Maryland School of Social Work, Baltimore, MD

Background: Retention in drug treatment is often affected by client perceptions and motivations. Expectations of immediate cessation of drug use are associated with early dropout. We characterized clients' motivations for treatment entry and expectations among clients of the Baltimore City Needle Exchange Program who sought and received a drug treatment referral. Methods: Study participants were interviewed at baseline regarding demographics, support networks, substance use, prior experience with drug treatment, motivations for seeking treatment, and treatment expectations. Distributions of motivation and expectation variables are reported; chi-square analysis was used to compare proportions between groups. Results: Of 145 subjects studied to date, 48 (33%) were female and 110 (75.9%) were African-American. The most commonly reported motivating factors for seeking drug treatment were those related to lifestyle (77%); these included being tired of the lifestyle, having been incarcerated, receiving a court order for treatment, or having no money. The second most commonly reported motivating factors were physical factors (12%) such as overdose, withdrawal, medical symptoms and fear of HIV/AIDS. When stratified by gender, men were marginally more likely to report lifestyle factors as their greatest motivators for seeking treatment ($p=0.07$), and women were more likely to seek treatment because they have children ($p=0.07$). Overall, 71.7% of participants expected that they would stop injecting drugs forever as a result of treatment. When asked how likely they thought their chances were to stop injecting soon after treatment, 31% said they were most likely to stop within 2 weeks, 49% said within 6 months, and 68.3% within one year. Conclusions: Preliminary analysis suggests that lifestyle factors are the most common motivations to seek drug treatment, though motivators differ by gender. Expectations for overall treatment success are high, but expectations of immediate cessation of drug use are relatively low, suggesting potentially high rates of treatment retention. Ongoing analysis may help to elucidate the relationship between motivations, expectations, and treatment retention and success.

Smoking practices among opioid-dependent individuals presenting for emergency medical services

A. Haas, J. Sorensen, C. Lin, K. Delucchi, K. Sporer and S. Hall
University of California San Francisco and San Francisco General Hospital, San Francisco, CA

The current study examined cigarette smoking in opioid users presenting for emergency medical care and changes in smoking one year after the patient was linked to substance abuse treatment services (methadone maintenance and/or case management). Participants were 48 individuals (77% male, 48% Caucasian, 83% homeless) recruited while receiving care for substance-related medical problems (e.g., abscesses). Baseline measures of substance use and smoking were collected using the ASI, Fagerstrom Test of Nicotine Dependence (FTND), and expired CO. Smoking behaviors (FTND and CO) were reevaluated at follow-up. Results indicated a high rate of smoking overall (89%) with rates remaining relatively unchanged at one year (Wilks $\lambda = .99$, $p = .47$). Patterns of smoking were characterized by moderate dependence, as measured by FTND, with participants smoking less than one pack per day ($M = 13.0$, $SD = 10.69$). The majority of participants (54%) reported smoking their first cigarette within five minutes of waking. Nearly all participants reported smoking cigarettes with high nicotine yield ratings ($>1.2\text{mg}$), with 8% preferring unfiltered cigarettes. Subtle gender differences were also noted, with women smoking fewer cigarettes per day at baseline ($p = .04$) and more likely to report difficulty refraining in smoking prohibited areas ($p = .04$). Differences in cigarette type were also found, with women more likely to smoke menthol cigarettes and men more likely to smoke unfiltered. No gender differences were found in FTND scores or CO expiration at baseline or follow-up. This study was funded by a NIDA center grant (P50-DA09253).

Smoking stage of change is associated with retention in a smoke-free residential drug treatment program for women

D.L. Haller, D.R. Miles and K.L. Cropsey
Virginia Commonwealth University, Richmond, VA

Prochaska and DiClemente's Transtheoretical Model predicts dropout from substance abuse treatment.

However, it is not known whether readiness to quit smoking is associated with attrition from drug treatment programs with smoking restrictions. This study examined the relationship between smoking characteristics, smoking stage of change and both length of stay and discharge type among 75 perinatal substance abusers attending a smoke-free residential treatment program. Smoking related URICA scores predicted LOS ($p = .0004$) and discharge type ($p = .01$). Women in Action and Maintenance remained in treatment longer and were more likely to complete treatment compared to those in Pre-Contemplation. Findings were not accounted for by nicotine dependence, addiction or psychiatric severity. Women with little interest in quitting smoking may have difficulty adhering to smoking restrictions during treatment for other drug problems, resulting in increased attrition. Alternatively, smoking stage of change may be a "proxy" for overall readiness to change in this population. Supported by the Center for Substance Abuse Treatment (HS4 T1000555) and the National Institute on Health; Building Research Careers in Womens' Health (DA 14041).

Prenatal opiate exposure differentially affects acoustic startle responding and thermal nociception in male and female rats

K.L. Hamilton, A.C. Harris, S.B. Sparber, J.C. Gewirtz, and L.M. Schrott
University of Minnesota, Minneapolis, MN

Opiate exposure and/or withdrawal may affect emotional reactivity and pain sensitivity. We examined the long-term sequelae of prenatal exposure to l-alpha-acetylmethadol (LAAM) on ASR and thermal nociception in adult rats. Female Sprague-Dawley rats were treated with water or LAAM (0.2 or 1.0 mg/kg/day) starting one month prior to and continuing throughout pregnancy via daily oral gavage. There was no evidence of toxicity due to LAAM treatment. Pups were cross-fostered at birth and then underwent opiate withdrawal. At 16-19 weeks of age, male and female rats ($n=6$ per group, non-littermates) were assessed for reactivity to an acoustic startle-eliciting stimulus for 3 days. There was a sex effect in ASR magnitude ($p < .01$), with males showing approximately 50% higher mean startle reactivity than females. There was also an interaction between sex and prenatal treatment ($p < .05$). Males from dams treated with 1.0 LAAM/kg showed enhanced ASR compared to the other male groups, while there was no effect of prenatal opiate exposure in female rats. Additionally, prenatal opiate exposure induced a sex difference in thermal nociception. In controls, there were no differences in the latency to remove the hind paw. However, in both LAAM-treated groups males were slower to respond than females (0.2 LAAM: $p < .005$; 1.0 LAAM: $p < .05$). These results suggest that prenatal opiate exposure differentially affects male and female rats in measures of anxiety-like behaviors and nociception under these conditions. Supported, in part, by USPHS grants K01 DA 00362 and T32 DA 07097.

Links between binge-drinking behavior and a restrained eating pattern in female social drinkers

S.C. Han, S.E. Beck, F.R. Levin, and S.M. Evans
Columbia University and NYS Psychiatric Institute, New York, NY

The present study investigated the associations between binge drinking episodes (4 or more drinks per occasion) and restrained eating (a score of 10 or greater on the Restraint Scale of the Three-Factor Eating Questionnaire) in female social drinkers. Previous research using self-reported patterns of alcohol consumption has shown a significant correlation between binge drinking and high dietary restraint. To date, out of 120 proposed participants, 30 women, ranging in age from 18 to 43 years, have been recruited: 18 restrained eaters (RE) and 12 unrestrained eaters (URE). In order to encompass one entire menstrual cycle, women were prospectively tracked for 45 days regarding menstrual cycle, mood, and patterns of alcohol use. Preliminary data show that RE tended to show a lower level of alcohol consumption than URE, based on percentage of drinking occasions (48% vs. 56%, respectively), total number of drinks (63 vs. 75, respectively), and total number of binge drinking episodes (7 vs. 9, respectively) over 45 days. Regardless of eating pattern, drinking tended to be higher during the luteal phase of the menstrual cycle than during menses or the follicular phase (9, 7.5 and 8 drinks, respectively). However, none of these differences were statistically significant; that may be due to the small sample size thus far. Ultimately, these data will contribute to our understanding of the role of dietary restraint and binge drinking across the menstrual cycle in female social drinkers. Supported by NIDA Grant DA-09114

Influence of voucher amount in the treatment of male and female cocaine-dependent outpatients

S.H. Heil, S.T. Higgins, G.J. Badger, R. Dantona, R. Donham, and S. Horn
University of Vermont, Burlington, VT

Our group has conducted a series of clinical trials demonstrating the efficacy of a 24-week outpatient treatment for cocaine dependence (i.e., CRA + Vouchers). CRA is an intensive behavior therapy emphasizing lifestyle changes delivered throughout the 24-week intervention, while the vouchers component is an incentive program wherein patients earn vouchers exchangeable for retail items contingent on cocaine-negative urinalysis results during the initial 12 weeks. The effect of varying the amount of contingent vouchers has received little research attention. We are now conducting a randomized clinical trial that varies the value of the voucher in cocaine-dependent males and females, all of whom also receive CRA therapy. Patients have the opportunity to earn approximately \$2000 and \$500 in the High (HI) and Low (LO) voucher conditions. Results are currently available for 77 subjects (46 male, 31 female). Percentages completing the initial 12 weeks of treatment when vouchers were available were 79% vs. 44% in the HI and LO conditions (chi square = 10.12, $p < .01$), and that was consistent across males (78% vs. 30%) and females (80% vs. 63%). The influence of voucher value on completing 24 weeks was not significant. There was a nonsignificant trend towards an interaction (chi square = 2.05, $p = .15$) with gender on this variable: 30% vs. 17% of males in the HI and LO conditions completed 24 weeks, while 27% and 44% of females in the HI and LO conditions did so. Regarding cocaine abstinence, 29% vs. 10% of patients in the HI and LO conditions achieved 12 or more weeks of continuous abstinence (chi square = 4.29, $p < .05$). The influence of HI vs. LO voucher value on continuous abstinence was in the same positive direction in males and females: 39% vs. 13% in males and 13% vs. 6% in females. Overall, these results demonstrate a positive influence of voucher value on retention and abstinence in males and females.

fMRI study of sex differences in impulse and emotion modulation in children of alcoholics

M.M. Heitzeg, R.A. Zucker, and J.K. Zubieta
University of Michigan, Ann Arbor, MI

Impulsivity and negative affect have been identified as powerful risk factors for later alcohol use disorders. Furthermore, there is evidence for a sex difference in risk trajectories such that females tend toward negative affectivity to alcoholism, and males tend toward impulsivity to alcoholism. A complex neuronal circuit involving subcortical and cortical substrates of the reward and motivation circuit is involved in both impulse and emotion regulation. In addition, there are neural alterations in these systems that arise during adolescence - a critical period in the etiology of alcohol use disorders - and differ between males and females. We compared the neurophysiological correlates of impulsivity and negative affect in male and female children at risk for developing an alcohol use disorder, based on family history (FH+), with that of low-risk children (FH-), using fMRI. The children studied were between the ages of 8 and 11 years. The go/no-go task was used to study impulsivity and a self-referring lexical task was used to study negative affect. We hypothesized that FH+ would be associated with a lower magnitude of activation in brain regions involved in impulse control and a higher magnitude of activation in brain regions involved in affect regulation. We further expected that these results would interact with sex, such that FH+ males would show the most dysregulation of neural circuits involved in impulse control and FH+ females would show the most dysregulation of neural circuits involved in the regulation of affect. To date, we have scanned six children: 4 FH- males, 1 FH+ female, and 1 FH+ male. Performance of the impulsivity task was associated with increased activation in the dorsolateral PFC and the dorsal anterior cingulate of the FH- males and the FH+ female, but not in the FH+ male. Performance of the affect task was associated with increased activation in the ventral anterior cingulate in the FH+ female but not the males in either group. Ultimately, these data will provide important information on the early neurobiological processes associated with the development of alcohol use disorders in adolescence and have relevance for early intervention and prevention. (support from NIAAA grants T32-AA07477 and R01 AA07065)

A mixed method analysis of methamphetamine use, pregnancy, and parenting

A.S. Hernandez, A.M. O'Brien and M.-L. Brecht

UCLA Integrated Substance Abuse Programs, Los Angeles, CA

Various sources indicate increasing trends in methamphetamine (MA) use with deleterious effects on users, fetuses, and related social costs. However, few data are available on pregnancy rates and fetal loss among MA users or on how pregnancy and parenting relate to MA use. In this analysis, we describe pregnancy incidence and fetal loss among a diverse sample of women with a history of MA use and compare pregnancy rates across ethnic groups and to national figures. The analysis sample consists of 153 females treated for MA use in Los Angeles County treatment facilities. Compared to the national average, MA users report significantly higher pregnancy rates, live births and pregnancies that terminated without live births. African-Americans and non-Hispanic White subgroups had significantly higher pregnancies and losses than comparable groups in the general population. Open-ended questions found that 44% of women mentioned pregnancy as at least one reason for changing drug use and all but 3 resumed or increased their use after at least one of their pregnancies. We then use a case study to illuminate the relationship between pregnancy, parenting, and MA use. Data for the case study were collected in an ethnographic interview in which the respondent reflected on the development of her drug use and accompanying experiences over the course of her drug use career. Analysis entailed a time-ordered matrix, in which the variables of pregnancy/parenting, MA use and their social contexts as well as the respondent's understanding of them are examined over time. The respondent reported that she had "no problem" stopping drug use during pregnancy. However, she resumed MA use after childbirth because she believed that MA use enabled her, as well as other women, "to do more of everything" such as "satisfy our husbands and their friends, as well as our own needs with our families. And it seems like the husbands don't give a damn". She stopped using MA when she became "paranoid" that her children would be injured and she wouldn't be in her "right mind" to handle it. The findings suggest that concurrent sexual and social relations impact the relationship of pregnancy, parenting and drug use. Perceiving MA use as directly hindering good parenting may encourage women to stop or reduce use. Because of high pregnancy rates among MA users and the subsequent social costs, pregnancy and parenting should be appropriately addressed in prevention and intervention strategies. (Supported by NIDA grant #R01-DA11020)

Voucher-based incentives for abstinence from cigarette smoking in pregnant and postpartum women

S.T. Higgins, S.H. Heil, L. Solomon, J. Plebani-Lussier, M.E. Lynch, L. McHale, L. Simpson and P. Glassman

University of Vermont, Burlington, VT

Maternal cigarette smoking is the leading preventable cause of poor pregnancy outcomes in the U.S. Our group is nearing completion of a preliminary study to examine the use of abstinence-contingent vouchers to increase cessation rates during and following pregnancy among women still smoking at their first prenatal care visit. In the present study, 58 women were assigned to a Contingent condition (N = 31) wherein voucher delivery was dependent on biochemically-verified smoking abstinence or a Noncontingent condition (N = 27) wherein voucher delivery was independent of smoking status; 41 women were assigned to study conditions as consecutive admissions and 17 were randomized. Participants were 22.7 + 4.9 yrs old, 96% Caucasian, completed 11.7 + 2.1 yrs of education, and smoked 23.0 + 11.1 cigs/day prior to learning of the pregnancy and 10.3 + 8.6 cigs/day at study admission. There were no significant differences in subject characteristics between treatment conditions. Vouchers were available during pregnancy (\$786 maximum) and for 3 months postpartum (\$360 maximum). Participants were followed through 6 months postpartum. One contingent and 4 noncontingent participants had adverse pregnancy outcomes and were excluded from the following results. Verified abstinence rates in the Contingent and Noncontingent conditions at end-of-pregnancy and 3-month postpartum were 11/30 (37%) vs. 2/23 (9%) (chi sq=5.5, p=.02) and 10/30 (33%) vs 0/21 (0%) (chi sq=8.7, p=.003). We do not yet have enough data for a statistical comparison, but among those who have reached the 6-month postpartum assessment in the Contingent and Noncontingent conditions, abstinence rates are 7/25 (28%) vs. 0/9 (0%). These results support the efficacy of contingent vouchers for promoting and sustaining smoking cessation during pregnancy and postpartum, and the 6-month postpartum results suggest sustained benefit for at least 3 months following discontinuation of the incentive intervention. These results should be interpreted cautiously pending replication in a fully randomized design.

Early cognitive, emotional and behavioral precursors to adolescent substance use in young girls

A. Hipwell, H. Raskin White, M. Stouthamer-Loeber, K. Keenan and R. Loeber
University of Pittsburgh, PA, and State University of New Jersey, Piscataway, NJ

Studies of adolescents indicate that substance use is related to conduct problems, impulsivity and depression. From a developmental perspective, these behavioral and emotional problems often precede the onset of substance use. In addition, research has demonstrated that cognitive factors (i.e., expectancies about the effects of substances on feelings and behavior) are good predictors of substance use behavior in adolescence. The current study is a prospective, longitudinal investigation of the precursors and correlates of female substance use in a population sample of girls aged between 5 and 8 years at baseline. The sample of 2,451 girls was recruited following a city-wide enumeration of more than 103,000 households in the city of Pittsburgh. Two annual waves of data collection with multiple informants (child, primary caregiver and teacher) have now been completed. In this analysis we examine the temporal relationships between young girls' expectancies of substance use and symptoms of conduct disorder, depression and impulsivity. In addition, logistic regression analyses are used to explore the predictive validity of expectancies, emotional and behavioral problems for early use of alcohol and tobacco. The implications of the findings for the prevention of later drug use are discussed.

The effect of behavioral couples therapy on the degree of indirect risk exposure to HIV among wives of substance-abusing men

C. Hoebbel & W. Fals-Stewart

Research Institute on Addictions, University at Buffalo, The State University of New York, Buffalo, NY

Several studies suggest that nonsubstance-abusing women who are married to or live with drug-abusing men are at elevated indirect risk for exposure to HIV via unprotected sexual intercourse with their male partners (who often participate in high risk sexual behaviors outside the primary relationship or engage in needle-sharing). Behavioral Couples Therapy (BCT) is an empirically supported treatment for married or cohabiting drug-abusing patients. BCT contains session material designed to reduce HIV risk behaviors by having partners negotiate a 'safety agreement' regarding risky drug use and sexual behaviors. However, the effect of BCT on the prevalence of such behaviors has not been examined. In the present study, we examined the effect of BCT on the degree of HIV risk exposure of women married to or living with drug-abusing men (N = 40) compared to drug-abusing men who were randomly assigned to participate in traditional individually-based substance-abuse counseling (N = 40). Compared to male partners who were assigned to traditional individual substance abuse counseling, men assigned to participate in BCT with their nonsubstance-abusing female partners reported a lower prevalence of HIV risk behaviors (e.g., lower prevalence of extramarital relationships, needle sharing) during the 1-year posttreatment follow-up period. Consequently, women who participated in BCT with their male partners had significantly lower indirect risk for exposure to HIV than women whose male partners received individual counseling only.

Quality-of-life improves after opioid maintenance initiation

R. Jagsch, H. Eder, R. Ortner, A. Pfeiffer, U. DeCordova, A. Primorac, and G. Fischer

Institute of Clinical and Health Psychology, University of Vienna, Austria University of Psychiatry, Vienna, Austria

Long-term maintenance treatment with methadone and buprenorphine has been established in the majority of European countries as well as in the USA, oral slow-release (SR) morphine can be applied in some European countries. In the current study, 150 subjects meeting DSM-IV criteria for opioid addiction were compared in a quality-of-life investigation. Scores prior to maintenance treatment were compared with scores after being stabilized on methadone, SR-morphine and buprenorphine, respectively (mean time between testings = 19.6 weeks, SD = 7.2). As instrument for assessing quality-of-life the "Berliner Lebensqualitaetsprofil" (BeLP) was applied, which refers to the German translation of the "Lancashire Quality of Life Profile" by Oliver (1991). Sixty-one patients were maintained on methadone (22 pregnant women), 74 on slow-release morphine (45 pregnant) and a group of 15 on buprenorphine (8 pregnant). The mean age of patients was 27 years (SD = 5.9) with the sample of pregnant being significantly younger

($p < .01$), the group of the non-pregnant patients consisted of 12% females. Using a general linear model for repeated measures a main effect of treatment could be found for quality-of-life on a general level (significant increases of quality-of-life, $p < .001$), together with a main effect for individual maintenance groups ($p = .001$, buprenorphine being better than methadone with SR-morphine in between). The results also showed a significant main effect in regard to reproductive status ($p < .001$, pregnant subjects have higher scores than non-pregnant), while no interactions between maintenance group, reproductive status and time could be found. A significant increase in quality-of-life in all subsamples underlines the intended positive effect of stabilizing patients addicted to opioids through maintenance treatment independent of individual baseline motivation of patients.

Developmental trajectories of marijuana problems over a 20-year period: Differences in birth cohort, gender and risk factors

V.L. Johnson and R.J. Pandina

Rutgers University Center of Alcohol Studies, Piscataway, NJ

This study used growth modeling to develop trajectories of marijuana problems among marijuana users over a 20 year span. Data were obtained from a sample of community-based subjects participating in a longitudinal study. Subjects were originally tested in 1979-81 when they were 12, 15 or 18 years old, representing subjects born from 1961 to 1969. These subjects were tested again 3, 6, 13 and 20 years later. At all five test times, behavioral, psychosocial, medical and drug use measures were gathered. Results of analyses found that more than 70% of the sample had tried marijuana at some point in time. Seven robust groupings were found among users: 1) minimal number of problems at ages 15 and 18 (11%), 2) minimal number of problems from ages 15-31 (18%), 3) minimal number of problems from ages 18- 21 (29%), 4) appreciable number of problems from ages 15-25 (15%), 5) appreciable number of problems from age 15-31 (10%), 6) high level of problems from age 18- 28 (8%) and 7) chronically high number of problems from adolescence into adulthood (8%). Male subjects born in years 1961-66 were significantly more likely to be found in either group 6 or group 7 than were males or females born in 1967-69. Male and female subjects born in 1967-69 were more likely to be in group 2 (minimal problems). The level of marijuana problems at each point in time was clearly associated with levels of quantity and frequency of alcohol use. In addition, measures of arousal needs (including sensation seeking, experience seeking and disinhibition) tended to be higher among males in the older two birth cohorts (especially at T1- 1979/81) and measures of negative affect (including depression, stress and negative coping) tended to be higher among females in the two oldest birth cohorts (especially at T1). We conclude that there are important historical, birth cohort, gender and risk factor effects associated with life course trajectories of marijuana problem use. Funded by Peter F. McManus Charitable Trust, NIAAA 11699 & NIDA 03395.

Gender differences in predictors of motivation

E.C. Katz, R.P. Schwartz, E. Weintraub, and B.S. Brown

Friends Research Institute, Inc., and University of Maryland Medical School, Baltimore, MD

The current study examined gender differences in treatment objectives, motivation for treatment, and correlates of motivation. Study participants (N=415, 56% Male) were applicants to a drug-free, outpatient substance abuse treatment program who consented to involve themselves in an early retention research project. They completed the Texas Christian University (TCU) Motivation Scales (i.e., Problem Recognition [PR], Desire for Help [DH], and Treatment Readiness [TR]), and the Addiction Severity Index (ASI) as part of the intake assessment. On the TCU Motivation Scales, females expressed significantly greater DH (M=43.6, SD=6.0), $t(394)=2.4$, $p=.02$, and TR (M=48.4, SD=6.5), than males (DH: M=42.0, SD=7.1; TR: M= 46.9, SD=6.8). On the ASI, males reported being more troubled by and needing treatment for alcohol and legal problems, whereas females reported being more troubled by and needing treatment for family/social and psychological problems. More serious drug (e.g., days of heroin use), legal (e.g., number of arrests), and employment (e.g., expressed need for employment counseling) problems were associated with greater PR and DH among males. Greater social and psychological problems were associated with lower TR among males. There was a less clear pattern of predictors of motivation for females. Among females, current cocaine use was associated with greater PR and a greater number of prior treatment episodes for drug abuse were associated with greater PR and DH. More prior arrests that resulted in

convictions, more serious social problems, and more serious psychological problems were all associated with greater PR among females. Future research should examine gender-based counseling approaches that focus on addressing abstinence goals and legal problems for males and social and psychological problems for females. This study was supported by NIDA grant #RO1 DA 11402-01 to B. S. Brown and E. C. Katz.

Attitudinal differences between women and men entering methadone treatment

D.J. Kayman, M. Goldstein, S. Deren

National Development and Research Institutes and Center for Drug Use and HIV Research, New York, NY

While fewer women attend methadone programs (MMT) than men, female enrollment has increased over the past 25 years. Identification of characteristics of women entering MMT might suggest how to better meet their needs. This study reports on differences between women and men at treatment entry.

Hypotheses: As compared with men, women will (1) show greater readiness for treatment, and (2) have more positive opinions about methadone. Methods: Subjects were recruited and interviewed in 1997-1998 at the central intake facility of a large MMT system in New York City. Measures: Measures included sociodemographics, treatment history, drug and sexual risk behaviors, and motivation for treatment.

Motivation scales included the Motivation Scale for Substance Abuse Treatment (CMRS, by De Leon et al., 1994) and Opinions About Methadone Scale (Brown, 1975). Results: Sample characteristics (N=338): 25% female; mean age, 39; 51% Hispanic, 32% African American, 16% white or other; 54% HS graduation or more; 63% used cocaine; 62% had previous MMT. On Opinions About Methadone, mean score was significantly higher ($p=.03$, t-test) among women. On the Motivation Scale, mean score was significantly higher among women ($p=.05$, t-test). Conclusions: Results support hypotheses that women enter MMT with a more positive outlook than men, about MMT and their own readiness. To retain women in treatment, MMT must live up to these expectations by addressing issues such as the impact of treatment on the family and the safety of methadone during pregnancy. Women may also benefit from interventions designed to strengthen their readiness. Supported by NIDA RO1 DA10312.

The Violence Exposure Questionnaire: Test-retest reliability for a new measure of victimization in pregnant drug-dependent women

L. Keyser-Marcus, M. Velez and D. Svikis

Virginia Commonwealth University, Richmond, VA, and The Johns Hopkins University School of Medicine, Baltimore, MD

Recent studies found that up to 20% of pregnant report being victims of abuse during the prenatal period (Cokkinides et al., 1999). In drug dependent women, prevalence rates for comorbid abuse and victimization are much higher, and recent studies suggest episodes of abuse continue during pregnancy (Velez et al., 2002). Since such women are already at risk for a variety of medical, psychosocial and psychiatric problems, episodes of physical or emotional abuse during the prenatal period are of particular concern. While several tools have been developed to screen for violence and victimization, the majority have not been tested in pregnant or drug dependent women. To address the unique needs of chronic, drug dependent pregnant women, study investigators developed the VEQ questionnaire; a brief self-report tool that screens for the presence of both recent (during pregnancy) and lifetime victimization and abuse. The present study examined test-retest reliability of the VEQ in a convenience sample of 65 pregnant cocaine and/or opiate dependent women admitted to a comprehensive treatment program for perinatal addiction. In all cases the VEQ was administered following an educational group where abuse and victimization were defined. Study participants were primarily African-American (68%), with a mean age of 29 years. Initial analyses focused on six items: emotional, physical and sexual abuse during pregnancy and in lifetime. Concordance for lifetime abuse ranged from 79% for physical abuse to 81% for sexual abuse to 84% for emotional abuse. For abuse during pregnancy, concordance rates varied from 67% for emotional abuse to 68% for physical abuse to 95% for sexual abuse. These data suggest moderate to high rates of reliability, particularly for both current as well as lifetime episodes of sexual abuse. This research was supported by NIDA R01 DA11476 & H64MC0017-02.

Sex-related differences in smoked marijuana effects as a function of nicotine patch pretreatment

E.M. Kouri, M.M. Gross, E.M. McCarthy, and S.E. Lukas

Behavioral Psychopharmacology Research Laboratory, McLean Hospital/ Harvard Medical School, Belmont, MA

Sex-related differences in nicotine sensitivity and in nicotine's subjective and reinforcing effects have been reported. We recently showed that nicotine pretreatment alters some of the acute effects of smoked marijuana. The present study expands on those findings by investigating whether nicotine's modulation of marijuana's effects varies between men and women. Following a 4-hour nicotine patch pretreatment (placebo and 21 mg) subjects were challenged with a marijuana cigarette (1.94% and 3.59% 9THC) and monitored for an additional 3 hours. Preliminary findings from 10 men and 8 women indicate a sex by nicotine dose interaction on reports of stimulation, happiness and feeling good. Men scored higher on these items following both doses of marijuana compared to women but only during the active nicotine conditions. Women scored higher than men on desire to smoke a tobacco cigarette following marijuana administration but only during the active nicotine conditions. There were no sex-related differences in post-marijuana ARCI scores. Analysis of heart rate responses revealed that women experienced significantly higher nicotine-induced increases in heart rate than men. However, marijuana-induced increases in heart rate were similar between men and women. These preliminary findings suggest that some of marijuana's subjective effects are enhanced by nicotine pretreatment in men but not women and provide further evidence of sex differences in nicotine's effects. Additional research is necessary to determine the significance of these differences and to elucidate the mechanisms underlying them. Supported by NIDA grants DA12014 and DA00343.

Effects of estrogen and progesterone on hyperalgesia responses in ovariectomized rats

T. Kuba, L.M. Kemen, M. Kraish, C.E. Inturrisi, S. Jenab1 and V. Quinones-Jenab

Hunter College, City University of New York, and Weill Medical College of Cornell University, New York, NY

The regulation of pain perception is a complex process that depends on a wide range of physiological, neurochemical and hormonal interactions. Differences exist between males and females in responses to acute and chronic pain. Numerous studies have reported that certain pain conditions such as migraine, temporomandibular disorders, neuropathic pain, and some forms of arthritis and fibromyalgia are significantly more prevalent in females than males. The complex endocrinological profile of females is likely to have an impact on their nociceptive responses. Little is known of the role of ovarian hormones on the control of inflammatory pain. The aim of this study is to determine if estrogen and progesterone modulate inflammatory pain measured by the formalin test, a tonic pain model. Ovariectomized rats received subcutaneous injections of estrogen (1, 2 or 20 μ g), progesterone (10, 50, 100 or 500 μ g) or vehicle (sesame oil). Using a computerized formalin model, the number of paw flinches was measured 48 hr after estrogen or 4 hr after progesterone treatment. Preliminary results show that estrogen decreases the formalin response in phase II (tonic pain) but not phase I (acute pain), in a dose dependent manner. These data suggest that ovarian hormones modulate hyperalgesic responses. This work was supported by PS-CUNY, RR-03037, NIDA DA 12136, SCORE 506-GM60654, 1454-NS41073, and SNRP NF 39534.

Cannabis abuse and suicidality in a longitudinal study: A gender comparison

W.H. Kuo

Medical and Health Research Association of New York City, New York, NY

BACKGROUND: Many studies have shown the association between cannabis use and suicidal behaviors; however, few of them were investigated longitudinally. Thus, little is known about the temporal effects of cannabis use on the development of suicidal behaviors. In this study, we hypothesize that cannabis abuse is associated with later development of suicide behaviors, including both suicide attempts and ideation. **METHODS:** Using data from Wave 1, Wave 2, and Wave 3 (W1, W2, W3) of the Baltimore Epidemiologic Catchment Area (ECA) Program, this study examined the association of DSM-III defined cannabis abuse at baseline (W1) and the later incidence of suicide ideation and attempts. The sample included 1920 participants older than 18 years of age. Subjects who reported history of suicide ideation and

attempts at baseline were excluded so all the cases who reported suicide behaviors between W1 and W3 (1981-1996) were newly incident cases. Multiple logistic regression analysis was utilized to determine the longitudinal association between suicidal behaviors and cannabis abuse, adjusting for age, sex, socioeconomic status, racial background, and marital status. Baseline history of other mental disorders were also identified and adjusted in the multivariate analyses. RESULTS: There were 89 incident cases of suicide ideation and 34 new cases of attempts. Cannabis abusers were 3 times more likely to develop suicide ideation than non-abusers (adjusted odds ratio=3.00, CI=1.46-6.18). Adjusting for the baseline diagnoses of depressive episode and alcohol abuse, cannabis abuse remained a significant risk factor for incident suicide ideation (adjusted odds ratio=2.72, CI=1.52-6.50). After dividing the sample by gender, we found that the association of cannabis abuse and incident suicide ideation was only significant among women (adjusted odds ratio=3.91, CI=1.84-8.28) but not among men (adjusted odds ratio=1.82, CI=0.71-4.66). For the sample as a whole, we did not find any association between cannabis abuse and incidence of suicide attempts (adjusted odds ratio=1.73, CI=0.72-4.14, $p < 0.22$). CONCLUSION: Cannabis abuse is an independent risk factor for developing suicide ideation, especially among women. Cannabis abuse only precedes later suicide ideation but not attempts, suggesting that the adverse effects of cannabis might contribute more to thoughts of suicide than the actual behaviors.

From research laboratory to clinical practice: Do modest incentives improve engagement in drug abuse treatment?

D. Langhorst, D. Svikis, K. Schaefer and R. Mejia
Virginia Commonwealth University, Richmond, VA

Contingency management (CM) is an effective strategy for achieving and maintaining abstinence among drug dependent individuals (Higgins and Bickel, 2000). Despite strong empirical support, efforts to integrate CM into ongoing ("real life") clinical practice have met with resistance and, at times, even active opposition. Barriers to effective translation of CM from research to treatment can be practical (limited staff time and resources), philosophical (reinforcement of treatment attendance may undermine recovery and intrinsic patient motivation) and/or sociopolitical (Are we paying addicts not to use drugs?). The present study examined effectiveness of behavioral incentives (BI) for promoting patient engagement in outpatient drug abuse treatment. Patients (N=183) who provided informed consent were randomly assigned to either a behavioral incentive (BI) or standard care control (SC) group. BI participants could earn \$30 for attending their first two counseling visits (\$15/session). The analysis used a 2 X 2 design with gender and group assignment (BI and SC) as independent variables and session attendance as the dependent measure. GLM analysis found better program attendance for the incentive group, but only at the first counseling session. Interestingly, subsequent chi-square analyses identified a gender difference, with the incentive effect occurring predominantly in women. The primary objective of this study was to initiate collaborative interactions between research and drug treatment staff. The project was of short duration so that clinical staff could receive immediate feedback as to study outcomes. Only modest incentives were used, and the clinical staff was asked to participate in research activities (e.g., dispensing Target gift cards to eligible study participants). We hope that this initial study established a bi-directional bridge between research and clinical practice, thereby creating the infrastructure and foundation upon which future research studies can be initiated. This research was supported by NIDA RO1 DA11476.

Analyzing the acquisition of drug self-administration using growth-curve models

S.T. Lanza, E.C. Donny, L.M. Collins and R.L. Balster
FPG Child Development Institute, Chapel Hill, NC, Johns Hopkins School of Medicine, Baltimore, MD, and The Methodology Center, University Park, PA

Preclinical research on addiction has focused predominantly on the maintenance of drug self-administration; less attention has been given to acquisition. Furthermore, studies of acquisition have been limited by quantitative analyses with little power to detect individual differences in the pattern of acquisition or to efficiently and accurately describe changes in behavior. Here, we employed a novel approach, growth curve modeling, to describe the change in infusion rates during acquisition. This approach explicitly models individual trajectories of behavior, estimates variability among subjects, assesses the impact of the individual-level characteristics, and explores the relationship between time-

varying covariates and a growth process. In the present study, we utilized hierarchical linear modeling with data from 106 male and female Sprague-Dawley rats that were allowed to acquire i.v. nicotine self-administration at one of four doses of nicotine (20-90 mcg/kg/inf). Acquisition trajectories could be described with a quadratic equation represented by an intercept, slope, and acceleration parameter. Increases in the fixed ratio requirement during acquisition resulted in a drop in infusion rates. Lower doses of nicotine were related to a higher intercept and a greater decrease in infusions as the response cost of nicotine was increased. Sex was related to acquisition of the lowest nicotine dose; infusions rates for females had a greater positive slope early in acquisition, greater schedule-induced drops, and more deceleration as acquisition progressed. This paper demonstrates how growth curve modelling can be used to study change in drug self-administration. This approach yields an appealing summary of the growth trajectories that illustrate the acquisition process and provide a rich framework for testing hypotheses about the effects of individual-level characteristics and time-varying covariates on acquisition. Supported by the Robert Wood Johnson Foundation Research Network on the Etiology of Tobacco Dependence and NIDA grants DA10075 and DA-01442.

Sex differences in Sprague Dawley rats in response to morphine and other opioids: Mu receptor binding and G-protein activation

E.M. Lapoczka, M. Falgout, T.J. Cicero and J.R. Traynor

University of Michigan, Ann Arbor, MI, and Washington University, St. Louis, MO

Male and female rats differ in their sensitivity to morphine in the warm water tail withdrawal assay for antinociceptive activity. The aim of this study is to examine whether males are more sensitive to morphine over a range of behavioral assays; and to test the hypothesis that differences between male and female rats in response to opioid drugs are due to differences in opioid signaling pathways, particularly mu opioid receptor binding and G protein activation. Using age matched male and female Sprague Dawley rats, studies in homogenates of whole brain showed no difference in the maximum binding of the mu-opioid ligand [3H]DAMGO between males ($B_{max} = 220 \pm 24$ fmol bound/mg protein) and females ($B_{max} = 215 \pm 21$ fmol bound/mg protein). However, there was a significant difference in binding affinity of [3H]DAMGO between males ($K_d = 0.6 \pm 0.02$ nM) and females ($K_d = 0.8 \pm 0.02$ nM), but no differences in the affinities of morphine (male $K_i = 0.71$ (0.56-0.94) nM; female $K_i = 0.96$ (0.76-1.21) nM) or fentanyl (male $K_i = 0.69$ (0.51-0.95) nM; female $K_i = 1.08$ (0.80-1.46) nM). The potency of morphine to stimulate [35S]GTP γ S binding in whole brain homogenates was not significantly different between males ($EC_{50} = 85$ (31-225) nM) and females ($EC_{50} = 145$ (48-438) nM), nor was the relative efficacy of morphine compared to DAMGO different between males and females. Thus, differences in opioid receptor binding or G protein coupling in whole brain do not appear to account for observed sex differences in response to mu opioids. Data will also be presented on discrete brain nuclei, since region-specific differences may be masked in studies of whole brain. Understanding the mechanism behind differences between male and female responses could lead to improved clinical treatments and improved understanding of drug-seeking behavior. Supported by DA07267 to the University of Michigan Substance Abuse Research Center (EML, JRT), DA00254 (JRT) and DA03839 (TJC).

Gender differences in nicotine replacement therapy use among alcohol-dependent patients in treatment

J.J. Larence, R.A. Martin, D.J. Rohsenow, P.M. Monti, and S.M. Colby

Brown University and Providence Veterans Affairs Medical Center, Providence, RI

People with alcohol dependence smoke more cigarettes and have greater difficulty stopping than do smokers without alcohol dependence. Women have more difficulty quitting smoking than men, particularly women with elevated depression. Women may obtain less benefit from NRT than men because NRT does not affect stress, anxiety, and depression which are risks for smoking relapse particularly for women. We examined whether gender and depressive symptoms were related to use of nicotine replacement therapy (NRT) among 180 alcohol dependent patients in residential alcohol treatment following brief intervention for smoking cessation (59% male). Study participants were offered eight weeks of NRT patch upon quitting smoking. Depressive symptoms were measured by the Center for Epidemiologic Studies Depression Scale. Sixty-three percent of men and 56% of women began NRT in the three months following brief intervention

for smoking cessation ($p=ns$). To examine whether depressive symptoms and gender were related to how long NRT was used, hierarchical multiple regression analyses were employed using a mediational model (with depressive symptoms as the mediator) according to Baron and Kenny (1986). Men ($M = 28.1$) and women ($M = 17.7$) differed in mean number of days using NRT, ($p < .05$). However, depressive symptoms were not a significant mediator of this relationship. In this alcohol dependent sample treatment, a similar proportion of men and women began NRT, but women discontinued it more quickly. However, depressive state does not seem to mediate the gender differences, suggesting that the gender differences are due to factors other than depression.

Gender differences across measures of physiology in those with alcohol dependence or PTSD during a cold pressor task

S.D. LaRowe, A.L. McRae, K.T. Brady, and M.A. Timmerman

Center for Drug and Alcohol Programs and Charleston Alcohol Research Center, MUSC, Charleston, SC

In the present study, preliminary findings concerning gender differences in measures of physiological reactivity in response to a cold pressor task were collected from 50 participants (29 female) with 1) ETOH dependence, 2) ETOH dependence and comorbid PTSD, 3) PTSD only, and 4) a control group. Measures of heart rate (HR), galvanic skin response (GSR), and levels of ACTH were taken prior to the task, immediately following, and after 30 minutes. Initially, differences were predicted on the basis of group membership: PTSD/ETOH individuals were expected to show the smallest increase in ACTH levels, and PTSD and alcohol dependent individuals were expected to show the highest increase on measures of skin conductance and heart rate. Prior to assessing for group differences, a preliminary 2×3 (Gender \times Time of Assessment) mixed model ANOVA was performed to assess for gender differences. Numerous gender differences were evident, particularly with respect to baseline measures. Males showed higher baseline measures of ACTH; females had higher baseline HR. A main effect for assessment time was noted for ACTH, suggesting that ACTH increased in response to the cold pressor test. Once group membership was added into the analysis, the Gender by Group interaction was significant for heart rate data; while females generally tended to show higher HR levels than males, the reverse was noted in the ETOH group, where females showed lower HR levels relative to males. Differences in GSR, HR, and ACTH levels in response to the cold pressor test were not detected across diagnostic groups or gender. These results emphasize the need to include gender as a factor in study of stress reactivity in those with ETOH dependence and PTSD. The results also highlight the importance of accounting for baseline physiological levels when measuring physiological reactivity to stressors.

The antinociceptive responses of opioid-dependent and opioid-naïve individuals to experimentally induced pain

S.F. La Vincente, J.M. White, F. Bochner, A.A. Somogyi, W. Ling

University of Adelaide, Australia, and UCLA Integrated Substance Abuse Programs, Los Angeles, CA

Evidence is accumulating that individuals who are chronically exposed to opioids are more sensitive to pain than opioid-naïve controls. We have completed a normative study ($n=100$) of a commonly used pain induction technique, the cold pressor (CP) test. Normal values for the CP (mean, \pm SE) (threshold: $9.6 (\pm 0.41)$ secs; tolerance: $52.6 (\pm 4.41)$ secs) were established. A range of demographic, physiological and cognitive factors previously shown to impact upon pain tolerance were also investigated for their relative contribution to performance on the pain test. These factors included gender, age, ethnicity, alcohol and caffeine intake, cigarette smoking, fear of pain, anxiety, and, for females, phase of menstrual cycle. Of the range of factors assessed, only gender and fear of pain contributed significantly ($p < 0.05$) to variance in CP tolerance, together contributing 27.8%. This contribution is small compared to the impact of opioid exposure on sensitivity to pain. We have previously shown that methadone maintenance patients (MMPs) are hyperalgesic to cold pressor (CP) pain. In that study, patients achieved a mean pain threshold of $5.06 (\pm 0.50)$ seconds and a mean pain tolerance of $14.81 (\pm 0.93)$ seconds at trough methadone concentration. Subsequent studies have shown similar results for heroin and buprenorphine maintained subjects. We compared the results of the normative study with the pain response of these MMPs, and with the pain response of other opioid-dependent populations. These findings further demonstrate that chronic opioid use

has a profound effect on pain sensitivity, and highlights the need for improved assessment and management of pain in opioid dependent populations. (Supported by NIDA grant R01DA 13706-01).

Does gender moderate the efficacy of desipramine in depressed cocaine-dependent outpatients?

D.C. Levin, J.L. Rothenberg, D. McDowell, and E.V. Nunes

Columbia University, College of Physicians and Surgeons, and New York State Psychiatric Institute, New York, NY

While substance use disorders are more prevalent among men, substance use is recognized as a growing problem for women. Women with substance use disorders are also likely to have a high incidence of comorbid psychiatric disorders such as depression. Few studies have examined gender differences in treatment outcomes for substance use disorders, among those that do, most have not yielded significant findings. This analysis examined whether the effect of an antidepressant medication, desipramine, in depressed cocaine dependent individuals enrolled in a placebo controlled trial differed between men and women. Participants were exposed to desipramine, 300 mg daily or the maximum tolerated dose, or a matching placebo and received weekly individual manual-guided relapse prevention therapy. It was hypothesized that women would have a stronger medication treatment effect than men. Outcomes were clinician global ratings of depression response, and a global rating of cocaine response requiring either abstinence or at least a 75% reduction in cocaine use by end of study. Among men, the rate of mood response was 31% (13/42) on placebo and 49% (20/41) on desipramine (Chi-square = 2.75, $p < .10$). Among women, the rate of mood response was 36% (5/14) on placebo and 57% (8/14) on desipramine (Chi-square = 1.29, $p = .26$). Among men, the rate of cocaine response was 31% (13/42) on placebo and 44% (18/41) on desipramine (Chi-square = 1.49, $p = .24$). Among women, the rate of cocaine response was 57% (8/14) on placebo and 50% (7/14) on desipramine (Chi-square = .15, $p = .7$). Differences in treatment effect between men and women were not significant. These data do not suggest that gender moderates the efficacy of desipramine in depressed cocaine abusers. However, the small sample size, particularly the small number of women, limits power to detect such an interaction. Treatment studies including larger samples of women are needed. Supported by NIDA Grants P50DA09236 and K02 DA00288

A comparison of the Addiction Severity Index and the Life History Calendar in assessing addiction and related factors among women: A methodological issue

C.A. Lewandowski and T.J. Hill

Wichita State University, Wichita, KS

Hypothesis: Responses on Retrospective Life History Calendar (RLHC) and Addiction Severity Index (ASI) will differ in pilot test of LHC instrument with women in residential drug treatment. Procedures: RLHC was developed, based on established LHC procedures, ASI items, and research literature identifying events that are significantly associated with substance abuse in adult women. Ten women who were recently admitted to residential treatment in a Midwestern state were interviewed, using the RLHC and following interview guidelines identified by Nurco (1985) to improve accuracy of self reports. Analysis. RLHC responses were compared to ASI responses, looking at the percent agreement between the two instruments. Following are the number of corresponding items by area: medical (6), education (10), drugs (36), legal (6), family (4), and psychiatric (2). Results. Women's responses were most likely to differ in the legal and substance abuse area, with RLHC responses likely to be more accurate than ASI responses. The RLHC is able to clarify legal troubles more often found among women, such as child protective services (CPS) involvement, and to describe frequency, nature, and duration of sexual and physical abuse. The RLHC also was more likely to identify more substances and longer durations of use than the ASI. Though both are self reports, the RLHC responses are likely to be more accurate, due to the contextual method of inquiry, a demonstrated advantage of the LHC methodology. Implications. While the ASI continues to be a useful instrument for assessing severity, other methods, such as the RLHC can augment the ASI to increase the accuracy of factors that are associated with women's recovery. The RLHC's potential in increasing the reporting of number of drugs and duration of use may also have implications for treatment and research.

Alcohol abuse, intimate partner violence, and restriction: Reports from inner-city battered women

C.S. Lewis, M. Chu, S. Griffing, R.E. Sage, T. Jospitre, L. Madry, B.J. Primm
Urban Resource Institute, Brooklyn, NY

Prior research supports a disproportionate incidence of domestic violence amongst substance abusers. This study investigates alcohol abuse defined as batterer's intoxication on at least a weekly basis and reports of physical violence and partner restriction amongst female survivors seeking emergency shelter at two inner-city domestic violence facilities. A total of 70 predominantly minority women completed structured, self-report interviews on an array of psychosocial, demographic, and clinical measures including partner's substance abuse history upon entry. A substantial portion of batterers (42.9%) were reported to be heavily intoxicated on at least a weekly basis. Based on disinhibition theory, we predicted that alcohol abuse would significantly intensify domestic abuse. Surprisingly; independent samples t-tests revealed that mean levels of violence and restriction were indistinguishable for survivors with batterers who abused alcohol and survivors with batterers who did not. The results point to the need to look beyond stereotypic assumptions and cast a wider net for explanations of domestic violence, especially for population subgroups. Negative social modeling and the role of social forces are discussed as rival hypotheses to disinhibition theories of substance abuse and family violence amongst minority women who seek emergency shelter.

The effect of gender on the discriminative stimulus and subject-rated effects of d-amphetamine in humans

J.A. Lile, W.W. Stoops, and C.R. Rush
University of Kentucky College of Medicine, Lexington, KY

Variation in the interoceptive effects produced by cocaine in women and men may underlie differences in the initiation of cocaine use, the transition to addiction and relapse. 5 female and 5 male healthy human volunteers were trained to discriminate 15 mg oral d-amphetamine. In addition, various subject-rated drug effect questionnaires were administered throughout experimental sessions. Once a discrimination criterion was met (i.e., \geq 80% correct responding on 4 consecutive days), a range of doses of d-amphetamine (2.5-15 mg) was substituted. In females, all but the lowest dose of d-amphetamine engendered greater than 75% drug-appropriate responding. In contrast, only the training dose of d-amphetamine resulted in drug appropriate responding above 75% in males. Administration of d-amphetamine produced significant increases in subject-rated effects typical of psychomotor stimulants (e.g., increased ratings of Active, Drug Liking, Good Effects, Stimulated, and Take Again) and elevated heart rate and blood pressure. Although there were no significant effects of gender on subject-rated measures, female subjects tended to have higher scores on measures of Drug Liking, Good Effect, Take Again and Any Effect, whereas males scored higher on subjective ratings of High and the ARCI A and MBG scales. Additional subjects will be tested under these conditions to further explore these trends. The findings from this study suggest that males and females differ in their sensitivity to the interoceptive cues produced by d-amphetamine. Supported by NIDA grant DA 10325.

Sex differences in temporal summation

L.M. Lomas, E.S. Smith and M.J. Picker
University of North Carolina at Chapel Hill, Chapel Hill, NC

A number of recent studies suggest that human and rodent females are more sensitive than their male counterparts to thermal nociceptive stimuli. Human females also show an enhanced sensitivity to repeated presentation of thermal stimuli, which suggests sex differences in the processing of nociceptive stimuli. This phenomenon, frequently referred to as temporal summation (TS) or wind up, has not been reported using behavioral assays in rodents. In the present study, sex differences were examined using a model of TS in which the tail of male and female rats was placed repeatedly in warm water and the latency to remove the tail recorded. All testing was conducted using 49, 50, 51 and 52°C water. Prior to the repeated presentation of the thermal stimulus, baseline tail-withdrawal latencies were recorded and in both males and females; latencies decreased with increases in water temperature. Presenting the thermal stimulus 4, 8 and 12 times produced TS, as evidenced by at least a 50% decrease in tail-withdrawal latencies. This effect was apparent at each of the water temperatures tested, but was smallest at the 49°C water. TS was most

apparent 3 seconds following the final presentation of the thermal stimulus, then diminished considerably by 15 seconds, and by 30 seconds tail-withdrawal latencies returned to baseline levels. TS was also evidenced in males and females when the duration of thermal stimulus presentation was both 1 and 3 seconds and when the time between thermal stimulus presentations was both 3 and 6 seconds. When collapsed across conditions, the magnitude of the TS was generally larger in males than females. This rodent model of TS may provide insight into the mechanisms underlying sex differences in nociception. (Supported by grants DA10277 and Training Grant DA07244).

Sex differences during withdrawal from ‘binge’ cocaine self-administration in rats

W.J. Lynch and J.R. Taylor

Yale University School of Medicine, New Haven, CT

Cocaine withdrawal is associated with prolonged periods of dysphoria, depression/anhedonia, and high rates of relapse. There is some evidence to suggest that sex may be an important factor in mediating behavior during cocaine withdrawal. For example, more women than men attribute relapse to cocaine use to depression, and results from both humans and animals suggest that females are more vulnerable to the pathophysiological effects of cocaine. The purpose of the present experiment was to investigate sex differences in the duration and severity of withdrawal behaviors following ‘binge’ cocaine self-administration. Female and male Sprague Dawley rats were given 24-hr access to cocaine (1.5 mg/kg/inj) under a 4 discrete trial/hr schedule for 7 consecutive days. Subsequently rats were compared at various cocaine withdrawal periods (i.e. 12, 24, 36, and 48 hours) on behavioral signs of withdrawal using a standard checklist (i.e. ptosis, writhes, gasps, teeth chatter). In order to investigate sex differences in behavioral signs of anhedonia, rats were tested on responding for sucrose under a progressive ratio schedule prior to and 48 hours following cocaine self-administration. Preliminary results revealed that compared to males, females show prolonged behavioral signs of withdrawal. Relative to baseline, responding for sucrose was decreased during cocaine withdrawal, reflecting an anhedonic state, and this decrease was significantly greater in females compared to males. These results demonstrate sex differences in the duration of withdrawal behaviors and the severity of anhedonia. These data suggest that females may be susceptible to cocaine-induced depression/anhedonia than males. Supported by Yale IWHR Scholar Program on Women and Drug Abuse (BIRWCH) DA114038 (WJL) and DA11717 (JRT).

School- and home-based treatment for adjudicated youth and their families

N. Mai, D.W. Watson, and L. Bisesi

Friends Research Institute, Inc. and UCLA Integrated Substance Abuse Programs, Los Angeles, CA

This review focuses on current research problems involving populations of substance abuse-involved youth in the criminal justice system and their families. Although these youth and their families need substance abuse services, there is a lack of systematic evaluation and controlled treatment interventions. This review describes methods to obtain basic research information on substance abuse histories while delivering an intervention that is sensitive to culture and gender differences; a description of how valid outcome measures can be obtained in the context of a controlled intervention is illustrated by presentation of the author’s recently approved HHS/CSAT-funded project entitled LIFE (Life Interventions for Family Effectiveness). The program targets a population of 80 Hispanic and African American youth and their families; the population served is at-risk teenagers who are wards of the juvenile court for an array of offenses. The adolescents attend a day treatment school in the Los Angeles County Department of Education; the age range is 13-18 years; they are residents of the surrounding areas of South Central Los Angeles. The cornerstone of the treatment model is Multisystemic Therapy (a family preservation model) delivered at the students’ homes; the other essential components of the model are a computer literacy program, music-engineering program, and parent drug education group (components are provided either at school, home, or community). The review includes descriptive data on the self-reported substance use and related domains of the adjudicated adolescents.

Cocaine-using mothers who cease drug use have much less psychopathology and their prenatally exposed kids have relatively better cognitive status by age 9

P.R. Marques, L.O. Teti, J.L. Pokorni, D.G. Branch, H.R. Kirk, and T. Long

Pacific Institute for Research and Evaluation, Calverton, MD, and Georgetown University Child Development Center, Washington, DC

A cohort of 47 women who delivered cocaine-exposed infants during a 1990-1993 study was restudied in 1999-2002. Both the mothers and their age 9 children were evaluated within 4 months of the child's ninth birthday. All lived in or near Prince George's County Maryland adjacent to Washington DC. The level of exposure of newborns was documented with four measures including mother hair, infant hair, mother urine, mother self-report. The extent of third trimester exposure was estimated from a principal components factor score comprised of all exposure sources. In the original study, mothers provided up to 7 baseline and post-delivery assessment points over a two year period. These initial data points now form the basis for historical measures of maternal depression, drug use, psychiatric status and other predictors of child achievement and development. At child age 9 most adult assessments were repeated. The children were also evaluated with comprehensive cognitive, achievement, behavior, and environmental assessments. In the intervening years it was found through current hair analysis and self-report 27 of the 47 women had ceased use of cocaine. The women who self-selected out of the drug lifestyle were compared to those who remained drug-involved. At baseline there were no distinguishing differences on any assessments. Mean Beck depression scores > 16 at birth were by child age nine 6 ± 8 and 12 ± 9 . Of MCMI-II scales that did not differ at baseline, by child age 9, the mothers differed significantly on 15 of the 22 scales. The largest (non-drug) differences were for borderline, passive-aggressive, self-defeating, and antisocial. Current maternal IQ differs by < 3 points, child IQ differs by > 6. Multivariate analyses will identify sources of variance in the developmental environment that account for some of this difference. While direction of causality cannot be determined, mothers who cease use may improve the prospects for their cocaine-exposed children. Supported by U.S. Dept Education H324C980092.

Gender differences in motivation to quit smoking among alcohol-dependent patients in treatment

R.A. Martin, D.J. Rohsenow, S.M. Colby, and P.M. Monti

Brown University and Providence Veterans Affairs Medical Center, Providence, RI

The majority of smoking alcoholics are not motivated to quit within six months of alcohol treatment and those who have decided to take action may experience considerable ambivalence. Women may be less ready to quit smoking than men, particularly women with elevated depression. We examined whether gender and depressive symptoms were related to motivational readiness to quit smoking among 180 alcohol dependent patients in residential alcohol treatment following brief intervention for smoking cessation (59% male). Motivation to quit smoking was measured when entering treatment by the Contemplation Ladder, a 10-point scale providing a single continuous measure. Depressive symptoms were measured by the Center for Epidemiologic Studies Depression Scale. There was a trend for genders to differ in pretreatment motivation to quit smoking ($p=.056$). However, when controlling for depression, men (adj. $M = 6.8$) and women (adj. $M = 5.5$) differed in mean motivation levels, ($p<.05$). On average, men were planning to quit smoking in the next 30 days but women were only thinking about quitting smoking or may have had plans to quit in the next 6 months. In this alcohol dependent sample, men and women appeared to have similar motivation to quit smoking. However, in the context of depressive symptoms, women are less motivated to quit smoking than men, suggesting that the gender differences are related to depression.

Age at first drink among women and behavioral impulsivity

C.W. Mathias, D.M. Dougherty, D.M. Marsh, and M. Lee

Neurobehavioral Research Laboratory and Clinic, University of Texas Health Science Center at Houston, Houston, TX

Background: An individual's age at first drink has been associated with adult vulnerability to alcoholism. Subsequent research indicates that intermediate behavioral phenotypes like impulsivity mediate this relationship. This study examined the relationship between age at first drink and prospectively measured behavioral impulsivity using the Immediate and Delayed Memory Tasks. Because previous research has

noted significant gender differences in drinking onset, we specifically sampled two groups of women differing in their self-reported age at first drink. Hypothesis: It was hypothesized that those women whose first drink was at age 18 or earlier (Early-Onset) would emit significantly more impulsive-type responses on the Immediate and Delayed Memory Tasks than those who first drank at age 21 or later (Late-Onset). Species: Human. Number of Subjects: Early Onset n=51, Late Onset n=23. Procedures: Participants completed a session of the Immediate and Delayed Memory Tasks and self-report measures of drinking behavior, mood and impulsivity. Statistical Analyses: Repeated measures ANOVA – Immediate and Delayed Memory Tasks. Univariate ANOVA - questionnaire scores. Results: The main findings were that the Early-Onset group tended to: (1) emit more impulsive responses on the Immediate and Delayed Memory Tasks, and (2) persist in making impulsive responses across testing periods, while the Late-Onset group's performance improved, making fewer impulsive responses over time. Importance of Findings: These results demonstrate that differences in impulsive behavioral responding are distinguishable even between groups of female drinkers who are not expressing clinically significant problems with alcohol.

Court-referred women are sicker: Analysis of health disparities between court- and community-recruited women in a community HIV prevention study

C. Meeks, LB. Cottler, A. Ben-Abdallah and JE. Sullivan

Washington University School of Medicine and St. Louis City Municipal Courts, St. Louis, MO

NIDA has highlighted the need to focus research on drug court systems. In an ongoing NIDA-funded HIV prevention study of cocaine, heroin or amphetamine using women in St. Louis, we have augmented our community-based sample with a sub-group of court-referred women, giving us the opportunity to compare the health status of these women. Based on ordinance violations resulting in involvement with the criminal justice system, these women represent a vulnerable population with potentially elevated health risks. To date, our sample is comprised of 425 women. Court-referred respondents (COURT, N=112) were more likely than community-referred respondents (GEN POP, N=313) to report sex trading (79% vs. 49%) and injection drug use (34% vs. 17%). While GEN POP respondents were more likely to report alcohol use (88% vs. 94%), COURT respondents were more likely to report heroin use (25% vs. 13%), opiate dependence (22% vs. 11%), hallucinogen use (12% vs. 6%), and hallucinogen dependence (4% vs. 1%). Although all women reported cocaine use, COURT respondents were more likely to meet criteria for cocaine dependence (91% vs. 74%). Differences between the two groups in physical and mental health were apparent. A trend was evident toward GEN POP respondents seeing a physician for a physical illness (60% vs. 70%), and having a mammogram (8% vs. 18%). COURT women were more likely than GEN POP women to see a physician for an emotional or mental health issue (30% vs. 19%), and were more likely to meet criteria for lifetime antisocial personality disorder (90% vs. 80%) and post-traumatic stress disorder (41% vs. 30%). They were also more likely to test positive for a sexually transmitted disease, including Hepatitis C (33% vs. 20%) and syphilis (8% vs. 4%), and correspondingly more likely to report treatment for Hepatitis B, C or D (8% vs. 4%) and syphilis (22% vs. 14%). COURT women represent a population in need of public health attention. Increased efforts to provide resources to this vulnerable population are warranted.

Rapid effects of cocaine on estradiol and LH in female rhesus monkeys during the follicular phase of the menstrual cycle

N.K. Mello, J.H. Mendelson, S.S. Negus, M. Kelly

Alcohol and Drug Abuse Research Center, McLean Hospital/Harvard Medical School, Belmont, MA

Clinical and preclinical data indicate that cocaine stimulates significant increases in estradiol and LH, but the time course and sequence of these hormone changes has not been established. This study examined the rate and sequence of hormone increases after i.v. cocaine administration using a rapid (2 min) sampling procedure. Saline or cocaine (0.8 mg/kg, i.v.) was administered over 1 min to follicular phase rhesus females. Samples for estradiol and LH analysis were collected at 2 min intervals for 20 min, then at 10 min intervals for 50 min. Samples for plasma cocaine analysis were collected every 4 min for 20 min, then at 20 min intervals. Peak plasma cocaine levels (220 ± 34 ng/ml) were measured at 4 min. Saline did not alter estradiol or LH levels, and baseline hormone levels were equivalent before saline and cocaine administration. LH began to increase within 4 min after cocaine administration and reached peak levels

(35% above baseline) within 12 min. Estradiol began to increase within 10 min after cocaine administration and reached peak levels (42% above baseline) at 16 min. These data suggest that LH increases faster than estradiol after i.v. cocaine in follicular phase females. Studies in males and peri-ovulatory females are now in progress. Supported in part by grants PO1-DA14528, R01-DA14670, K05-DA00101 and KO5-DA00064 from the NIDA, NIH.

Community influences on high-risk behaviors: Can zip code predict behaviors?

C.E. Mennes, C.C. Meeks, C. Ostella, A.B. Abdallah, and L.B. Cottler
Washington University School of Medicine, St. Louis, MO

Current research has focused on neighborhood associations with risky behaviors; this study continues research focusing on the association between place of residence and high risk behaviors. Data from ongoing NIAAA and NIDA funded projects aimed at reducing crack/cocaine use and high-risk behaviors among female substance abusers were used to determine the impact of community on behaviors, hypothesizing that place of residence relates to substance use and sexual risk behaviors. The predominately African American sample recruited from inner city St. Louis includes 656 women who were administered assessments concerning their drug use and sexual risk behaviors. The sample was stratified by zip code and was categorized into two socio-demographically comparable areas, north and south (relative to our satellite HealthStreet facilities). Women residing in the north, compared to those in the south, were more likely to be African American (89% vs. 65%), older (62% vs. 55%), less educated (59% vs. 48%), earn less (71% vs. 62%), receive public assistance (48% vs. 38%), and have children (84% vs. 75%). Using bivariate analyses, no significant differences in substance use and sexual risk behaviors were found between the two areas. The women show similarities with respect to sexual behaviors, drug use behaviors, and STD rates. However, further investigation will be conducted using a multivariate approach to control for the demographic differences to determine the full extent of the community impact. Future studies using clustering procedures to examine the specific neighborhoods within each community/zip code would provide more specific information on how community influences behaviors. Columns: Cocaine, Amphet, & Caffeine; Prevention; Humans Key words: community; sexual behavior; substance abuse Author: C. Mennes.

Adolescent onset substance use disorder in women: Personality and maltreatment as predictors of physical health in young adulthood

A. Mezzich, K. Pajer, S. Parks, M. Dunn, and K. Day
University of Pittsburgh, Pittsburgh, PA

Personality traits reflective of behavioral and affective dysregulation and childhood/adult maltreatment (MALT) are related to antisocial behavior (ASB), substance use disorder (SUD), and poor physical health symptoms (PHS). Also, ASB and SUD influence PHS. This prospective study aimed at predicting PHS from ages 14-18 to 19-23 controlling for the stability of personality, MALT, ASB, SUD and PHS in women with SUD (n=155) and without SUD (n=115). The hypotheses are: (1) ASB and SUD mediate the association of personality and MALT with PHS at each age concurrently, and (2) personality, MALT, ASB, and SUD at ages 14-18 and 19-23 in conjunction with PHS at age 14-18 predict PHS at age 19-23. The results of the concurrent analysis, controlling for age and socioeconomic status, in the SUD women showed that (1) MALT, negative affectivity, and constraint (behavioral self-control) were associated with PHS at each age, (2) ASB accounted for the association of negative affectivity and constraint with PHS at age 14-18 only, and (3) SUD explained the association of childhood MALT, negative affectivity, and constraint with PHS at age 14-18, and between constraint and PHS at age 19-23. The longitudinal analysis showed that childhood MALT and PHS at age 14-18 and negative affectivity and constraint at age 19-23 jointly predict PHS at age 19-23. Among normals, (1) none of the predictors were related to PHS at age 14-18; however, adult MALT and negative affectivity were related to PHS at age 19-23, and (2) at age 19-23 PHS was predicted by childhood MALT, constraint, and PHS at age 14-18, as well as by negative affectivity and constraint at age 19-23. The data suggest that dysregulation and childhood MALT predispose adolescent onset SUD young women to ASB and SUD which, in turn, predispose to PHS, whereas among normal adolescents dysregulation and childhood MALT predispose directly to PHS in young adulthood. Early

treatment of child's affective and behavioral dysregulation and parental training in parenting skills may prevent ASB, SUD, and PHS in young adult women.

Sex-related differences in the pharmacokinetics of (+)-methamphetamine and (+)-amphetamine

A. Milesi-Hallé, H.P. Hendrickson, and S.M. Owens

University of Arkansas for Medical Sciences, Little Rock, AR

The male Sprague-Dawley rat is often used as a model for METH use; however, the pharmacokinetics of METH in rats and humans is substantially different. For instance, AMP formation after a METH dose in the male rat is significantly greater than in humans. For the current studies we hypothesized that female Sprague-Dawley rats could provide an improved animal model, since female rats are known to have lower clearance of most drugs. First, we characterized the pharmacokinetics of METH and AMP after a 1.0 (n=4) and a 3.0 mg/kg (n=5) IV bolus dose of METH and found no differences. However, systemic clearance (Cl_s) and volume of distribution at steady state (V_{dss}) after a 1 mg/kg METH dose were significantly lower (p<0.05) in female rats than in male rats (Cl_s = 72±10.1 vs. 126±20.2 ml/min/kg; V_{dss} = 5.8±0.8 vs. 9.0±2.0 l/kg, respectively). The molar ratio of the AMP to METH area under the concentration-time curve in the female rat (0.21) was substantially lower than that in the male rat (0.48), and closer to the ratio in humans (0.15). These data support the hypothesis that there are sex-related differences in the pharmacokinetics of METH and AMP, and suggest that female rats could provide a useful model for studying METH effects. Supported by grants P01 DA14361, K25 DA14601, NSF EPS-9977816.

Short-term reliability of women's addendum to the ASI

R. Mittal, M. Gutman, and A.T. McLellan

Treatment Research Institute, Philadelphia, PA

A number of studies have demonstrated special needs of women in treatment, although the literature is somewhat inconsistent. Therefore, we developed a Welfare-to-Work (WTW) Women's Addendum to the Addiction Severity Index – to measure needs of low-income women in treatment in terms of childcare, domestic abuse, involvement with the child welfare system, and welfare/work situations. This study investigates the short-term reliability of this WTW Women's Addendum to the ASI. Since the ASI has proven to be reliable and valid in several studies it is of utmost importance to establish whether the same is true for the Addendum. The sample consisted of 100 primarily African-American and white women on welfare or income eligible for it, unemployed, with at least one child under the age of 17 years. The Addendum consisted of 90 items most of which were asked at three time points – lifetime, past 6 months, and current (past 30 days). Data were collected at three outpatient treatment programs in three cities. The first interview was administered in an individual session at the treatment site and the interview was re-administered after 3-5 days. For the dichotomous and categorical variables, Kappa and percentage exact agreement were calculated. For continuous variables, Mean, SD and Interclass Correlation Coefficients (ICC) were calculated. For 37 of the 52 categorical items, and 64 of the 91 continuous items, the Kappa and ICC's ranged between 0.3 and 1.0. For 30 out of the 52 categorical items the Kappa was 0.7 or higher. For others it was moderate (0.3-0.69). Similarly, for 53 out of 91 continuous items the ICCs were higher than 0.7. for others it was moderate. The findings will be used to further refine the WTW Women's Addendum.

Sex-differences in the assessment of depression in a substance-abusing population

M. Mouratidis, J. Poling, A. Oliveto, T. Kosten

Yale University School of Medicine, New Haven, and VA CT Healthcare System, West Haven, CT

This study examined the ability of two common measures of depression, the Hamilton Depression Inventory (HAM-D) and the Center for Epidemiological Studies Depression Scale (CES-D) to predict a diagnosis of current major depression made with the Structured Clinical Interview for DSM-IV (SCID). Participants were 129 subjects (63% male and 37% female; 72% Caucasian and 12% African American) beginning treatment for opiate and/or cocaine dependence. Subjects were administered the SCID, HAM-D, and the CES-D as part of screening procedures. Data were analyzed using logistic regression. The HAM-D correctly predicted SCID diagnoses of depression with 78% accuracy compared to 68% for the CES-D (p<.001). Both instruments were significantly better at correctly classifying current major depression in

men then in women: the HAM-D correctly classified 83% of men but only 71% of women ($p < 0.026$), with the CES-D correctly classifying 73% of men but only 60% of women ($p < 0.017$). Analyses showed no significant model improvement after adding the CES-D with the HAM-D already in the model ($p < 0.25$). Thus, the HAM-D is a better predictor of major depression than the CES-D especially for women. These results may assist clinicians and researchers in choosing assessment instruments for their clinical practice and/or research protocols based on empirical validation. (Supported by T 32-DA 07238-12, P 50-DA 12762, and K 05-DA 00454).

Marijuana dependence and abuse symptom profiles in U.S. men and women

R.J. Neuman, J.D. Grant, A.A. Todorov, R.K. Price, and K.K. Bucholz
Washington University School of Medicine, St. Louis, MO

Very little research has explored marijuana use in women, or whether men and women differ in abuse and dependence symptoms. The present analyses address this gap by exploring whether there are gender differences in lifetime marijuana abuse and dependence symptoms in a general population sample of US adults. Latent class analysis was used to explore symptom patterns for men and women who participated in the National Longitudinal Alcohol Epidemiology Survey (NLAES). Respondents who had used marijuana 12+ times (lifetime) were asked the abuse and dependence questions. Thus, data from 3,112 men (17% of men in NLAES; mean age = 33.6 years at interview) and 2,509 women (10% of women in NLAES; mean age = 32.3 years at interview) were analyzed. Eight dependence items (tolerance, withdrawal, using more, inability to quit, increased time getting/using, giving up activities, emotional problems, health problems) and three abuse items (role interference, hazardous use, social problems) were assessed. Based on the Bayesian Information Criterion, 4-class solutions were selected for both men and women. The solutions were highly similar, with both groups having one class (63% of women; 50% of men) that was basically asymptomatic, with mild endorsement for hazardous use ($\sim .2$); another class (24% of women; 31% of men) had high endorsement of hazardous use ($\sim .7-.8$) but was low ($< .4$) on all other symptoms; a third group (10% of women; 14% of men) had endorsement probabilities $\sim .5-.8$ for the abuse symptoms and the milder dependence symptoms (i.e. tolerance and withdrawal); the fourth class (3% of women; 5% of men) was highest on all symptoms, endorsing most dependence and all abuse items ($\geq .6$ for all items). The present analyses suggest that although marijuana use, abuse, and dependence rates are somewhat different for men and women, the symptom profiles are comparable across gender. Supported by NIH grants: DA14632, DA14363, AA11998, AA07728

Ovarian hormones modulate levels of GABA after acute cocaine administration

T. Niyomchai, S.J. Russo, E.D. Festa, D. Ferguson, V. Luine, S. Jenab, V. Quinones-Jenab
Hunter College of CUNY, New York, NY

Previous studies have demonstrated that estrogen (E) and progesterone (P) affect cocaine-induced behavioral activity in a dose-dependent and temporal manner. The aim of this study was to determine if interactions between ovarian hormones and the GABAergic system regulate cocaine-induced activity. Prior to an acute injection of cocaine (15 mg/kg; i.p.) or saline, female ovariectomized rats received vehicle (sesame oil), or E (10 μ g or 50 μ g; 48 hours; s.c.) and P (100 μ g or 500 μ g; 24 hours; s.c.). Both 10 μ g E + 500 μ g P and 50 μ g E + 100 μ g P treatments inhibited cocaine-induced behavior. In the caudate putamen, independent of hormonal treatment, GABA levels were decreased. In contrast, GABA levels increased after 50 μ g E + 500 μ g P treatment in the VTA. Taken together, these results show that there is an interaction between ovarian hormones and the GABAergic system in the regulation of cocaine-induced behaviors. This research was supported by NIH/MARC 5 T34 GM07823-23, PS-CUNY, RR-03037, NIDA DA 12136, SCORE 506-GM60654, and SNRP NF 39534.

Substance abuse and depressive symptoms in Costa Rican adolescents

C.P. Obando, W. Kliewer, and L. Murrelle
Virginia Commonwealth University, Institute on Alcoholism and Drug Abuse, Richmond, VA

The increased use of alcohol and other drugs by young Costa Rican adolescents, as well as the increase of depression and suicidal rates has been of recent concern of local health and governmental authorities.

Given the lack of studies in this area, it is the aim of this study to describe and define the relationship between substance abuse, depression and suicidal ideation in Costa Rican youth, and look at the effect of family structure and gender in adolescents at different risk situations. A total sample of 5,338 adolescents aged 12 to 21 years was studied. Data from high-risk adolescents was gathered from a total of 230 addicted adolescents under treatment, 55 children of drug users, and 83 street children from the city of San José, Costa Rica. The non-risk sample included 5,107 high school students from public and private schools, from four out of seven country states, both from rural and urban areas. The children were evaluated by using a self-reported questionnaire, measuring various risk and protective factors, as part of a larger study. Depressive symptoms were highly correlated to substance abuse in all populations. Correlation and ANOVA analyses were run controlling for age, sex and family structure for each of the four groups. For alcohol use, age was a significant covariate with a significant main effect group $F(3, 5299) = 12.07$ $p < .001$. Adjusting for age and family structure, high prevalence of alcohol use are shown for adolescents under treatment, street children and children of drug users. Family structure and group status are also associated with lifetime smoking $F(3, 5295) = 62.53$ $p < .001$ for group main effect. Gender differences are observed between groups in the use of alcohol, marijuana and tranquilizers. In general, children in treatment and street children show higher means for problems with alcohol and drugs and depressive symptoms. There were main effects of groups for depressive symptoms, $F(3, 5311) = 42.60$, $p < .001$ and sex, $F(1, 5311) = 26.64$. Correlation and mean differences were computed for depressive symptoms, suicidal ideation and substance abuse. The pattern varies across groups and across type of substance. Given the characteristics of the study, no cause effect can be defined for depression and substance abuse, however, specific patterns are observed across groups that highlights the specificity of the relationship for each population.

Sex differences in cocaine-induced activity and anxiety

R.L. Peltier, J. Greene and N.E. Goeders

Louisiana State University Health Sciences Center, Shreveport, LA

It has been previously suggested that female rats acquire cocaine self-administration quicker and at a higher rate than males. In contrast, our laboratory has shown that under different experimental parameters, male rats will acquire cocaine self-administration faster than female rats. The current experiments were designed to further examine the basic differences between the responses of male and female rats to cocaine by investigating the role of female gonadal hormones and the HPA axis on non-contingent cocaine-induced locomotor activity and anxiety in rats. Subjects were male and female Wistar rats ($n=12$). Rats were implanted with indwelling jugular catheters. One-half of the female rats underwent a bilateral ovariectomy (OVX) while the other half received a sham surgery. Rats were first placed into the locomotor test chambers for 1 hr (habituation). Activity (locomotor counts) and anxiety tests (light/dark box) were conducted on the four days following habituation using a randomized design. Rats were tested with cocaine (10 mg/kg, IP) and saline in both the locomotor activity boxes and the light/dark chambers. During locomotor tests, rats received an IP injection (cocaine or saline) and were immediately placed into the activity test chamber for 1 hr. During anxiety tests rats received an IP injection (cocaine or saline) 15 min before being placed into the light/dark box for 5 min. Horizontal, vertical and stereotypic counts were measured. For the anxiety tests, the time spent in each side of the light/dark apparatus was also recorded. Plasma blood samples were obtained at the end of each test session. There were no differences in baseline activity (saline pretreatment). Cocaine significantly increased locomotor activity in both intact and OVX female rats, while only producing a slight increase in male rats. Under baseline conditions, males and intact females spent significantly more time on the light side of the light/dark box, while OVX rats spent equal time in both sides. Cocaine pretreatment increased the time that the OVX rats spent in the light side without significantly affecting males or intact females. Plasma corticosterone and cocaine analyses are underway. In summary, these data demonstrate that there are gender differences in the ability of non-contingently administered cocaine to increase activity and anxiety. Supported by DA06013 from the National Institute on Drug Abuse.

Sex-related differences in amygdala response to emotional visual stimuli

J.C. Pendergrass, R.J. Erwin, T.J. Ross, H. Garavan, E.A. Stein and R.C. Risinger
Finch University of Health Sciences/The Chicago Medical, North Chicago, IL, NIDA Neuroimaging Branch, Baltimore, MD, and Medical College of Wisconsin, Milwaukee, WI

Recent studies of gender differences in cocaine dependence have demonstrated that females exhibit higher levels of craving, high, and withdrawal that are associated with increased negative mood states (Elman, Karlsgodt, & Gastfriend, 2001). At the same time, recent brain mapping studies of the craving state have identified a topography that frequently includes the amygdala and arousal systems. Taken together, sex-related functional differences in the amygdala, a structure key to emotional arousal, may be responsible for sex-related differences in certain aspects of the phenomenology and psychopathology of compulsive drug use. Preliminary to studies in drug abusers, 24 male and female matched normal volunteers underwent functional magnetic resonance imaging to determine sex-related differences in amygdala response to visual stimuli that varied in emotional content (positive vs. negative valence) and arousal level (high vs. low). Results indicate that the sex of the volunteer influenced the arousal effect detected in amygdala response to different emotional stimuli. Males demonstrated an arousal effect for positive stimuli with increased amygdala response to highly arousing, positive stimuli. In contrast, the arousal effect in females was associated with an increased amygdala response to highly arousing, negative stimuli. These findings suggest that females in general may be more susceptible to the induction of a negative affective state. This may in part account for the higher levels of experienced withdrawal and craving reported by female cocaine abusers. The present study implies that subtle sex-related differences in neurobiological mechanisms subserving emotional experience may account for sex differences in the phenomenology, epidemiology, and maintenance of compulsive drug use. Supported by DA09465.

Familial associations between cigarette use and panic severity in adolescent female twins

M.L. Pergadia, A.C. Heath, K.K. Bucholz, E.C. Nelson, D.F. Klein, P.A.F. Madden
Washington University School of Medicine, St. Louis, MO, and Columbia University, New York, NY

Research suggests that cigarette smoking is associated with panic disorder symptoms. However, examination of familial effects on panic and familial associations between panic and cigarette use remain unexplored in adolescents. We tested whether Panic Severity (4 level variable: never had an attack, uncued anxiety attack, DSM-IV diagnostic uncued panic attacks, DSM-IV Panic Disorder) was associated with smoking cigarettes (ever used, regular use: daily, problematic use: 2+-DSM-IV symptoms), after controlling for use of alcohol, marijuana, other illicit drugs, alcohol and marijuana related problems, personality, and major depression. Secondly, because we have a genetically informative sample, we tested whether symptoms of panic run together in families with risk for cigarette use. Interview and mailed-questionnaire-data from a survey conducted in 1995-1997 of older adolescent females twins, ascertained from Missouri birth records (N=1422, age=16-23) were analyzed using multinomial logistic-regression. Multivariate analyses found problematic cigarette use significantly associated with increased risk for panic disorder (OR=25.9). At all levels, symptoms of panic were found to be familial in this sample. Symptoms in one twin significantly predicted an increased risk for symptoms in her sister (anxiety attack-OR=2.5; diagnostic panic attacks and disorder- OR=4.7). Moreover, problematic cigarette use in one twin was associated with an increased risk for panic disorder (OR=3.6) in her sister, and this remained true after controlling for alcohol and other drugs use, personality and depression. Similar to findings in adult populations, these results in female adolescent twins suggest that panic attacks and panic disorder are familial. Our results also suggest that the association between panic disorder and problematic cigarette use is in part due to familial risk factors. Supported by NIH Grants: AA07728, AA09022, AA11998 (A.C.H.); DA12540 and DA12854 (P.A.F.M); AA12640, DA14632, DA14363 (K.K.B.); and AA07580 (M.L.P).

Subjective and behavioral responses to visual and olfactory stimuli of alcohol

K.A. Perkins, M. Ciccocioppo, L. Jacobs, T. Doyle, and A. Caggiula
University of Pittsburgh, Pittsburgh, PA

Non-drug stimuli associated with drug intake (such as smell and sight of a cigarette) can influence subjective and reinforcing effects of that drug intake, perhaps including alcohol consumption. Young

healthy male and female social drinkers participated in two experimental sessions in which they briefly tasted, rated, and then consumed ad lib their preferred beer (with subjects blind to brand). Visual and olfactory stimuli were obscured during one session (“blocked”) and not obscured (“unblocked”) during the other (counter-balanced order). Visual stimuli were obscured by presenting the beer in an opaque glass (versus clear glass). Olfactory stimuli were obscured with noseclips that blocked the nostrils (versus noseclips that did not block the nostrils). Dependent measures included subjective ratings of taste and liking, etc., and amount of ad lib consumption (reinforcement). Water was continuously available. Results showed lower ratings of like, good taste, looks appealing, and want more, as well as less ad lib consumption, during the blocked versus unblocked condition. There was no effect of blockade on rating of alcohol content of beer, and no sex differences were apparent. These findings show that non-alcohol stimuli associated with alcohol consumption influence alcohol’s subjective and reinforcing effects. Supported by NIDA Grant DA12655.

Gender differences in response to high-dose naltrexone in dual alcohol and cocaine dependence

H.M. Pettinati, K.M. Kampman, D.W. Oslin, K. Lynch, F. She, J. Jowers, and M. McAllister
U. of PA School of Medicine, and Veterans Affairs Medical Center, Philadelphia, PA

Patients addicted to both cocaine and alcohol have traditionally been difficult to treat. Two prior studies which treated this population with 50 mg/day naltrexone were not encouraging. Recent work has suggested that higher daily dosages of naltrexone may be more successful. In addition, some studies have reported that addicted females can have a more severe addiction profile and are more difficult to retain in treatment. This study assessed changes in alcohol and cocaine use in males versus females treated with naltrexone at 150 mg/day (or placebo), with one of two weekly psychosocial interventions. Preliminary analyses using linear regression found a two-way interaction (gender x medication group). That is, there appeared to be gender differences in response to naltrexone vs. placebo: Males had better outcomes both in reducing their alcohol drinking and cocaine use; Females had worse outcomes if they were taking naltrexone compared to placebo. This finding was demonstrated by the percentage of days drinking, self-reported cocaine use, and the percentage of dirty urines during the treatment trial. Work is underway that will address the correlative influences of gender and medication response in dually-addicted cocaine and alcohol dependent individuals. Supported by NIAAA R01 AA09544; NIDA P60 DA05186; NIDA P50 DA12756

Gender x age interactions in effects of nicotine on body weight and elevated plus maze performance in rats

J.M. Phillips, B.M. Elliott, M.M. Faraday, and N.E. Grunberg
Medical & Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD

Nicotine, the primary drug of dependence in tobacco, has other effects that reinforce tobacco use. These effects include body weight regulation and anxiety management. Laboratory experiments with rats and nicotine yield findings that extrapolate to humans and tobacco use. This presentation will review a series of experiments that have revealed gender x age interactions in effects of nicotine on body weight and elevated plus maze performance (EPM; a behavioral index of anxiety) in male and female, adolescent and adult Sprague-Dawley rats. Nicotine was administered SC via osmotic minipump for the body weight assessments and was administered SC by acute injection for the elevated plus maze measures. Nicotine decreased body weight with greater effects on adult females than adult males, and greater effects on adolescent males than adolescent females. With regard to EPM, nicotine had anxiogenic effects in adult males and females and adolescent females (decreased time in open arms), whereas nicotine had anxiolytic effects for adolescent males (increased time in open arms). These results indicate the importance of including male and female subjects of different ages in studies of nicotine and other drugs of dependence. These findings also suggest that males and females of different ages may self-administer drugs of dependence for different reasons.

Gender differences in sex partner choice by IVDUs

R. Pickens, D. Miles, M. Hampton and D. Svikis
Virginia Commonwealth University, Richmond, VA

Characteristics of sex partners of intravenous drug users (IVDUs) were examined using data from the NIDA National AIDS Demonstration Research Program (1988-1991). In-person interviews were conducted with 40,858 IVDUs recruited in 27 major cities across the U.S. and Puerto Rico. Only individuals reporting injecting drugs in the past 6 months and not enrolled in a drug treatment program during the past 30 days were included. Overall, the participants were 74.5% male and 25.5% female, had a mean age of 34.2 yrs, and were 48.0% black, 26% Hispanic, and 23% white. Because of the large participant sample, almost all gender comparisons were statistically significant ($p < .000$). Males (26%) were more likely than females (18%) to report currently living alone, while females (32%) were more likely than males (25%) to report currently living with a sexual partner. Females reported many more sexual partners (mean 54.6) over the past 6 months than did males (mean 5.9), and were also much more likely to report exchanging sex for money (70% vs. 18%) or drugs (39% vs. 24%). Pregnancy was reported by 6.8% of females. 44% of both males and females reported having only a single sex partner during the past 6 months. In individuals reporting only a single sex partner, however, females (68%) were significantly more likely than males (37%) to report their sex partner was also an IVDU. Of individuals reporting needle use, needle sharing was reported by 80% of females and 78% of males. Females (15%) were also more likely than males (5%) to engage in needle sharing only with their sexual partner. Supported by DA 14041 (Building Research Careers in Women's Health).

Role of gonadal hormones in nociception and buprenorphine antinociception in female rats

M.J. Picker and J.M. Turner
University of North Carolina at Chapel Hill, Chapel Hill, NC

A number of studies suggest that in female rats gonadal hormones can influence both nociception and opioid antinociception. The magnitude of these effects, however, are generally small and appear to be dependent on the type of nociceptive assay, the parameters of the assay, the time of day tests are conducted, and rat strain. The present study examined the influence of estrous cycle phase and gonadectomy on levels of nociception and antinociception in the rat warm-water tail-withdrawal procedure in female rats. All nociceptive testing was conducted in the morning between 8:00 and 11:00 AM. The combination of using F344 rats, a strain in which sex differences in opioid antinociception are relatively large, and a low-efficacy μ opioid (buprenorphine) that is markedly more potent and effective in males than intact females, may provide a sensitive model for evaluating the influence of gonadal hormones on nociception and opioid antinociception. In normally cycling intact females, there were no significant differences in nociception across the phases (diestrous, metestrous, estrous, proestrous) of the estrous cycle. In contrast, depletion of gonadal hormones following gonadectomies increased nociceptive latencies relative to intact females. In tests of antinociception, buprenorphine was approximately 1.6-fold more potent during proestrous than the other phases of the estrous cycle. Similarly, gonadectomy produced an approximately 1.5-fold increase in the potency of buprenorphine antinociception relative to intact females in proestrous, and a 2.5-fold increase relative to the other phases of the estrous cycle. These data suggest that gonadal hormones influence both nociception and buprenorphine antinociception. (Supported by grants DA10277, MH07431, and DA07244).

Utilization of preventative health care services among women who are injection drug users, chronic drug users and non-users

K. Pierre, M. Comerford, D. Chitwood, D. Koo, J. Sanchez, and Y. Li
University of Miami, Coral Gables, FL

Purpose: This cross-sectional study examines the utilization of two preventative health care services among women who use illicit drugs and women from the same neighborhoods who do not use drugs. The preventative health services examined are breast exam by a health professional and mammogram in the past year. **Methods:** Three groups of women were selected for inclusion into the study: injecting drug users, other chronic drug users, and non-drug users. A stratified network based snowball sample of women was

recruited from neighborhoods with high rates of drug use in Miami-Dade, Florida. Logistic regression models identified demographic and health care variables associated with receiving preventative health care services. Results: The following were associated with receiving a breast exam: insurance coverage (OR=4.95, CI 3.25, 7.56), perceived health status of very good/good (OR=2.17, CI 1.23,3.66) and fair/poor (OR=1.91, CI 1.09, 3.35) compared to excellent. Injection drug use (OR=0.43, CI 0.23, 0.77) and heavy alcohol use (OR=0.41, CI 0.56, 0.64) were associated with not receiving a breast exam. The following were associated with receiving a mammogram: age 40 and older (OR=4.06, CI 1.96, 8.40), and insurance coverage (OR=7.11, CI 3.14, 16.11). Conclusion: While several factors are associated with obtaining these services, expanding insurance coverage would increase the likelihood that more women would receive both preventative health services. The reduction of illicit drug use and heavy alcohol use also is likely to increase the proportion of women receiving preventative care. The availability of preventative health care services at drug treatment centers would be a viable strategy to expand the accessibility of these services.

Cotinine cutpoints during pregnancy and postpartum: Do they need to be different?

J. Plebani-Lussier, S.H. Heil and S.T. Higgins

University of Vermont, Burlington, VT

Nicotine and cotinine clearance is more rapid during pregnancy compared to postpartum, suggesting that cotinine cutpoints used to classify women as smokers and nonsmokers may need to be different across these periods. That issue is relevant to researchers conducting smoking cessation studies with pregnant and recently postpartum women. To begin to empirically examine this issue, we used data from ongoing studies on smoking cessation in pregnant and recently postpartum smokers conducted at the University of Vermont. We examined whether a GC-MS urine cotinine cutpoint of 80 ng/ml, commonly used in smoking cessation studies with pregnant and non-pregnant subjects, differed in discriminating between smokers and nonsmokers dependent on whether specimens were collected at the 30th week of pregnancy or at 3 months postpartum. During pregnancy the 80 ng/ml cutpoint correctly classified 97% of self-reported non-smokers (n=34) and 87% of self-reported smokers (n=31) and at 3 months postpartum the 80 ng/ml cutpoint correctly classified 100% of self-reported non-smokers (n=17) and 96% of self-reported smokers (n=25). There was no evidence that the relationship between true smoking status and classification based on test results was dependent upon pregnancy status (Breslow-Day chi square test, $p = .28$). The errors in classification accuracy observed among smokers is likely the result of the relatively low smoking rates common in the pregnant and recently postpartum women. Overall, these results do not support a need for adjustments in urine cotinine cutpoints during pregnancy and postpartum, although this is a matter that merits further evaluation and larger sample.

U-69593 decreases cocaine-induced locomotor activity in estrogen-treated rats

A. Puig-Ramos, W.J. Bruckman, G.S. Santiago, and A.C. Segarra

School of Medicine and Biology Department, Rio Piedras, University of Puerto Rico, San Juan, PR

Studies in male rats have found that mu and kappa-opioid receptors exert opposing effects on cocaine-induced locomotor activity. Previous results in our laboratory indicate that naloxonazine, a mu-opioid antagonist, decreases cocaine-induced locomotor activity and sensitization in the female, an effect dependent on plasma estrogen levels. This study was designed to investigate if the kappa opioid system also participates in modulating cocaine-induced locomotor behavior. Adult Sprague-Dawley rats (n=7 per group) were ovariectomized (OVX), half received Silastic implants with estradiol benzoate (OVX-EB), the other half received empty implants (OVX). After recovery and habituation to the activity chambers, rats were injected daily with vehicle (VEH= propylene glycol) or U-69593 (0.32 mg/kg, i.p.) and locomotor activity measured for the next 15 min. Each of these groups were further subdivided, one that received a saline injection (SAL) and another that received a cocaine injection (COC)(15 mg/kg, i.p.) and locomotor activity measured for 60 min. Locomotor activity was recorded on day 1, 3, 5 and, after 2 days of cocaine withdrawal, on day 8. This resulted in the following injection groups: VEH-SAL, U-69593-SAL, VEH-COC and U-69593-COC. At all days tested, U-69593 diminished cocaine-induced locomotor activity in rats that received estrogen ($F=6.32$; $p=0.01$), similar to results obtained in males, but had no effect in ovariectomized females. These results indicate that estrogen alters kappa-opioid modulation of cocaine-induced locomotor activity. We are currently determining mu and kappa opioid receptor density in the

nucleus accumbens and ventral tegmental area of these animals to investigate the opioid receptor subtype that participates in mediating this effect. These data further emphasize the importance of conducting studies in females before considering the use of mu and kappa-opioid receptor ligands as therapeutic agents for the treatment of addictive disorders. The authors wish to acknowledge the support by: NIH-BRIN(RR16470) and RCMI(RR03051).; APR and GSS were supported by MBRS-RISE(R25GM61838-03)of the UPR- MSC.

Patient readiness for change and residential treatment retention

K.R. Reid, W.B. Kissin, K. Schaefer, N. Haug, and D.S. Svikis

Virginia Commonwealth University, Richmond, VA, Westat, Rockville, MD, and University of California San Francisco, San Francisco, CA

The past decade has seen tremendous decreases in funding and reimbursement for drug abuse treatment. As a result, approval for more intensive services (e.g., residential and inpatient care) has become more difficult to obtain, leading drug abuse treatment researchers to search for variables that will best match patients to the level of care that is maximally effective from both a clinical and economic perspective. One variable that has been effectively used for this purpose is patient readiness for change (RC) (Prochaska and DiClemente, 1983). To date, however, RC has not been tested as a predictor of treatment participation and retention in more specialized and high-risk patient populations. The present study examined the relationship between RC and residential treatment retention in a sample of chronic opiate and/or cocaine dependent pregnant women. Women who provided informed consent completed the University of Rhode Island Change Assessment (URICA) and Addiction Severity Index (ASI) on admission to a 7-day residential program. Chi-square analyses examined the relationship between stage of change (37.4% precontemplation; 40.1% contemplation; 22.4% action) and discharge status (19% left treatment AMA) . Participants (N=152) had a mean age of 30.2 years of age and 82% were African-American. In the present sample of pregnant drug dependent women, the URICA stage was not related to premature dropout when assessing readiness for change regarding their primary drug of abuse. Study findings have both clinical and economic treatment implications for this high-risk patient population of pregnant drug dependent women. This research was supported by NIDA grants RO1 DA11476 and P50 DA09258.

Genetic and environmental influences on substance initiation, use, and problem use in adolescents

S.H. Rhee, J.K. Hewitt, S.E. Young, R.P. Corley, T.J. Crowley, and M.C. Stalling

Institute for Behavioral Genetics, University of Colorado, and University of Colorado Health Sciences Center, Boulder, CO

Background: Although twin studies suggest the importance of genetic influences on the risk for substance use disorders in adults, little information regarding the etiology of risk for substance use disorders in adolescence is available. Problem: We conducted a sibling/twin/adoption study of substance initiation, use, and problem use, estimating the relative contribution of genetic and environmental influences on these phenotypes in adolescents. Method: The participants were 345 monozygotic twin pairs, 337 dizygotic twin pairs, 306 biological sibling pairs, and 74 adoptive sibling pairs assessed by the Colorado Center on Antisocial Drug Dependence. The initiation, use, and problem use of tobacco, alcohol, marijuana, and any drugs (i.e., tobacco, alcohol, or any illicit drugs) were assessed. Tetrachoric correlations were computed for each group, and univariate model fitting analyses were conducted. Results: There were modest to substantial genetic influences on substance initiation, use, and problem use, with the exception of alcohol use and marijuana problem use, and moderate shared environmental influences on substance initiation, use, and problem use, with the exception of alcohol problem use and any problem use. For alcohol and any drugs, heritability was higher and the magnitude of shared environmental influences was lower for problem use than for initiation or use. For tobacco use and dependence, heritability was significantly higher in females than in males, and the magnitude of shared environmental influences was significantly higher in males than in females. Environmental influences shared only by twin pairs had a significant effect on alcohol use and any drug use. Conclusions: The heritabilities found in the present study are comparable to those found in twin studies of adult substance use and substance use disorders. The finding that problem use is more heritable than initiation and use is also consistent with the results of adult twin studies. The significance of environmental influences shared only by twin pairs on alcohol use and any drug use

suggests the influences of peers, accessibility of substances, and sibling interaction. This research was supported by NIMH MH-43899, NICHD HD-10333, NIDA DA-05131, DA-11015, and DA-13956.

Depression, gender and drug use are associated with health status among HIV-infected marginally housed individuals living in San Francisco

E.D. Riley, A.W. Wu, A.R. Moss, R.A. Clark, and D.R. Bangsberg
University of California at San Francisco, San Francisco, CA

While homelessness has been found to negatively effect health, few studies have been conducted to characterize the specific aspects of homelessness that leave individuals vulnerable, and few studies have been conducted to assess the specific aspects of health that are effected. We assessed the overall health of HIV-infected homeless individuals living in San Francisco. METHODS: Between July 1996 and May 2000, study participants completed an interview regarding sociodemographics, health care use, depression measured by the Beck's depression index, and health status measured by seven scales from the SF-36 health survey. Higher scores indicated better health for all SF-36 scales and more severe depression for the Beck's index. Simple and multiple linear regression were used to estimate the effects of sociodemographic and medical characteristics on health scales. RESULTS: Among 330 individuals interviewed, 83% were male, 43% were African-American, and the median age was 39 years. Current injection drug use was reported by 33% of the population while 63% reported ever having injected. All median health status scores were lower than those of the general population, and 46% of this population was depressed. Viral load and CD4 count were associated with physical health scores, but not mental health scores. Currently receiving antiretroviral therapy was not associated with any health scale tested. In adjusted analyses, depression was associated with lower scores for all physical and mental health scales; female sex was associated with lower scores for physical functioning and "vitality"; a history of injection drug use was associated with bodily pain and vitality. DISCUSSION: Depression, female sex and injection drug use were associated with multiple dimensions of health status in this population. Interventions to treat depression and addiction may improve the health status of HIV-infected marginally housed individuals. In addition, gender-sensitive health care could be warranted, though the current study did not have the power to detect specific aspects of female gender responsible for lower health scores.

Comorbidity and HIV risk behaviors among Hispanic drug users residing in Puerto Rico

R.R. Robles, J.C. Reyes, H.M. Colon, C.A. Marrero, and H. Sahai
Center for Addiction Studies, Universidad Central del Caribe, School of Medicine, Bayamon, PR

Although comorbidity of drug use and mental health problems has been associated with drug use chronicity, homelessness, HIV seropositivity, and AIDS, there is a dearth of information about the effect of comorbidity on HIV risk behaviors among drug users. This study examined the impact of comorbidity on Hispanic drug users residing in Puerto Rico, the U.S. site with the second highest incidence of AIDS. The study sample consisted of 556 injection drug users (IDUs) not in treatment. After verification of recent injection drug use, participants completed a survey instrument covering drug use patterns, HIV risk behaviors, and demographics. The Beck Inventory Scale for Anxiety and Depression was used to classify participants as: a) without severe symptoms of either condition, b) with anxiety only, c) with depression only, or d) with both conditions. Bivariate analysis and logistic regression were used in the analysis. The sample was predominantly male and over one-third were age 25 to 34. Participants classified with both conditions (anxiety and depression) were more likely to be females (47.5% vs. 25.7%) and homeless (44.8% vs. 24.9%). Multivariate analysis showed that they also were more likely to share needles (OR = 2.27), share cotton (OR = 3.44), share rinse water (OR = 2.50), engage in backloading (OR = 3.80), and pool money to buy drugs (OR = 2.83). These results reinforce the need for prevention and treatment programs to be able to identify these conditions in their target populations and to address both drug use and mental health conditions if the programs are to be effective.

The impact of gender and personality on decision-making in drug abusers

S.L. Rock, J.C. Stout, P.R. Finn, J.R. Busemeyer
Indiana University, Bloomington, IN

The psychological processes that underlie drug abuse may differ for men and women, and such differences may be explored in studies of decision making related to risky behaviors. In this study, we applied formal cognitive models of a gambling task (GT; Bechara et al., 1994) to explore the influence of gender and personality on decision making processes in drug abusing men and women. Participants were 57 men and 64 women between 18 and 35 years old who completed a computerized GT along with measures of drug use/abuse, and personality, including measures of harm avoidance, impulsivity, and socialization. We manipulated learning by altering the amount of win/loss information available, by either having the contingencies of wins and losses stated or not. Formal mathematical models (Expectancy-Valence Model, Busemeyer and Stout, 2002) of GT decision making were applied to derive individual participants' parameters related to their decision styles, including the relative influence of learning the task contingencies, responsivity to win and loss events, disparity of loss influence relative to win influence, and the consistency of response styles across the task. Performance data indicated that the pattern of decision making in female drug abusers was more advantageous compared with male drug abusers. With respect to personality characteristics, decision making in drug abusing women was associated with high levels of harm avoidance. In contrast, for drug abusing men, performance was associated with impulsivity and low socialization. The modeling results provided additional information about the characteristics of decision task performance. These results indicated that male drug abusers showed greater responsivity to possible winnings and a larger disparity between the influence of win and loss on decisions. Thus, their performance demonstrated a pattern of disadvantageous decision making that favored larger immediate rewards in spite of their association with larger long-term punishments, a finding that was similar to earlier studies of substance abusers and frontal-lesion patients. In contrast, data from drug abusing women pointed to differences in the model's learning parameter, indicating that decisions were unduly influenced by recent events, and did not benefit as much from an accrual of experiences with the task contingencies. This study of decision making points to individual differences in the psychological processes that underlie decisions in drug abusers.

An economic analysis of gender differences in addiction: The case of smoking with a proxy for addictive stock

J. Roddy

Wayne State University, Substance Abuse Research Division, Detroit, MI

Consumption of addictive goods is often viewed as irrational, self destructive behavior that is uncontrollable. This study tested the application of the rational addiction model on a group of smokers from the American's Changing Lives Survey, Waves I and II, 1986 and 1989 (n=641). Two stage least squares analysis was applied to compare the competing hypotheses of myopic behavior versus rational addiction on the sample examining each gender separately. The model distinguishes itself by offering a proxy for addictive stock, sometimes described as propensity to consume, that is comprised of stressful life events measured by the Social Readjustment Rating Scale (Holmes and Rahe, 1967). The group (371 women and 270 men) supports a rational model with positive and significant coefficients on future consumption. Both men and women are influenced by weight in the decision to continue to smoke. Addictive stock, modeled by assessing stressful life events, negatively influenced smoking in women. In contrast, the addictive stock variable was insignificant for men. The model revealed a strong association between price and consumption in men while both current and future price were insignificant for women. The results suggest that policies such as an increase in the excise taxes of cigarettes will reduce smoking by men much more than women.

Comparing the perceived value of vouchers, gift certificates, and cash incentives in pregnant drug-dependent women

J. Rosado, H. Jones, M. Stitzer and V. Vaidya

Johns Hopkins University School of Medicine, Baltimore, MD

Rationale. Contingency management via vouchers exchangeable for goods/services is an effective drug

abuse treatment. However, vouchers entail staff effort and may have lower reinforcing potency than comparable cash amounts. Gift certificate rewards avoid cash payments reduce staff burden. This study examines the relative reinforcing value of gift certificates vs. vouchers and vs. cash in a hypothetical choice task. Methods: Choice behavior is examined in a 60-min session with 150 discrete two-way choices presented in two counterbalanced blocks of 75 (voucher vs. gift certificate; gift certificate vs. cash). In each block, 25 choices are made between a fixed cash value gift certificate (\$10, \$50 or \$100) and either voucher or cash with value varying from 0 to >100% of the gift certificate. Primary outcome is the point where choices switch from gift certificate to the alternative. Results: A repeated measures ANOVA was performed on the outcome measure of crossover points showing a non-significant difference between choice options ($F = 0.298$, $p = 0.589$). Overall, subjects ($N = 33$) crossed over at approximately the same amounts no matter the choice options they had (i.e. voucher vs. gift certificates or gift certificates vs. cash). Implications: These results suggest that vouchers and gift certificates are equivalent to cash using this procedure. Research supported by DA 12403.

Pharmacotherapy for nicotine, alcohol and opiate dependence in women: A critical review

L.E. Ross, G. Koren and M. Steiner

Women's Health Concerns Clinic, St. Joseph's Healthcare, Hamilton, Centre for Addiction and Mental Health, and Hospital for Sick Children, Toronto, Canada

Substance abuse and dependence are increasingly recognized as significant health concerns for women; however, little research is available to determine whether women respond differently than men to standard therapeutic approaches, nor is there research to guide treatment of substance dependence during women's reproductive transitions. Since sex differences have been identified in the effects of many psychotropic medications, a literature review was undertaken to examine the evidence for sex differences in pharmacotherapies for nicotine dependence (nicotine replacement therapy, bupropion), alcohol dependence (disulfiram, naltrexone) and opiate dependence (methadone and related compounds). Particular emphasis was given to reports of administration of these compounds to adolescent women, pregnant or lactating women, and older women. Results revealed very few studies that systematically examined efficacy of these pharmacotherapies in women, particularly in the case of pharmacotherapies for alcohol dependence. Where sex differences were reported, men tended to have better treatment outcomes than women, perhaps because of the important roles of social and psychological factors in women's patterns of drug use. Implications of these findings for future research and clinical practice are discussed.

Gender and menstrual cycle effects on progressive ratio measures of cocaine- and food-maintained responding in cynomolgus monkeys

M.E. Roth, N.K. Mello, S.S. Negus, and J.H. Mendelson

McLean Hospital, Harvard University, Belmont, MA

Clinical data have revealed that psychostimulants enhanced positive subjective measures in women during the follicular phase compared to the luteal phase of the menstrual cycle. Preclinical data also indicated that cocaine-maintained responding under a progressive ratio schedule varied as a function of the estrous cycle in female rodents. For example, female rats reached the highest breakpoints for cocaine during the estrus phase of the estrous cycle. There are currently no reports on the effects of menstrual cycle phase on cocaine-maintained responding in nonhuman primates. The present study was designed to examine gender and menstrual cycle effects on cocaine- and food-maintained responding under a progressive ratio schedule in cynomolgus monkeys. Female ($n=4$) and male ($n=2$) monkeys were initially trained to self-administer 1g banana-flavored food pellets. Once food-maintained responding was stable on an FR 20 schedule, monkeys were trained on a progressive ratio schedule. Once breakpoint measures were obtained across 3 menstrual cycles, the monkeys were catheterized and trained to self-administer intravenous (i.v.) cocaine (0.032 mg/kg/injection) under the same conditions used for food self-administration. Menstrual cycle phase was monitored with hormonal measures, vaginal swabs and observation of menses onset. Hormone levels were determined with radioimmunoassay. We hypothesize that breakpoint measures for cocaine-maintained responding will be higher in female than in male monkeys, and that the highest breakpoints for cocaine will occur during the follicular phase compared to the luteal phase in females. We also hypothesize that food-maintained responding will vary as a function of gender and menstrual cycle phase. These studies are now

ongoing. This research was supported by grants T32-DA07252, RO1-DA14670, K05-DA00101, and K05-DA00064 from NIDA, NIH.

Gonadal hormones regulate conditioned place preference for cocaine and monoamines in female rats

S.J. Russo, E.D. Festa, S.J. Fabian, S. Jenab, and V. Quinones-Jenab

Hunter College of CUNY, New York, NY

Previous reports have shown that there are sex differences in conditioned place preference (CPP) for cocaine. However, it is not known whether gonadal hormones affect the rewarding properties of cocaine in either sex. In the present study, we use a CPP paradigm to determine the effects of endogenous gonadal hormones as well as of estrogen and progesterone replacement on cocaine reward. Neurochemical measurements were also taken to identify monoaminergic substrates in experimental animals. Although both intact and gonadectomized (GDX) male and female rats showed a significant CPP for cocaine, ovariectomy (OVX) attenuated the magnitude of CPP. In OVX rats, progesterone inhibited cocaine CPP while estrogen plus progesterone enhanced CPP. Additionally, GDX and hormone replacement in female rats affected monoamine levels and turnover ratios in the ventral tegmental area (VTA) and nucleus accumbens (NAc). While no effects of castration were observed, OVX decreased levels of dopamine and serotonin in the VTA. In females, progesterone replacement increased levels of dopamine and serotonin in the VTA, while estrogen plus progesterone replacement increased dopamine levels in the NAc. Collectively, these results indicate that ovarian hormones may influence cocaine reward by altering monoaminergic systems, which, in turn, may contribute to sex disparities in overall cocaine use. This work was supported by: PS-CUNY, RR-03037, NIDA DA12136, SCORE 506-GM60654, and SNRPNF-39534.

Sex-dependent effects of neonatal isolation on acquisition of cocaine and food self-administration in adult rats

H. Sanchez, X.-Y. Zhang, and T.A. Kosten

Yale University School of Medicine, New Haven, CT

We showed that neonatal isolation (NI) increases acquisition of cocaine self-administration in adult male rats suggesting that early life stress enhances vulnerability to addiction. Some neural areas that contribute to drug behaviors differentiate postnatally and are sexual dimorphic. This leads to the hypothesis that NI has different effects in females. We are testing adult rats (n=8-12/group) of both sexes that have NI (1-hr isolation/day; PN2-9) or non-handled (NH) experience. Rats are implanted with jugular catheters and allowed to self-administer cocaine (FR1; 10" IT; 5" TO), 2 hr/day, 5 day/wk by presenting 4 escalating doses (0.0625-0.5 mg/kg/infusion; 1 dose/5 days). NI males acquire self-administration more readily than NH males, replicating our previous work. We confirm sex differences shown in other studies; NH female rats acquire cocaine self-administration more readily than NH male rats. However, NI attenuates this effect in female rats. Separate groups of rats were allowed to lever press for food (FR1; 10" TO; 30 min/day) until they acquire the operant. NI does not alter acquisition of food responding in male rats. NH females are significantly slower to acquire this operant than male rats. However, NI negates this effect; NI females do not differ from male rats in acquisition of food responding. Finally, locomotor activity does not differ by stress group or sex. These results show that NI alters acquisition of operant responding for cocaine and food in a sex-dependent manner. Support: Donaghue Medical Research Foundation.

Utility of the CAGE smoking questionnaire in a sample of perinatal smokers

K. Schaefer, B. Perry, J. Ferrante, K. Reid, R. Mejia and D. Svikis

Virginia Commonwealth University, Richmond, VA

Perinatal cigarette smoking is one of the most common addictive behaviors during pregnancy, yet screening for perinatal tobacco use has become difficult within the past decade. Historically, patient self-reported use was reliable and valid data, but increased public attention and scrutiny and greater social stigma associated with smoking during pregnancy has led practitioners to posit an increased likelihood for pregnant women to minimize and deny perinatal tobacco use. Obtaining biological assays on all women entering prenatal care is not feasible or cost effective, thus, appropriate self-report screening measures are needed to identify women at risk. The CAGE smoking questionnaire, modified from the familiar CAGE questionnaire for

alcohol use, is a recently developed four-item clinical tool that is used to screen for nicotine dependence. The purpose of the current study was to examine the utility of the CAGE smoking questionnaire in a sample of perinatal smokers. Pregnant women (N=32) who consented to a large clinical trial for smoking cessation completed a self-report health behavior assessment, which included the CAGE smoking questionnaire, and provided urine sample for cotinine assay. Based on urine cotinine levels, nearly twenty percent of the sample were recent smokers. Sensitivity, specificity, and positive predictive value were calculated for different cut-off scores for the CAGE. Results suggest a cutoff of one on the CAGE smoking questionnaire was associated with the least amount of false positives and false negatives (sensitivity =65%; specificity= 66%). The positive predictive value for a cutoff of one was 90%, which suggests, in this sample, the CAGE detected 90% of pregnant women who were truly smokers. Additional subjects are expected to be recruited for further analyses, but these preliminary results suggest the CAGE smoking questionnaire may be an important screening tool for clinical to use in obstetrical settings to identify recent smoking. This research was supported by NIDA R01 DA11476 and NIAAA R01 AA11802.

Are women less able to quit smoking with bupropion than men? A pooled analysis of published trials of bupropion SR

D. Scharf and S. Shiffman

University of Pittsburgh, Pittsburgh, PA

Data suggest that women have less success quitting smoking than men do. Few comparisons have been made of gender differences in quitting smoking with bupropion SR (Zyban), the only non-nicotine pharmacological aid for smoking cessation. To determine if there is a gender difference in quitting with Zyban, we conducted a pooled analysis of data from five published trials reporting gender-specific quit rates for Zyban. Data from an aggregate 1840 moderate-to-heavy smokers were included in the analyses. Outcomes were assessed at week 7 with point prevalence (1 study) and continuous abstinence measures (3 studies), or at week 52 with point prevalence (1 study). Pooled analysis (stratified by study) showed that women generally had lower quit rates than men, regardless of treatment (OR=0.67, CI 0.5 to 0.88). However, logistic regression analyses showed no gender X treatment interaction (OR=1.20, ns): men and women benefited equally from Zyban treatment. Results suggest the need to better understand gender differences in cessation, and suggest that Zyban is an effective smoking cessation aid for both women and men.

Early findings from the Colorado Women's Prison Project comparing risk behavior histories of young and mature female offenders

M.L. Schoeneberger, J.Y. Sacks, H. Wexler and S. Sacks

National Development & Research Institutes, Inc., Center for the Integration of Research and Practice, New York, NY

The CO-WPP is a 5-year NIDA sponsored study whose purpose is to compare the effectiveness of two prison-based substance abuse treatment models for female offenders, a Therapeutic Community (TC) and an Intensive Outpatient (IOP) program. Preliminary data is based on an initial cohort of 173 female offenders who were admitted to the Denver Women's Correctional Facility (DWCF) between February and December 2002. (Little is known about treatment for the female offender population in our prisons and even less is known about the profiles and needs of the older female offender. This poster will compare the demographic profiles, criminal justice involvement, substance use, and risk behavior histories of Young (less than age 40) and Mature (age 40+) female offenders recommended for intensive substance abuse treatment during their present incarceration term. The total female offender cohort is predominantly Caucasian, under-educated, unmarried, and under-employed; their median age is 35. The women have an extensive lifetime arrest history. Over three-quarters of the women are parents, with an average of three children. The profiles and behavioral histories of the Young and Mature cohorts will be related to suggested treatment modifications for the two sub-populations of female offenders.

Social-contextual predictors for polydrug abuse among college students

L. Simons, S. Deihl, L. Wright, and B. Schatz
Widener University, Chester, PA

The study evaluated social-contextual risk factors for drinking, smoking, and substance abuse among 207 undergraduate students. A survey research design with an anonymous questionnaire packet was distributed to a convenient sample of students from the fall of 2001 to the fall of 2002. Chi-square analyses demonstrated that drinking, smoking and drug use did not vary significantly over time. A 2 (gender) x 2 (drinking game) ANOVA demonstrated that males who participate in drinking games had higher alcohol use scores than females who participate in drinking games. A hierarchical regression analysis showed that previous alcohol use is a primary predictor, drinking game participation is a secondary predictor, and fraternity/sorority membership is a tertiary predictor for alcohol use. Another hierarchical regression analysis demonstrated that lifetime drug use, drinking game participation and gender were significant predictors for marijuana use and drug use. Other significant univariate analyses demonstrated differences in drinking, smoking, and drug use according to social-contextual factors (ie. residence). These results suggest that students who have experimented with drugs and alcohol prior to entering college may be more likely to live on-campus and engage in recreational activities where drugs and alcohol are readily available, therefore prevention programs should focus on increasing alternative social activities on campus to deter continued substance use.

A concurrent assessment of the rewarding and aversive properties of morphine

G.R. Simpson and A.L. Riley
American University, Washington, DC

The dual motivational properties of recreational drugs are well established with drugs such as morphine having both rewarding and aversive effects. Given that the interaction of these two properties is reported to influence drug-acceptability (Grakalic & Riley, *Pharmacol.Biochem.Behav.* 73:787-95;2002) and drug-seeking behavior (Stolerman, *Trends Pharmacol.Sci.* 13:170-6;1992), information regarding their relative contribution may give insight into their role in drug abuse. Although these properties are well established, assessments of the aversive and rewarding effects of such drugs are generally made independently and under different parametric conditions. Consequently, it is unknown if their aversive and rewarding properties are affected similarly by the same manipulations. Such a determination may be useful in assessing how these manipulations affect drug taking and to what degree (if any) each property mediates drug use. To begin addressing these issues, the present study evaluated a combination Conditioned Taste Aversion (CTA)/Conditioned Place Preference (CPP) procedure that allowed for the concurrent assessment of both morphine's aversive (CTA) and rewarding (CPP) properties in the same animal. Specifically, both male and female Sprague-Dawley rats were given a novel saccharin solution to drink and injected subcutaneously with morphine sulfate (1, 5.6, 10 or 18 mg/kg) or drug vehicle. They were then placed on one side of a two-compartment place-conditioning chamber. On the following day, they were given water to drink followed by injections of the drug's vehicle and then placed in the other CPP compartment. This conditioning procedure was repeated for four such conditioning cycles after which all subjects were tested for their taste aversion and place preference. Both males and females displayed morphine-induced taste aversions and place preferences. Only the taste aversions were dose dependent, however, suggesting a dissociation between these two motivational properties of morphine. Further, females displayed both greater aversions and greater preferences compared to males, suggesting enhanced sensitivity in females to morphine's affective properties. The combined CTA/CPP preparation may be useful in evaluating the motivational properties of drugs and may provide a baseline for evaluating their role in drug taking. Supported in part by a grant from the Mellon Foundation to ALR.

Effects of progesterone treatment on cocaine response in male and female cocaine users

M. Sofuoglu, E. Mitchell, T.R. Kosten
Yale University, New Haven and VA Healthcare System, West Haven, CT

We recently reported that in female cocaine users progesterone treatment attenuated some of the subjective effects of smoked cocaine. To further extend these findings, in this study, we examined the effects of

progesterone treatment on the subjective and physiological effects of cocaine and cocaine self-administration behavior in both male and female cocaine users. We hypothesized that progesterone treatment would attenuate the subjective response to cocaine and reduce cocaine self-administration behavior. A total of 8 subjects, 4 men and 4 female cocaine users had 2 experimental sessions. Before each session, subjects received either two oral doses of 200 mg of progesterone or placebo. Two hours after the second medication treatment, subjects received a dose of 0.3 mg/kg cocaine intravenously and started the self-administration period in which 5 optional doses of cocaine were available. The main analysis compared the 2 treatments with repeated measures of ANOVA. Progesterone treatment did not significantly affect the blood pressure and heart rate changes in response to cocaine or cocaine self-administration behavior. Progesterone treatment attenuated the rating of some of the subjective effects of cocaine. These preliminary results suggest that progesterone can be administered safely to both male and female cocaine users. The effects of progesterone treatment on cocaine dependence need to be further studied in controlled trials (Supported by NIH grant P-50 DA12762).

Behavioral couples therapy for female patients with alcoholism: Effects on drinking behavior and relationship adjustment

C. A. Stappenbeck and W. Fals-Stewart

Research Institute on Addictions, University at Buffalo, The State University of New York, Buffalo, NY

Historically, alcoholism and other drug use disorders have been conceptualized as problems of men. In turn, it has been the study of addictive behavior in men that has shaped our understanding of the etiology, course, and treatment of these disorders. Both researchers and clinicians have argued that significant behavioral, social, and emotional differences exist between treatment-seeking substance-abusing men and women that may bear on the unique treatment needs of alcoholic women. Family and relationship factors, in particular, appear to play a critical role in the maintenance and exacerbation of drinking problems, as well as relapses after treatment. Therefore, interventions specifically designed to address both relationship and drinking problems concurrently would seem likely to have significant benefit for female alcoholic patients. Thus, the purpose of the present study was to examine the effects of BCT on the outcomes of married or cohabiting alcoholic female patients and their nonsubstance-abusing spouses or intimate partners. These couples (N = 105) were randomly assigned to 1 of 3 equally intensive interventions: (a) a behavioral couples therapy treatment condition (BCT; n = 35), which consisted of individual alcoholism counseling plus behavioral couples therapy sessions; (b) an individual-based treatment condition (IBT; n = 35), consisting of individual alcoholism counseling only; or (c) a psychoeducational attention control treatment condition (PACT; n = 35), consisting of individual alcoholism counseling plus couple-based lectures. A piecewise multilevel regression (MLR) model was used to assess changes in couples over the intervention phase of the study and the 12-month posttreatment follow-up period. During the 1-year follow-up, compared to participants who received IBT or PACT, those who received BCT reported (a) fewer days of drinking, (b) fewer negative consequences related to alcohol use, (c) higher dyadic adjustment, and (d) reduced partner violence.

Correlates of homelessness in a sample of women arrestees in California

J. Steinberg and C. Grella

UCLA Integrated Substance Abuse Program, Los Angeles, CA

Previous research has documented high rates of residential instability and homelessness among women offenders, yet less is known about the relationship between previous life experiences and risks for homelessness among jailed women. Using a sample of substance-abusing women offenders in California, we compared women with and without a history of homelessness on drug use, criminal behavior, and background characteristics. Structured interviews were conducted with 396 women arrestees in jails located in 13 counties throughout California using data from the California Drug Use Forecasting Project (CAL-DUF) between 1994-1996. Forty-four percent (44%) of the sample reported ever being homeless, with a median age of first homeless episode at 26 years. Bivariate analyses indicated that women who reported ever being homeless were more likely to test positive for one or more drugs at intake (84% vs. 71.2%, $p < .05$) and to report more drug-related problems (45% vs. 22%, $p < .05$). Logistic regression models were run to assess the predictors of homelessness. Preliminary analyses suggest that women arrestees with a

homeless history were more likely to report earlier first age of alcohol and marijuana use, parental alcohol or drug problems, and parental incarceration. In addition, arrestees with a homeless history were more likely to have been jailed previously and were more likely to have been arrested for drug-related offenses during the previous 12 months. Clinical and policy implications are discussed.

Sex differences in locomotor effects of morphine

E.C. Stoffel, J.L. Clark, and R.M. Craft

Washington State University, Pullman, WA

Sex differences in the effects of morphine and other mu opioid agonists have been reported in tests of antinociception, drug reinforcement, and drug discrimination. The purpose of this study was to determine to what extent sex differences in effects of s.c. morphine on spontaneous locomotor activity might contribute to sex differences in its effects on other behaviors. In the first experiment, time- and dose-effect comparisons were conducted in adult Sprague-Dawley rats. There were no sex differences in activity levels of saline-treated controls. In contrast, there was a significant sex difference in morphine's effect on activity. Morphine was more potent in males than females in producing early decreases and later increases in locomotor activity relative to saline-treated controls. Morphine also appeared to be more efficacious in males than females in its sedative effects, as 10-32 mg/kg essentially eliminated activity in males at 60-120 min post-injection, whereas these doses only partially suppressed activity in females. The second experiment tested whether the locomotor effects of 10 mg/kg morphine differed between rats that were handled for 4 days before testing compared to rats that were tested immediately. In females, pre-test handling did not significantly affect activity levels in saline- or morphine-treated rats relative to non-handled controls. In contrast, in males, the effect of morphine but not saline was significantly attenuated in handled rats relative to non-handled controls. The third experiment examined whether sex differences in the effects of morphine on spontaneous locomotor activity are gonadal steroid hormone-dependent. Rats were gonadectomized (GDX); females and males with and without estradiol (females) or testosterone (males) replacement were tested with saline or 10 mg/kg morphine. In females, there was no significant effect of estradiol in either saline- or morphine-treated rats, although estradiol-treated females were slightly more active than GDX+0 controls overall. In males, there was no significant effect of testosterone in saline-treated rats; in morphine-treated rats, testosterone slightly attenuated the locomotor-decreasing effect of morphine in the first 30 min only. The results of these experiments indicate that sex differences in locomotor effects of morphine may be related to sex differences in stress reactivity, but are not attributable to activational effects of gonadal steroid hormones.

Gender matching, not ethnic matching, desired for HIV post-test counseling

C. Woodstock Striley and L.Cottler

Washington University School of Medicine, St. Louis, MO

Barriers to HIV testing and/or enrollment in an HIV prevention study might include the inability to match interviewers or counselors on gender or race. We had the opportunity to determine what men and women feel about these matching disparities regarding post-test counseling, which included sensitive information about high risk behaviors. One hundred and thirty men and women in the NIDA-funded EachOneTeachOne HIV intervention study filled out questionnaires following their individual HIV post-test counseling session. They were asked if they would prefer a gender-matched counselor, and an ethnically-matched counselor, and were asked how the counselor could have improved the session. Nearly all respondents were African-American (91%), and most were male (68%). Seven of the eight counselors were male, and two were African-American. Respondents were 19-68 years old. Fifty nine counselor-respondent pairs (45%) were ethnically-matched, and 79 (61%) were gender-matched. Chi-squares were used to examine the effect of gender, ethnicity and match. Desire for a matched counselor was significant for gender, with more males wanting a male counselor. African-Americans were not significantly more likely to desire an ethnically-matched counselor. Respondents in matched gender and ethnic pairs were more likely to desire matched counselors. Respondents were highly satisfied with post-test counseling as measured by 98% saying they would have done "nothing" differently had they been the counselor. In this study, ethnically-matched counselors were not desired by respondents. Gender-matched counselors were important to men. High satisfaction with counseling may produce a halo effect and predict desire for a future match. Continued

research on the importance of ethnic and gender matching is important. These findings show that it is important to note when respondents are asked if they desire a matched counselor. Research funding from NIDA (501-DA08324, L.B. Cottler, PI) and NIMH training grant (5T32-MH17104, L.B. Cottler, Director).

Gender issues and adolescent substance treatment outcomes

G. Subramaniam, M. Stitzer, P. Clemmey, C. Voss and M. Fishman

Johns Hopkins University, Baltimore, and Potomac Healthcare Foundation, Rockville, MD

Background: Female gender has been associated with higher depressive comorbidity among adolescent substance abusers. However, there are no data on the association between gender and treatment outcomes in adolescents. The objectives of this study are to a) characterize intake substance abuse and psychiatric features for both genders in a sample of substance abusing adolescents entering multi-modal residential treatment and b) to determine if there is a differential treatment outcome at 12-months between the two genders. **Method:** 136 adolescents entering a residential SUD treatment program were administered the Global Appraisal of Individual Need (GAIN), a structured interview instrument and the Beck Depression Inventory (BDI), on admission and at 12 months post-intake. 71% of the entire sample was referred for a psychiatric evaluation and 52% received psychotropic medications during residential treatment. Descriptive analyses, chi-square for categorical variables and one-way ANOVAs for continuous variables were performed. **Results:** On admission, females (n=30) scored higher than the males (n=106) on the BDI, with scores of 17.5 and 13.2, respectively ($\chi^2=10.2$, $p = .029$). A higher proportion of females (74%) versus males (56%) had a comorbid psychiatric disorder but the difference was not statistically significant; a higher proportion of females (24/30) were treated with a psychotropic medication compared to males (50/106, $\chi^2=10.2$, $p = .002$). Although there were no gender differences in the severity of substance use, more females had an opioid use disorder (OUD, 48.5%) vs. males (26.7%, $\chi^2 = 5.7$, $p = .02$). The total sample showed significant reductions in days of substance use and BDI scores from intake to 12 months but there were no differences in the 12-month measures between the two genders. **Conclusions:** This study provides new information to suggest that more females than males present with an OUD and confirms prior findings substance abusing adolescent females have higher rates of comorbid psychiatric disorders and higher depression symptoms scores at treatment entry. Although both BDI scores and days of substance use for the total sample improve from intake to 12-months post-intake, there were no gender differences in the 12-month measures.

Emotionally responsive parenting: New intervention for drug-dependent mothers

N. Suchman, M. Altomare, F. Moller, A. Sladec, and L. Mayes

Yale University School of Medicine, The APT Foundation, and Yale Child Study Center, West Haven, CT

Behavioral parent training programs for drug dependent mothers have had limited success in improving parent-child relationships or children's psychosocial adjustment. Attachment research suggests that parenting interventions for high-risk mothers should go beyond overt behavior management to focus on increasing parents' emotional availability to children and helping parents understand children's emotional needs at different ages. In this study, we examined preliminary feasibility of an adjunct, 12-week parenting intervention (Emotionally-Responsive Parenting or ERP) for mothers enrolled in outpatient treatment for drug dependence. Twenty mothers recruited via clinician referrals to participate in the ERP intervention were compared with 23 mothers in a matched historical control group that received standard treatment. The majority of mothers in the study were DCF-referred for treatment of cocaine dependence and were enrolled in intensive outpatient treatment (2-3 groups/wk). On average, mothers were single, high school educated, 35 years old, with 2-3 minor children in their care. Outcomes included weekly attendance, treatment retention, completion, and compliance, and post-tx abstinence. For mothers enrolled in ERP, we also examined the capacity to acknowledge cognitive and affective states (their own and their children's) in the parent-child relationship at pre- and post-tx; this capacity is thought to influence maternal emotional availability and sensitivity. In comparison with mothers receiving standard care, ERP mothers had better weekly attendance ($t = -2.07$, $p < .05$) and were more compliant with clinical advice ($\chi^2 = 10.67$, $p < .001$). Effect sizes (d) also indicated meaningful differences in length of enrollment ($d = .47$), and treatment completion ($d = .27$) favoring ERP mothers. At post-tx, 83% ERP vs 70% comparison mothers were abstinent; this difference was non-significant. Results of repeated measures ANOVA's indicated that, at

post-tx, ERP mothers' capacity to acknowledge their own and their children's cognitive and affective states ($F = 7.80, p < .05$) had also improved significantly. This pilot study indicates the feasibility and promise for developing new parenting interventions for high-risk mothers to improve their understanding and capacity for emotional relatedness with their children.

Methodological issues when screening drug-dependent women for victimization: What measure should we use and when should we use it?

D. Svikis, M. Velez, S. Scholle, L. Keyser-Marcus and H. Jones

Virginia Commonwealth University, Richmond, VA, and Johns Hopkins University School of Medicine, Baltimore, MD

Many drug dependent women are victims of emotional, physical and sexual abuse. When left untreated, victimization can lead to premature treatment dropout and other psychosocial sequelae (McFarlane, 1996). For women of childbearing age, pregnancy does not eliminate such abuse, and in fact some studies suggest that frequency of abuse may actually increase (Velez et al., 2002). The present study compares three strategies for assessment of victimization: a) clinical interview by certified nurse midwife, completed during first on-site prenatal care visit, typically within 24 hours of program admission; b) standardized psychosocial assessment (ASI) by substance abuse counselor, within 48 hours of program admission; and c) self-administered Violence Exposure Questionnaire (VEQ), given by trained staff within 5 days post-admission, following an educational group that defines victimization and abuse. Participants (N=101) were pregnant women admitted to a 7-day residential program for pregnant and post-partum women. Analyses to-date compared ASI and VEQ prevalence rates for both recent and lifetime emotional, physical and sexual abuse. For all six measures of abuse, prevalence rates were higher with VEQ questionnaire as compared to ASI interview data. For recent abuse (during current pregnancy), ASI and VEQ prevalence rates differed as follows: 2.7% vs 0%, for sexual; 11.6% vs 39.8% (physical); and 21.6% vs 39.8% (emotional). Lifetime rates ranged from 28.9% vs 40.2% (sexual); 32.2% vs 68.8% (physical) and 49.5% vs 63.9% (emotional). Chi-square analyses were significant for all six comparisons at the $.001 < p < .03$ level. Study findings confirm high rates of comorbidity in this high-risk group of women. The data also support the hypothesis that such abuse often continues during pregnancy. Additional analyses should inform clinical practice, by yielding sensitivity and specificity estimates for each measure. Research support provided by HRSA grant No.H64MC0017-02.

Sex and age differences in the behavioral responses to acute methylphenidate

A.C. Swann, P.B. Yang, N. Dafny

University of Texas-Medical School at Houston, TX

Sex and age differences are important considerations in the study of the effect of drugs on humans and animal models. Methylphenidate (MPD), commonly known as Ritalin, is a psychostimulant widely used in the treatment of attention deficit/hyperactivity disorder (ADHD), a behavioral disorder with onset in childhood. Attention deficit/hyperactivity disorder affects 3% to 5% of school-aged children in the United States. Many adults may also be suffering from this disorder. The aims of this study were to examine the acute dose-response characteristics of MPD in young and adult female and male Sprague-Dawley (SD) rats and to determine whether there were sex and age differences in the behavioral responses of these animals to acute administration of MPD. Locomotor activity was recorded from young and adult female (n=48) and male (n=52) SD rats before and after an administration of MPD (0.6-, 2.5-, or 10-mg/kg, i.p.). Results showed that young and adult female and male SD rats exhibited similar acute dose-response characteristics to 0.6-, 2.5-, and 10-mg/kg MPD. No age differences were found between young and adult male rats in all three MPD doses. However, adult female rats exhibited higher locomotor responses than young female rats to 2.5-mg/kg MPD. In addition, sex differences between young female and male rats were observed at the 10-mg/kg; whereas sex differences between adult female and male rats were found at both 2.5- and 10-mg/kg MPD. Supports: NIDA-DA14441-01A1(P.B.Y.) & Pat Rutherford Chair in Psychiatry; methylphenidate was a gift from Mallinckrodt.

Sex differences in opioid antinociception in twelve rat strains: Importance of the relative effectiveness of the opioid

J.M. Terner, A.C. Barrett, L.M. Lomas, E.S. Smith and M.J. Picker
University of North Carolina at Chapel Hill, Chapel Hill, NC

Sex differences have been reported in opioid antinociception, with opioids being more potent in males. Although there is some evidence to suggest that sex differences in opioid antinociception varies across rat strain, this issue has not been systematically examined. In the present study, the influence of rat strain (ACI, Brown Norway, DA, F344, F344-Sasco, Holtzman, Long Evans, Long Evans-Blue Spruce, Lewis, Sprague Dawley, Wistar, Wistar-Kyoto) on sex differences in opioid antinociception was examined in a warm-water tail-withdrawal procedure using water temperatures of 50, 52 and 55C. Tests were conducted with morphine, the low-efficacy mu opioid buprenorphine, and the less efficacious, mixed-action opioids butorphanol and nalbuphine. When collapsed across all conditions, the rank order of effectiveness in producing antinociception was morphine > buprenorphine > butorphanol > nalbuphine. Morphine and buprenorphine were generally more potent in males than females, although there were numerous instances in which these differences were small and not statistically different. The less effective opioids butorphanol and nalbuphine were generally more potent in males and at intermediate water temperatures more effective in males. Sex differences in opioid antinociception were observed with at least one opioid in each of the strains tested. The magnitude of the sex differences in opioid antinociception varied markedly across strains with relatively large differences obtained in the F344 and F344-Sasco, and small differences in the ACI, Holtzman, Long Evans and Long Evans-Blue Spruce strains. Moreover, the magnitude of these sex differences were smallest with morphine, and largest with butorphanol and nalbuphine. In summary, the sex differences in opioid antinociception were influenced by both the genetic (strain) background and the relative effectiveness of the opioid (Supported by grants DA10277, MH07431, and DA07244).

Understanding gender differences and similarities in private substance abuse treatment services: An organizational analysis

S.M. Tinney, H.K. Knudsen, J.A. Johnson and P.M. Roman
University of Georgia, Athens, GA

Given the numerous individual-level analyses of gender differences in service patterns and pathways into treatment by substance-abusing men and women, it is imperative to explore the organizational-level attributes characterizing facilities with a predominantly female, predominantly male, and gender-mixed caseload to identify the connect or disconnect between the client's needs and organizational response to these documented needs. Data are drawn from the 2001 National Treatment Center Study (NTCS), a nationally representative longitudinal study of private-sector alcohol and drug abuse treatment centers (n=450). A multinomial logistic regression model will be used to predict the likelihood of a center having a gender-mixed caseload relative to a predominantly female or predominantly male caseload. The study hypothesizes that private substance abuse treatment facilities with a gender-mixed caseload will be less likely than those with a female-dominated caseload to (1) offer child care programs, (2) offer specialized tracks for women, (3) offer treatment for eating disorders, (4) offer treatment for prescription drug addiction, (5) receive a higher proportion of referrals from mental health sources and (6) accept higher proportions of Medicare and/or Medicaid clients. Moreover, it is hypothesized that private substance abuse treatment facilities with a gender-mixed caseload will be less likely than those with a male-dominated caseload to (1) offer treatment for gambling addiction, (2) offer programs on domestic violence/anger management, (3) receive a higher proportion of work-based referrals, and (4) receive a higher proportion of referrals from the legal system. Results from the study provide suggestions for how treatment center's management can better target specific population's needs, as well as develop a more comprehensive program to suit men and women, alike. Supported by NIAAA grant T32-AA07473 and NIDA grant DA13110

12-Step attendance and commitment during and after inpatient and outpatient drug treatment by gender

J.S. Tonigan and W.R. Miller

CASAA Clinical Research Branch, University of New Mexico Center on Alcoholism, Substance Abuse and Addictions, Albuquerque, NM

Social support for abstinence is an important factor in sustaining abstinence from illicit drugs, and treatment providers routinely refer clients to 12-step programs. While there is a well-developed research literature on AA, less is known about the patterns of 12-step attendance and participation among illicit drug users. The purpose of this study was to document the nature and intensity of 12-step participation among 208 illicit drug abusers recruited in a randomized clinical trial (Miller, Yahne & Tonigan, in press) investigating the relative effectiveness of standard care versus standard care with a motivational enhancement session (outpatient $n = 152$; inpatient = 56). The most common presenting drug problem was cocaine (53%), followed by heroin (29%), amphetamine, marijuana, and barbiturates. Longitudinal measurement of 12-Step-related practices and attendance was done using the Form 90 (Miller, 1995) and the TSPQ (Tonigan et al., 1996), measures with strong psychometric properties. A majority (55%) of the clients reported 12-step attendance during treatment, but this percentage faded to 36% one year after treatment. About 20% reported jointly attending AA, NA, and CA groups. Large mean differences in frequency of 12-step attendance after treatment were found by provider type, client gender, and over time, but measures of 12-step commitment did not parallel these findings. Frequency of 12-step attendance was significantly and positively associated with increased abstinence from illicit drugs and alcohol. Research and clinical implications are discussed.

The effects of substance abuse on maternal attributions of an infant's cry

S. Truman, N. Suchman, and L. Mayes

Augsburg College, Minneapolis, MN, Yale University School of Medicine, and Yale Child Study Center, New Haven, CT

Drug-using (and in particular, cocaine-using) mothers have been thought to be globally less sensitive and responsive to their children when compared to their non-drug-using counterparts. One possible source of problems in parenting behavior may be biased attributions mothers make about infants, and negatively biased beliefs about their ability to effectively care for the child. A total of 110 mothers of six month old infants (46 non-drug-using, 14 drug-using without cocaine, and 50 cocaine-using) were presented seven 10-second audio-taped infant cry segments and then completed a measure that evaluated Efficacy of Response, Emotional Response of the Mother, Helping Behavior, No Helping Behavior, Reason for Cry and Baby Difficulty of Care. Additionally, mothers completed the Beck Depression Inventory (BDI) and the Parenting Stress Index (PSI). Analyses of Variance yielded no significant differences by drug-use-status on the attributional subscales. However parenting stress (high vs. low) was related to higher rates of No Helping Behavior, lower rates of Efficacy of Response, higher ratings of Baby Difficulty of Care, and higher BDI scores. Interaction terms (Drug Use Status X Parenting Stress) were non-significant. Maternal BDI scores mediated the effects of parenting stress for mothers' Efficacy of Response, but did not significantly mediate other outcomes. The study did not find deficits (poorer and more negative attributions about the baby and the mothers' own parenting behavior) as a function of drug use status. Rather, parenting stress and maternal ratings of depression were significantly related to attributional outcomes.

Gender differences regarding comorbidities and childhood trauma in alcohol/drug-dependent patients in Brazil

A.M. Tucci, F. Kerr-Corrêa, and M.L.O.S. Formigoni

UNIFESP/EPM, and UNESP/Botucatu, São Paulo, Brazil

There is a paucity of information on the relationship between psychiatric comorbidity and childhood trauma and alcohol/drug dependence, in Brazil. The ASI (Addiction Severity Index), the CTQ (Childhood Trauma Questionnaire) and the M.I.N.I. Plus were applied to a sample of 108 alcohol and/or drug dependent outpatients who looked for specific treatment in one psychiatric treatment unit. As regards the prevalence of sexual/emotional abuse and physical negligence, gender differences were observed (women >

men). On the other hand, no gender differences were found regarding physical abuse and emotional negligence. The number of psychiatric comorbidities was higher in women than in men. Men presented significantly higher alcohol related problems than women (according to the ASI scores). This difference was not detected in drug related problems. Drug dependent patients showed a significantly higher number of psychiatric comorbidities than alcohol dependent patients. Those patients with higher severity of drug related problems presented higher number of psychiatric comorbidities. The most common psychiatric disorders were: anxiety, dysthymia, post-traumatic stress disorders in both groups (alcohol and drug dependent patients). The severity of drug related problems presented a significant association with emotional abuse in the childhood. The presence of emotional, physical or sexual abuse, as well as physical negligence was associated with the number of psychiatric comorbidities. These findings support the idea that alcohol and drug dependent patients with history of childhood trauma should be considered a special group with specific needs. This kind of patients tends to present higher levels of problems severity, mainly psychiatric comorbidities. Women, particularly, present a higher risk of developing comorbidities and this could be due to the higher prevalence of childhood trauma.

Gender differences in cerebral hypoperfusion among cocaine-dependent patients with depression

K.A. Tucker, P.C. Gottschalk, and T.R. Kosten

Yale University School of Medicine and VA Connecticut Healthcare System, West Haven, CT

Previous studies have demonstrated gender differences in response to pharmacological and cognitive-behavioral treatment of cocaine dependence accompanied by depression. The neural mechanisms that may contribute to these gender differences are not clearly understood. The purpose of the present study was to examine gender differences in regional cerebral blood flow among cocaine abusers with normal mood or depression. Since previous studies have shown decreased cerebral perfusion among depressed subjects, it was hypothesized that cocaine abusers with depression would demonstrate less perfusion than cocaine abusers with normal mood. Analyses on males and females were conducted separately to control for gender differences in perfusion that are noted in even healthy normal subjects. Images of ^{99m}Tc -hexamethyl propyleneamine oxime single photon emission computed tomography (SPECT) were evaluated using Statistical Parametric Mapping (SPM99) with a height threshold of $p < .01$, and extent threshold of 30 contiguous voxels. All cocaine users met DSM-IV criteria for cocaine dependence. The Center for Epidemiologic Studies Depression Scale (CESD) was used to quantify level of depression. Depressed female cocaine users ($n = 13$) demonstrated two significant clusters of hypoperfusion (415 voxels, $p < .01$; 341 voxels, $p < .02$) when contrasted with female cocaine users with normal mood ($n = 12$). The clusters were located respectively within the bilateral inferior frontal gyrus/superior temporal gyrus and in the middle occipital gyrus. However, depressed male cocaine users ($n = 26$) showed no significant clusters of hypoperfusion as contrasted with male cocaine users with normal mood ($n = 25$). Depressed female cocaine users showed more hypoperfusion in the occipital lobe than their male counterparts ($p < .001$), further supporting the conclusion of a gender difference in perfusion among depressed cocaine users. These findings are discussed within the context of proposed models of neural circuitry involving depression.

Route of heroin administration impacts post-detoxification relapse prevention outcome

M. Tuten, H.E. Jones, M. Stitzer

Johns Hopkins University School of Medicine, Baltimore, MD

Introduction: Route of heroin administration (smoking vs. intravenous) may be a critical factor that impacts the relapse of opioid dependent individuals when they are treated in an intensive outpatient non-pharmacotherapy setting. Methods: Participants ($N=104$) receiving outpatient reinforcement based therapy (RBT), a therapy applying principles of community reinforcement approach and opioid/cocaine abstinent contingency management in the form of rent payments for structured drug-free housing, were categorized into 2 groups: those who reported using heroin 1) intravenously (IV; $n=53$) or 2) via smoking ($n=51$). The groups were compared on psychosocial variables including frequency and amount of drug use, legal involvement and opioid and cocaine relapse at 1 and 3 months post treatment-entry. Results: Chi-square and ANOVA were used to analyze the data. Demographically, the two groups were similar on age, race, marital status, education and frequency of drug use. However, the IV group was more likely to be male than the smoking group. Although the groups had similar relapse rates at 1 month, IV drug users were more

likely to have relapsed at 3 months relative to the smoking group (53% vs. 31%, $p < .05$). The IV drug using group was also more likely to have a history of incarceration (85% vs. 53%, $p < .05$) than the smoking group. Conclusion: Assessing route of administration at treatment intake is an important consideration and these data suggest more intensive relapse prevention is needed later in treatment to sustain IV drug users' abstinence in an intensive outpatient drug-free setting. Supported by RO1 DA10192.

Characteristics of substance-abusing pregnant women sexually abused during pregnancy

M. Velez, D. Svikis, H. Chilcoat, L. Jansson, V. Walters, J. Bryant, I.D. Montoya, J. Campbell
Johns Hopkins University School of Medicine and School of Nursing, Baltimore, MD, Virginia Commonwealth University, Richmond, VA and NIDA, Rockville, MD

Substance abusing pregnant women suffer from a myriad of psychosocial and medical problems, including exposure to physical, sexual and emotional violence. Sexual abuse has been associated with multiple complications such as sexually transmitted diseases, including AIDS, unintended pregnancy, complications during labor and delivery, and depression. The impact of sexual abuse during pregnancy among substance abusing pregnant women has not been studied. The purpose of this study was to compare the sociodemographic and clinical characteristics of substance abusing pregnant women who report sexual abuse during their current pregnancy to those who do not report sexual abuse. Among a sample of 435 pregnant women attending a drug abuse treatment program at the Center for Addiction and Pregnancy of the Johns Hopkins Bayview Medical Center (mean age 29 years, African American 70.0%, Whites 28.3% and other ethnicity 1.7%), 39 (9.0%) reported having been sexually abused during the current pregnancy at program intake, which typically occurred during the second trimester of pregnancy. Sexually abused patients had significantly higher rates of lifetime physical abuse (97.4% vs. 72.3%), physical abuse during pregnancy (70.3% vs. 16.1%), lifetime emotional abuse (92.3% vs. 66.8%), and emotional abuse during pregnancy (86.1% vs. 39.1%) than those who did not. Women sexually abused during pregnancy were significantly more likely to be involved in physical fights with current partner in their lifetime (69.4% vs. 30.2%), during pregnancy (53.1% vs. 13.3%), and in front of their children (44.4% vs. 14.4%), were more likely to be afraid of their current partner (31.4% vs. 8.5%) and to feel unsafe at home (32.3% vs. 5.4%) than those who were not. These preliminary results suggest that substance abusing pregnant women who are sexually abused during pregnancy are at greater risk of being physically and emotionally abused and to experience violence at the hands of their partners. Routine screening for sexual abuse in substance abusing pregnant women is imperative so that appropriate services and safety plans can be established. Research support provided by HRSA grant No.H64MC0017-02.

Psychometric utility of the Childhood Trauma Questionnaire with female street-based sex workers

C.L. Villano, C. Cleland, A. Rosenblum, L. Nuttbrock, C. Fong, M. Marthol, S. Magura, and J. Wallace
National Development & Research Institutes, Inc., and FROST'D, New York, NY

Previous research on childhood abuse among female sex workers has employed simple quantitative methods or qualitative inquiry. To date, no large-scale study of female sex workers has utilized a standardized survey instrument to measure childhood trauma. We administered the Childhood Trauma Questionnaire (CTQ) to explore its psychometric utility with poly-drug using, out of treatment female street-based sex workers (N=171). Subjects' self-reported drug use in the 30 days prior to interview showed 86% using cocaine, 53% heroin, 36% marijuana, and 29% alcohol. Results indicated adequate internal reliability for all five clinical subscales of the CTQ. Exploratory factor analysis (EFA) specified four factors (reflecting the Emotional Abuse, Emotional Neglect, Sexual Abuse, and Physical Abuse subscales); the Physical Neglect subscale did not form a stable factor. Three factors in the EFA evidenced complicated loading patterns (e.g., cross-loading of CTQ items), which may reflect ambiguity of latent constructs and/or lack of distinction among abuse types for our sample. Analysis of the Minimization/Denial scale indicated 41% of women (N=73) underreported childhood trauma. In particular, many women in this sample appeared to be experiencing physical hardship (e.g., hunger, poor hygiene, drug/alcohol abuse), which may have resulted in a denial of CTQ Physical Neglect items and inaccurate measurement of the construct. Excluding the Physical Neglect subscale, the CTQ is useful in measuring childhood trauma among female street-based sex workers; however, because the data indicate underreporting of maltreatment, it is important

that methods to ensure rapport and encourage disclosure (e.g., multiple contacts with subjects, self-administration of instrument) be utilized. (Funded by CSAT Grant #KD1-TI12049).

Caregiver-infant interaction in at-risk dyads

A.L. Vogel, C.E. Morrow, A. Windham, K.L. Hanson, and E.S. Bandstra
University of Miami, Miami, FL, and Johns Hopkins University, Baltimore MD

The associations among the quality of interaction between primary caregivers and their 1-year-old infants, and caregiver demographic and behavioral health indicators were examined in an at-risk sample. Methods: Data are from 242 families enrolled in the University of Miami site of the Starting Early Starting Smart National Initiative designed to provide integrated behavioral health services (parenting, mental health and drug use services) to at-risk families within a community pediatric setting. Families were enrolled based on meeting risk criteria related to drug use (53%) or mental health problems/parenting stress (47%). Analyses for the present study focus on data collected at enrollment at the birth of the baby, and at follow-up at 1 year. Caregiver-infant interaction was coded using the standardized Nursing Child Assessment Satellite Training system from a videotaped typical feeding session. Caregiver drug use was measured by the Addiction Severity Index, and caregiver psychological functioning was measured by the Brief Symptom Inventory. Basic demographic information was assessed with a psychosocial interview. Analyses were conducted using linear regression modeling. Results: Results at 1 year showed that positive caregiver-infant interaction during a typical feeding was associated with healthier caregiver psychological functioning, and less self-reported drug use ($p < .05$). Caregivers meeting the drug use risk criteria at enrollment were more likely to utilize parenting intervention services during the first year of the program. These caregivers were more likely to have positive interactions with their infants at the age 1 follow-up ($p < .05$). Caregiver-infant interaction was not related to other demographic risk factors examined. Discussion: A focus on the earliest caregiver-infant interactions may be important in understanding how to assist families at risk due to drug use and/or mental health difficulties. Support: †SAMHSA 5 U1H SP07996; †Casey Family Programs; State of Florida Healthy Start Program; *T32DA07292.

MDMA induces more locomotor behavior in female than male rats after acute and repeated administration

Q.D. Walker, C.J. Nelson, and C.M. Kuhn
Duke University Medical Center, Durham, NC

Illicit use of 3,4-methylenedioxymethamphetamine (MDMA, "Ecstasy") is increasing in the U.S. and emerging evidence suggests that women experience more delayed psychiatric effects and more changes in serotonergic markers than men. Because of this growing public health issue, the present studies investigated sex differences in locomotor effects of acute and repeated administration of MDMA. Male and female rats were administered a MDMA regimen reported to decrease serotonergic markers (15 mg/kg, ip, every 12hrs for 4 days). Acute MDMA increased horizontal activity in both sexes relative to saline controls but the duration of action was much longer in females, producing a sex difference in distance traveled in 5 hours. Horizontal activity peaked one hour after dosing and fell gradually to baseline by 4 hours in males. In females, MDMA produced a broad plateau in horizontal activity from 10 min to four hours after dosing. MDMA increases in vertical activity were dramatically greater in females than males and emerged later (2 hr vs. 10 min) than those for horizontal activity. Fourteen days after the first of the eight doses, saline and MDMA rats were challenged with 15 mg/kg MDMA. MDMA induced more horizontal activity in female rats treated repeatedly with MDMA than female controls. Augmented horizontal activity in MDMA treated males relative to controls was modest in comparison. Vertical activity did not sensitize in males but was very robust in females as the onset of action became immediate in MDMA females. These results suggest that MDMA induces a different and more intense pattern of behavioral activation in females and that adaptive changes after repeated dosing are also exaggerated in females. The relative contribution of stimulant-like sensitization and denervation supersensitivity to these adaptive changes in behavioral responses is unclear.

Women methadone clients are less knowledgeable about hepatitis C treatment

A.Y. Walley, M. White, Y. Song, M. Kushell, and J.P. Tulsy
University of California, San Francisco, CA

With an estimated 80-90% of methadone program participants positive for the hepatitis C virus (HCV) antibody, methadone programs may be excellent sites to focus HCV education and treatment. Determining clients' knowledge about HCV and interest in treatment is an important first step in defining the role for methadone programs in the care of HCV patients. We conducted a cross sectional survey of 110 methadone clients at one opiate addiction treatment program between June and December 2002. We consecutively recruited participants on random days and conducted a 20-minute face-to-face interview that included questions about demographics, experience with HCV treatment, HCV knowledge and interest in treatment. We used a 12-point knowledge score created from survey questions on HCV transmission, progression and treatment to measure knowledge. Participants were asked about their interest in treatment after hearing a paragraph read about the risks and benefits. Frequencies and bivariate analyses using t and chi-square tests were done using SPSS software. Among 110 participants interviewed, the average age was 45 years old (range 19-62); 36% were women; 43% were African-American, 35% were White and 14% were Hispanic/Latino; 31% had less than a high school education; 9% were employed; 77% were enrolled in methadone maintenance (maintenance), 23% were enrolled in methadone detoxification (detox); and 25% self-identified as HIV-infected. While 81% self-identified as hepatitis C-infected, only 23% had been evaluated or were being evaluated for HCV treatment. None had started treatment. Greater than 85% of participants correctly identified sources of HCV transmission. Only 37% felt that getting vaccinated for other kinds of hepatitis was important, while 85% believed that avoiding alcohol was important. Only 34% were aware that treatment exists and 34% believed HCV is incurable. Lower knowledge scores were associated with female sex (62% vs. 54%, $p=0.076$). This difference was accounted for mostly by lesser knowledge scores on the two treatment questions ($p = 0.006$). There was no significant difference by sex in interest in treatment. This study supports efforts by methadone programs to focus education efforts on increasing awareness of treatment options. Women were relatively unaware of treatment and its effectiveness and should be targeted for education.

Plasma cocaine and metabolite levels and locomotor activity across the postpartum period in female rats, including a comparison with males

M.P. Wansaw and J.I. Morrell
Rutgers University, Newark, NJ

Our conditioned place preference (CPP) studies indicate the rewarding properties of cocaine vary across the postpartum period in the rat (Mattson et al., *Beh Neurosci*, 2001). In the early postpartum period dams preferred a chamber associated with pups over one associated with cocaine, while dams in the late postpartum period preferred a chamber associated with cocaine. The goal of the present experiment was to determine if differences in the peripheral metabolism of cocaine or the locomotor activating effects of the drug underlie differences in CPP across the postpartum period. Measures of locomotor activity and plasma samples were obtained for 3 hrs post-injection from dams ($n = 69$) across much of the postpartum period from Days 6-24 and from a group of males ($n = 25$) for comparison. The drug dose (10 mg/kg, s.c.) was chosen based on prior use in our CPP studies, while the number of drug exposures were a deliberately examined variable, with animals receiving 1-5 injections of cocaine. Plasma concentrations of cocaine (COC) and two of its major metabolites, benzoecgonine (BE) and ecgonine methyl ester (EME), were determined using both gas and liquid chromatography/mass spectrometry. Regardless of postpartum day, cocaine increased ambulatory activity a maximum of 6-fold over baseline and there was a prolonged behavioral response with increased activity lasting 3 hrs. In males, ambulatory activity increased at least 20-fold after cocaine, but this activity peaked at 2 hrs and began to decline sharply thereafter. While peaks and their time course were different, mean total ambulatory activity was not significantly different between males and postpartum females. Peak levels of ambulatory activity corresponded generally with peak levels of plasma COC and BE. Mean plasma levels of COC, BE, and EME were not significantly different across postpartum days. Mean plasma levels of COC and BE were significantly higher in males than in females, indicating more rapid access to the circulation and metabolism in males. These results suggest differences in the peripheral metabolism of cocaine and the locomotor activating effects of the drug do not underlie

differences in CPP across the postpartum period. They also indicate peripheral cocaine metabolism and drug-induced increases in locomotor activity occur faster in males than in postpartum females.

Gender and aberrant drug-related behavior in patients with chronic pain

A.D. Wasan and R.N. Jamison

Brigham and Women's Hospital, Harvard Medical School, Boston, MA

Little research has focused on how rates of substance abuse are influenced by gender in pain patient populations. This study explored the relationship between pretreatment variables and problems with prescribing opioids for patients at an outpatient, academic teaching hospital-based pain management program in seventy male and seventy-six female patients. All patients were interviewed by a clinical psychologist and followed by their treating physician for an average of 6 months while taking long and short-acting opioids for their pain. Six treating physicians were asked to complete follow-up questionnaires about seven possible problems that they may have encountered with their patients. Ratings were verified through chart review. Males reported to have more legal problems and to attend AA or NA meetings more often than females, while females tended to admit to a history of psychiatric problems more often than males ($p < 0.05$). Forty-six percent of the patients were shown to have no aberrant drug behaviors after 6 months of treatment, while 26% had evidence of 2 or more behavior problems. On follow-up, males were found to have more aberrant drug-related behaviors than females (35.7% vs. 19.7%; $p < 0.05$) and were asked by their physicians to give urine toxicology screens more often than females. This study supports past findings that males are at greater risk than females to demonstrate aberrant drug related behaviors while taking opioids for noncancer pain.

Early drug use and risk of suicide ideation and attempts in an epidemiological sample followed from first grade into young adulthood

H.C. Wilcox, J.C. Anthony

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Aim: In this prospective study of 2311 community residing youths recruited upon entry into first grade, we estimate the risk of suicide ideation and attempts among those who used drugs before age 16, as compared to the subgroup who used later in development or never used. **Methods:** Standardized interview assessments in 1989-1994 were completed with 1796 youths age 8-15; we have reassessed 1588 (88%) in young adulthood (mean age=21), finding 148 to have made suicide attempts (SA) and 197 with suicidal ideation (SI). We used discrete time survival analysis to study the early use of tobacco, alcohol, marijuana, and inhalants as time dependent covariates, adjusting for possible confounding by age, sex, race-ethnicity, intervention status, free lunch status, childhood depression, early aggressive behavior, deviant and drug using peers, parental psychiatric disturbance, and history of early use of the other drugs under study. **Results:** Estimated risk of SA was 2.2 times greater for inhalant users versus later users and nonusers (95% CI 1.4-3.5) and an independent association was observed in a series of models adjusting for age, sex, race-ethnicity, intervention status, free lunch status, childhood depression, early aggressive behavior, deviant and drug using peers, parental psychiatric disturbance, and history of early use of the other drugs under study. There is evidence from sex-stratified models that the relative risk (RR) estimate for inhalant use and SA was 3.3 (95% CI 1.9-5.5) and for SI was 2.3 (95% CI 1.3-4.1) among females, while null in males. An excess risk of SA and SI was also observed for early marijuana use among females but not for males in models conditioning on first grade classroom. Neither tobacco nor alcohol use were associated with excess risk of SA and SI in this sample. **Discussion:** Early-onset inhalant and marijuana use is linked with later risk of suicidal ideation and attempt, independent of other suspected determinants of risk, including early-onset alcohol use and tobacco smoking. One possibility is an unmeasured shared diathesis for both early-onset drug use and later risk of SA and SI. **Acknowledgments:** NIDA R01DA009897; T32DA07292; F31DA014454.

Findings from The Methamphetamine Treatment Project: Weight concerns and depression in females

R. Willis and M. Hillhouse

UCLA Integrated Substance Abuse Programs, La Jolla, CA

As is true for other drug treatments (Nelso-Zlupko, Kauffman, & Dore, 1995) improved outcomes may result when adapting methamphetamine treatment to the unique concerns of women. This may be especially pertinent in studies of methamphetamine use given the physiological and psychological effects of methamphetamine, specifically weight loss and improvements in levels of depression. In the general population, women are two times more likely to be depressed than men (NIMH, 2001), and are more likely to use drugs to cope with negative mood states (Haseltine, 2000). Women are also more likely than men to have an eating disorder (ANRED, 2002). Weight concerns have already proven to be an issue in smoking-cessation trials; women with elevated weight concerns are less likely to quit smoking than males (Jeffery, Hennrikus, Lando, Murray, & Liu, 2000). This study addresses these concerns in methamphetamine dependent women. Results from The Methamphetamine Treatment Project, (MTP) a multisite study of 1016 methamphetamine-dependent men and women randomly assigned to treatment conditions indicate that 38% of women reported their use of methamphetamine due to weight concerns, whereas only 9% of males gave this response. At baseline, women also reported more suicide attempts and depressive symptoms than men. This paper addresses the important implications of weight concerns and depression in the treatment of methamphetamine dependent females.

Gender differences in adolescent smoking: A mediation test

T.A. Wills, C. Walker, J. Resko, M. Ainette and D. Mendoza

Albert Einstein College of Medicine of Yeshiva University, Bronx, and Adelphi University, Garden City, NY

Many epidemiologic studies find higher rates of smoking among girls but understanding of the reason for this gender difference remains limited. We examined for gender differences in data from two studies. Study 1 (N = 1,612) was focused more on temperamental variables whereas Study 2 (N = 1,699) was focused more on stress and coping variables, but some common predictor measures were available across both studies. In data from Study 1 the unstandardized regression coefficient of smoking on gender was $b = 0.481$ (SE .079), which was highly significant, $t = 6.06$, $p < .0001$. Four variables were identified that were risk factors for smoking, were elevated among females, and reduced this coefficient. In order of the magnitude of the reduction they were: friends' smoking (.307), avoidant coping (.404), peer support (.415), and task attentional orientation temperament (.428). These variables had complex and not always high correlations, and in a combined model with gender and four predictors the coefficient was reduced to 0.158 (SE .080) which was barely significant ($t = 1.97$, $p = .05$). Thus these variables almost completely accounted for the female elevation in smoking. Mediation tests for Study 1 did indicate that observed gender differences in smoking occur because of both social and nonsocial factors. In study 2 the zero-order regression coefficient of smoking on gender was $b = 0.216$ (SE .083), which was significant, $t = 2.62$, $p < .01$. Three variables were identified that were risk factors for smoking, were elevated among females, and reduced this coefficient. Two variables reduced the coefficient to nonsignificance: negative affect (.003, n.s.) and coping motives for smoking (.124, $p = .12$); friends smoking also reduced the coefficient for gender to .155, $t = 2.03$, $p = .04$). Thus variables related to affect and affect regulation were involved as mediators and accounted completely for the female differential in smoking. Results from the slightly older sample in Study 2 indicated that elevations in negative affect and motives for smoking explain the female smoking differential. This research was supported by NIDA grant DA-12623-S1

Gender differences in the association between family structure in childhood and illicit drug use and drug disorders in adulthood: A prospective study

A.M. Windham and H. Chilcoat

University of Miami School of Medicine, Miami, FL, and NIDA, Bethesda, MD

This study used prospective data to investigate the relationship between family structure during childhood and illicit drug use and drug disorders in adulthood and tested whether patterns of association differed by gender. Data are from a longitudinal study of a community-based cohort of low to middle income

individuals (n=1581) born in the early 1960's and followed from birth through age 30. Data on family structure were gathered when the cohort was age eight. At that time, 63% of respondents lived with both biological parents, 6% lived with their mother and a step-father, and 31% lived with mother alone. Study outcomes included lifetime DSM-III diagnosis of drug abuse or dependence (drug disorder), past year cocaine use, and past year heroin use. Logistic regression was used to estimate the odds of each outcome given family structure (mother-only and step-father families compared to intact families), controlling for selected demographic and socioeconomic variables. Gender differences in the associations were tested by including in the models interaction terms for gender by family structure. Family structure was related to drug use and disorders for girls, but not boys. Girls with step-fathers were 3.9 times (CI: 1.4 – 11.4) more likely to report cocaine use and 4.4 times (CI: 1.1 – 17.3) more likely to report heroin use than girls from intact families; girls with no father figure were 2.5 times (CI: 1.3 – 4.8) more likely to report cocaine use and 3.2 times (1.4 – 7.4) more likely to report heroin use compared to girls from intact families. Girls with step-fathers were 1.3 times (CI: 0.5 – 3.4) and girls with no father figure were 2.0 times (1.3 – 3.1) more likely to develop a drug disorder compared to girls from intact families. No associations were found for boys. This prospective study extends our understanding of the role of family structure in the development of problem drug use by focusing on drug disorders and drug use that persists into adulthood. Furthermore, it uncovers gender differences that suggest alternate pathways to problem drug use for women and men, such as a more salient role of interpersonal relationships for women.

Perinatal drug use in California: 1991-1998

E.L. Wolfe, T. Davis, J. Guydish

University of California, San Francisco, CA

There is limited information available to track perinatal drug use at the county or state level. Goal: The aim of this study was to describe the incidence of perinatal drug and alcohol use by utilizing hospital discharge diagnostic codes linked with birth and death certificate data. Results: A total of 5,907,270 births occurred over the 9 years with drug and/or alcohol use identified in 1.19% (70,559) of all births. This proportion, based on administrative datasets, is less than in other studies which have utilized biological assays. The proportion of drug/alcohol exposed births remained relatively stable (from 0.96% in 1991 to a high of 1.45% in 1994). The most common drug of choice was cocaine (28%), followed by opioids (19%), polydrug (14%), and amphetamines (11%). Alcohol was noted in 5% of births; alcohol and drug use in 6%. There were differences by hospital ownership and hospital charges. Although the majority of births occurred in private hospitals, the proportion of drug-exposed births was lower (0.97% vs. 2.86% in public hospitals). Maternal and infant hospital charges were higher for deliveries affected by substance use (a difference of \$414 and \$900, respectively). Conclusion: In order to develop and evaluate interventions which will improve the health and well being of women, children and families, it is important to be able to track the incidence and prevalence of substance use in this population. These findings emphasize the continued need to screen, identify and refer women with substance abuse problems and to improve reporting systems in order to improve estimates.

Determinants of ecstasy use in young, low-income women

Z.H. Wu, A.B. Berenson, J.J. Grady and C.R. Breitkopf

University of Texas Medical Branch, Galveston, TX

The purpose of this project is to investigate Ecstasy (methylenedioxy- methamphetamine) use among low-income women aged 18 to 31 years. A total of 522 patients who sought care at university family planning clinics in southeast Texas were recruited between December 10, 2001, and Dec 10, 2002. The information collected includes demographics, history of substance use, knowledge of club drugs, perceptions of friends' substance use, neighborhood assessment, and assessment of social/familial environment. Subjects' average age was 24 years (SD=3.6), about a quarter were currently married, about a third had some college education, and a third were currently employed. About 40% of the women surveyed were White, 40% were African American, and 20% were Mexican American. Overall, about 15% reported ever using Ecstasy in their lifetime. Among all Ecstasy users, 41% reported using it on average twice within the past 30 days; 34% used on average 4 times in the past 12 months, and another 25% had used at least once 13 or more months prior to the study visit. The median age at 1st use was 19 years. We used logistic regression to

predict Ecstasy use and report Odds Ratios (OR) and 95% confidence intervals (CI). After controlling for demographics and other covariates in the multivariate analysis, Ecstasy use was found to be highly associated with use of other illicit substances such as cocaine or heroin (OR=6.1; CI=2.6, 14.6), prescription drug use (OR=1.9; CI=1.2,2.9), strong approval of occasional Ecstasy use (OR=2.5; CI=1.1, 5.5), intention to use within the next five years (CI=4.8; CI=1.9,12.2), and perceived use of substances by their friends (OR=1.11; CI=1.06, 1.18). Our research demonstrated that Ecstasy, once considered a drug popular in urban clubs, has spread to rural population with lower socioeconomic status. The pattern of Ecstasy use among rural, low-income women appears to be similar to that observed in urban population, that is, Ecstasy use is reportedly used in conjunction with other illicit substances and is determined by peer influence and an intention to use in the future.

Cross-sensitization of methylphenidate and amphetamine: Implications of sex and dose differences in drug abuse

P.B. Yang, A.C. Swann, N. Dafny

University of Texas-Medical School at Houston, TX

Cross-sensitization, a phenomenon that occurs when pretreatment with one psychostimulant leads to greater sensitivity to treatment with another stimulant, has been shown between amphetamine (Amph) and fencamfamine, Amph and cocaine, and cocaine and methylphenidate (Ritalin). Methylphenidate (MPD) and Amph are the two most common psychostimulants used to treat attention deficit/hyperactivity disorder (ADHD). Effects resulted from the long-term use of these drugs are unclear. The present study explored (1) whether treatment with MPD in both juvenile and adult female and male rats elicited cross-sensitization to Amph, (2) whether cross-sensitization to Amph was dose-dependent, and (3) whether cross-sensitization to Amph was greater in females than in males. Juvenile male (n=60) and female (n=60) Sprague-Dawley (SD) rats were randomly divided into the following groups: (a) given saline as juveniles and adults, (b) given 0.6, 2.5, or 10 mg/kg, i.p., MPD for 6 consecutive days, 3 days of washout, and a day of MPD rechallenge as juveniles and similarly treated as adults and (c) given saline as juveniles and 0.6, 2.5, or 10 mg/kg, i.p., MPD for 6 consecutive days, 3 days of washout, and a day of MPD rechallenge as adults. To test for cross-sensitization to Amph, all rats received an Amph challenge at the end of their treatment regimen. Changes in locomotor activity and stereotypic behaviors were recorded using a computerized activity monitoring system and compared to the control SD rats that received saline as juveniles and adults. Results showed that cross-sensitization to Amph in males and females were dose-dependent with females exhibiting greater sensitivity than males. Supports: NIDA-DA14441-01A1(P.B.Y.) & Pat Rutherford Chair in Psychiatry; methylphenidate was a gift from Mallinckrodt.

Neonatal isolation alters maintenance of intravenous cocaine self-administration but not operant responding for food in adult male and female rats

X.-Y. Zhang, H. Sanchez, and T.A. Kosten

Yale University School of Medicine, New Haven, CT

Our previous study showed that neonatal isolation enhances acquisition of cocaine self-administration in adult male rats. Despite numerous reports that male and female animals differ in behavioral responses to drugs, few studies have investigated sex differences in drug-reinforced behavior in rats exposed to early life stress. In the present experiment, the effects of neonatal isolation (ISO) were extended to a comparison of male and female rats during maintenance of intravenous cocaine self-administration. Four groups of Sprague-Dawley rats (n=6/group), including adult female and male rats that experienced ISO (1 hr isolation/day; PN2-9) or were non-handled (NH) were implanted with jugular catheters and trained to intravenously self-administer cocaine (0.5 mg/kg) on a fixed-ratio 3 schedule (FR3) of reinforcement in daily 3-hr sessions. Once stable response rates were shown, cocaine doses of 0.0625, 0.125, 0.25, 0.5 and 1 mg/kg/infusion were presented. Repeated measures ANOVA showed that compared to NH rats, ISO rats showed greater response rates across doses ($F=10.25$, $df=1,22$, $p=0.004$). Moreover, females showed higher response rates compared to males ($F=4.93$, $df=1,22$, $p=0.037$). Three doses (0, 0.5, 1 mg/kg infusion) were then tested on a progressive-ratio (PR) schedule. At each dose, ISO rats showed significantly higher response rates than NH rats ($p's<0.01$). Moreover, females responded at higher rates than males ($p's<0.01$). Separate groups of rats trained to lever press for food showed no sex- or group- difference in response rates

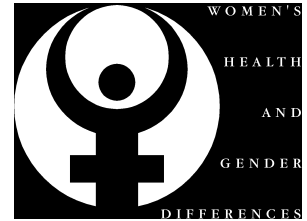
under FR or PR schedule ($p's > 0.05$). These results suggest that ISO specifically enhances the reinforcing effects of cocaine in adult male and female rats and that females are more vulnerable than males to cocaine reinforcement. Support: Donaghue Medical Research Foundation.

Sex differences in stress responsivity in stimulant-dependent women and men and controls: A pilot study

M.E. Zimmerman, R.A. Maxwell, and R.M. Anthenelli

University of Cincinnati College of Medicine, Cincinnati, OH

BACKGROUND: Few studies in humans have investigated the biological mechanisms underlying sex differences in the stress/stimulant abuse interaction. Serotonin is an important regulator of the stress response, and serotonergic stimulation of the hypothalamic-pituitary-adrenal axis in stimulant abusers may serve as a model for understanding this complex relationship. We evaluated the stress hormone response in long-term abstinent stimulant dependent women and men and controls to determine whether there were sex differences in resting morning or serotonin-induced hormone concentrations. **METHODS:** One hundred nine healthy, abstinent men (47% stimulant dependent) and 13 women (38% stimulant dependent) received d,l-fenfluramine (80-100 mg p.o.) in a randomized, double-blind, placebo controlled study. Plasma adrenocorticotropin hormone (ACTH) and cortisol levels were obtained at baseline and at 30-minute intervals for 5 hours following drug/placebo administration. **RESULTS:** On average, women had lower (36%) resting plasma ACTH levels compared with men ($p < .004$) without any corresponding difference in basal cortisol concentrations ($p < .65$). Once these baseline differences and the dosage received were controlled, stimulant dependent women had a serotonin-induced ACTH response that was roughly 2.5 times greater than stimulant dependent men, and non-stimulant dependent men and women ($p < .002$). **CONCLUSIONS:** Our results extend previous studies finding sex differences in basal pituitary-adrenal sensitivity. We also found that stimulant dependent women had a markedly greater ACTH response to fenfluramine than stimulant dependent men and non-stimulant dependent controls. These preliminary findings suggest that sex differences in pituitary-adrenal sensitivity or serotonergic function may be involved in mediating differential stress responsiveness in stimulant dependent women and men. This work was supported by NIAAA Grant AA09735 & the VA Research Service.



2004 College on Problems of Drug Dependence Women & Gender Junior Investigator Travel Awards

Accumulating evidence suggests that the antecedents, consequences, and mechanisms of drug abuse and dependence are not identical in males and females and that gender is an important variable in treatment and prevention. To foster research on women and gender differences in all areas of drug abuse research (both human and animal), the National Institute on Drug Abuse encourages the submission of abstracts on this topic for the 2004 annual meeting of the College on Problems of Drug Dependence (CPDD).

Special NIDA travel awards of up to \$750 will be granted to a maximum of 30 junior investigators whose CPDD abstract on women or gender differences is accepted for either a poster or oral session at the 2004 annual meeting in San Juan, Puerto Rico, June 12-17.

Eligibility:

- Graduate students, post-doctoral students, and investigators who are no more than five years past the doctoral degree or residency are eligible.
- Minority investigators are especially encouraged to apply.
- Priority is given to those who have not received this award in the past.
- Federal employees are ineligible.

Application Procedures:

- Follow the CPDD instructions for abstract submission. Then mail a **copy** of the full abstract form that you submitted to CPDD to:
Dr. Cora Lee Wetherington
National Institute on Drug Abuse
6001 Executive Boulevard, Room 4282, MSC 9555
Bethesda, MD 20892-9555
(For overnight mail: 6001 Executive Boulevard, Room 4282, Rockville, MD 20852)
- Application must be postmarked by **January 15, 2004**.
- Include your curriculum vitae and a cover letter indicating your eligibility and your interest in pursuing research on women and gender differences.
- Please do not fold your application materials.

For additional information about this annual award, contact:
Dr. Cora Lee Wetherington at 301-435-1319 or at wetherington@nih.gov

National Institutes of Health - U.S. Department of Health and Human Services