



Gender-Related Issues in Drug Abuse

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**Blending Clinical Practice & Research
March 14-15, 2002
New York, NY**

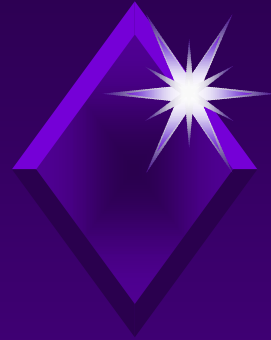




Sex Differences in Drug Abuse

- ◆ Sex Differences: The Numbers
- ◆ Sex Differences: Animal Models
- ◆ Sex Differences: Estrous Cycle
- ◆ Sex Differences: Biologic Mechanisms
- ◆ Sex Differences: Menstrual Cycle
- ◆ Sex Differences: Predictors & Progression
- ◆ Sex Differences: Treatment Issues

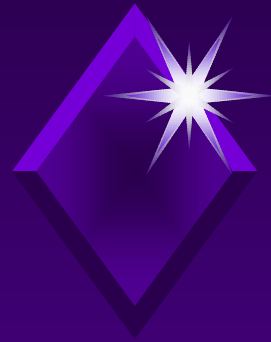




Sex Differences in Drug Abuse

- ◆ Sex Differences: The Numbers
- ◆ Sex Differences: Predictors & Progression
- ◆ Sex Differences: Treatment Issues

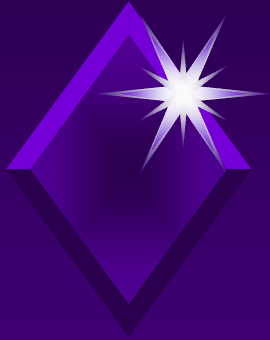




Sex Differences in Drug Abuse

- ◆ Sex Differences: The Numbers
- ◆ Sex Differences: Predictors & Progression
- ◆ Sex Differences: Treatment Issues

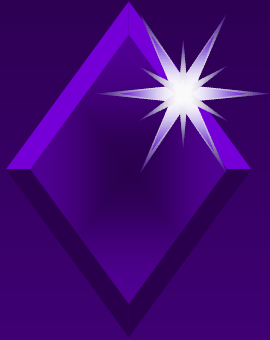




Sex Differences: The Numbers

Population prevalence data





Sex Differences: The Numbers

Population prevalence data

- ◆ Drug use > for males than females





Sex Differences: The Numbers

Population prevalence data

- ◆ Drug **use** > for males than females
- ◆ Drug **dependence** > for males than females
 - ◆ 9.2% Males
 - ◆ 5.6% Females (1994 Nat'l Comorbidity Survey)





Sex Differences: The Numbers

Population prevalence data

- ◆ Drug **use** > for males than females
- ◆ Drug **dependence** > for males than females
 - ◆ 9.2% Males
 - ◆ 5.6% Females (1994 Nat'l Comorbidity Survey)

Are females less vulnerable to drug abuse than males?



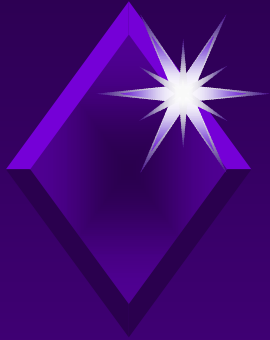


Sex Differences: The Numbers

Two ways of looking at prevalence:

- 1. Population prevalence**
- 2. Conditional prevalence**





Sex Differences: The Numbers

Conditional Prevalence of Drug Use:

calculate use prevalence only among individuals with opportunity to use

Van Etten et al. (1999)

Study drugs: Marijuana, Cocaine, Heroin, Hallucinogens

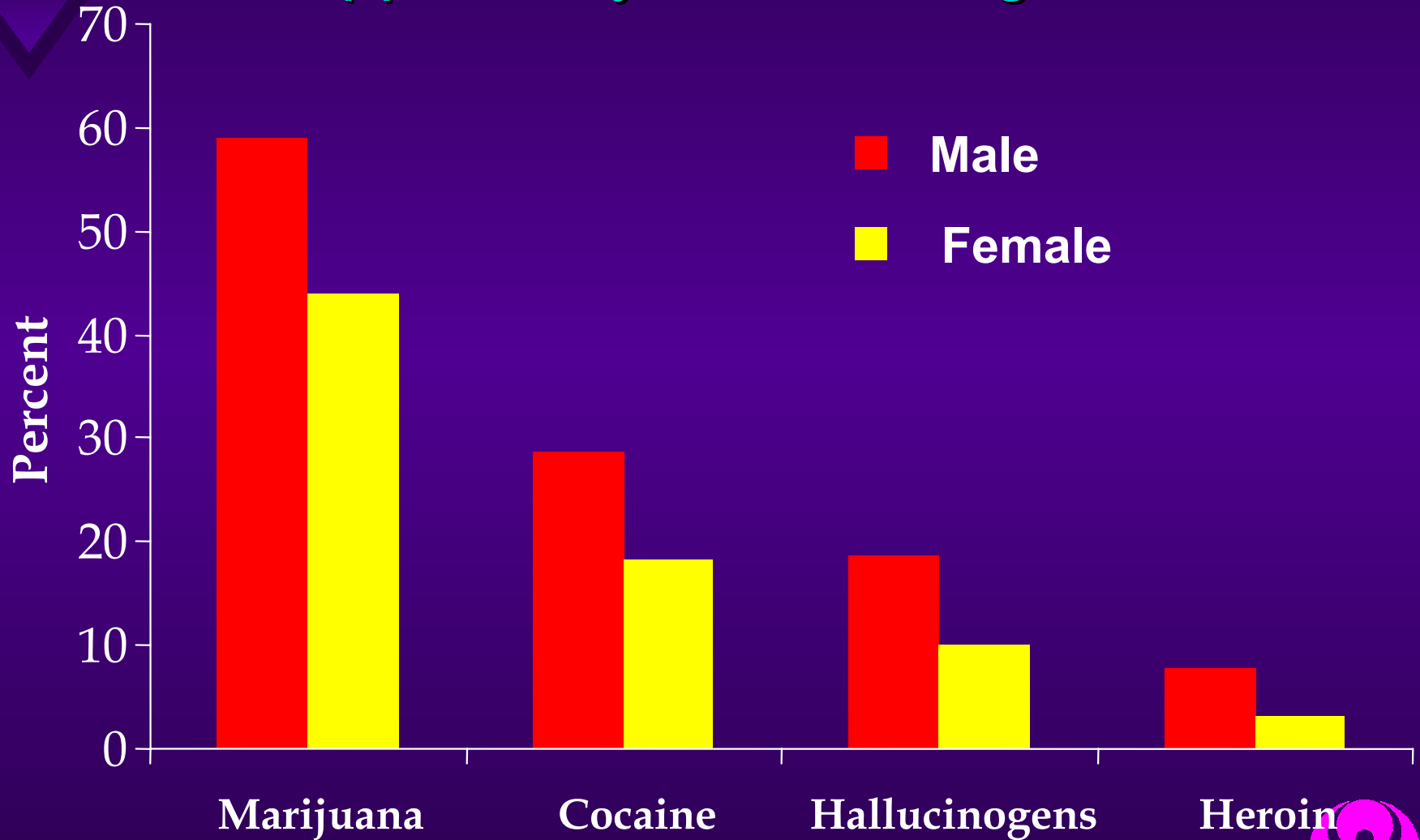
Data Source: 1993 NHSDA

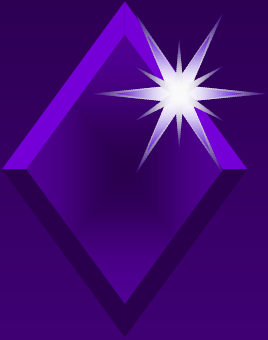
Findings:

1. Population prevalence: Drug use $>$ males than female use.
2. Opportunity to use $>$ males than for females.
3. Among individuals with opportunity to use : males and females are equally likely to initiate use.

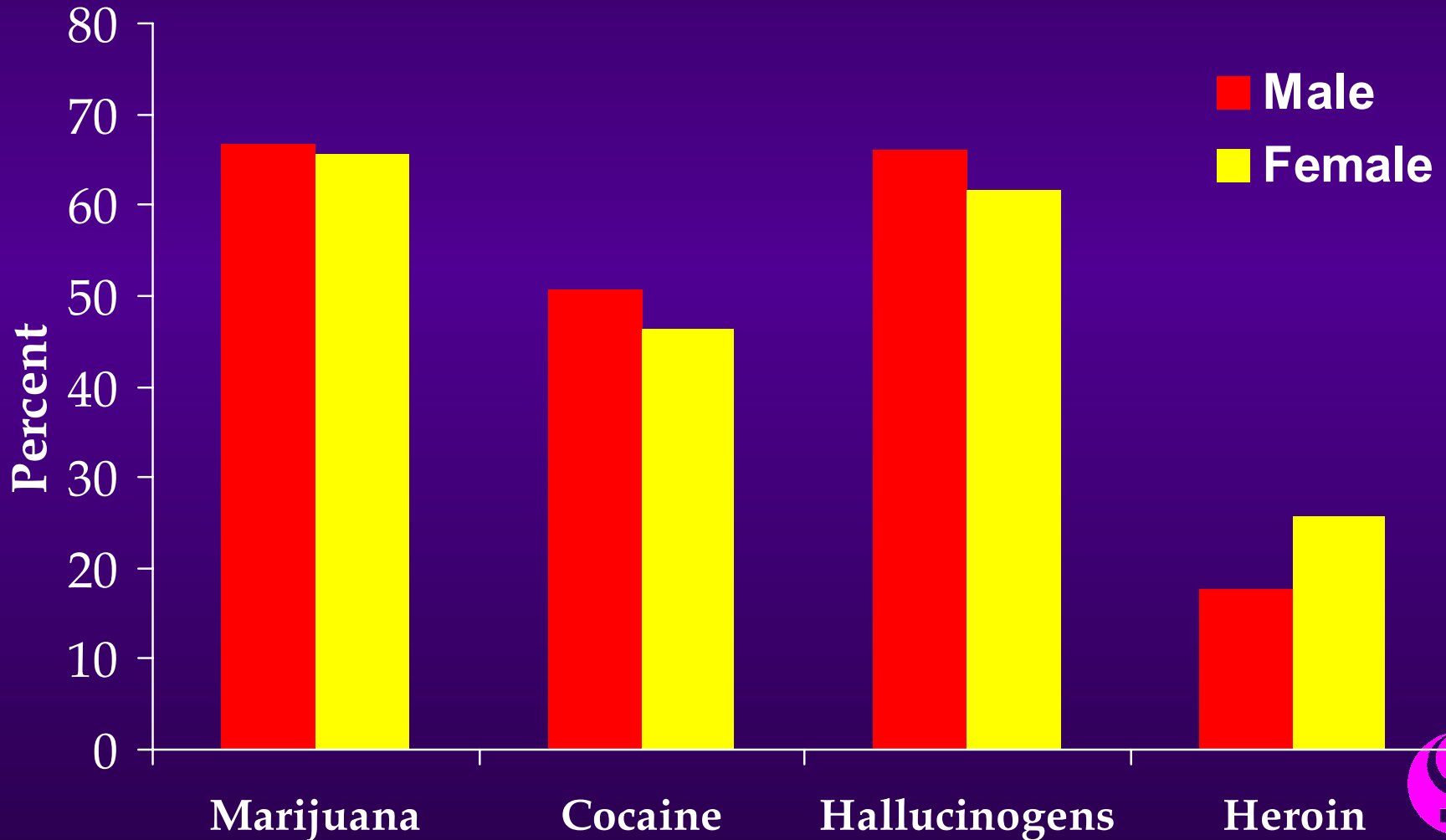


Opportunity to Use Drugs





Percent Use Given an Opportunity





Sex Differences: The Numbers

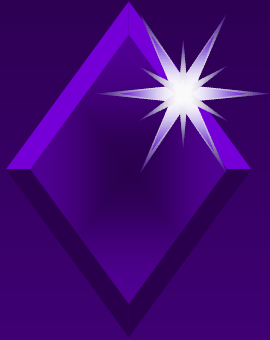
Drug Dependence

Population prevalence > for males than females

- ◆ 9.2% Males
- ◆ 5.6% Females (1994 Nat'l Comorbidity Survey)

Conditional prevalence: Sex Differences?





Sex Differences: The Numbers

Calculate Dependence Only among Users (i.e., dependence/use):

- Males and females = likely to become dependent on

cocaine

tobacco

heroin

inhalants

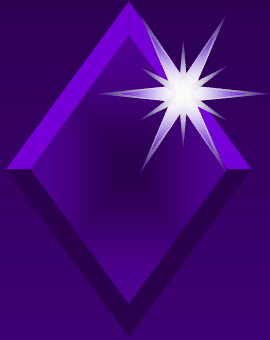
hallucinogens

analgesics

Anthony et al. (1994)

(Data Source: National Comorbidity Survey)





Sex Differences: The Numbers

Calculate Dependence Only among Users (i.e., dependence/use):

- **Males** more likely than females to become dependent on

marijuana

alcohol

Anthony et al. (1994)

Data Source: National Comorbidity Survey





Sex Differences: The Numbers

Calculate Dependence Only among Users (i.e., dependence/use):

- **Females** more likely than males to become dependent on
anxiolytics or
sedatives or
hypnotics

Anthony et al. (1994)

(Data Source: National Comorbidity Survey)





Sex Differences: The Numbers

Do prevalence data, adjusted for opportunity, suggest that females are less vulnerable to drugs than males ?

No. If females are offered drugs, they are as likely as males to use them (marijuana, cocaine, heroin, hallucinogens).

No. If females use drugs, they are as likely as males to become dependent; exceptions in both directions.

Caveat: Females are less likely to receive drug offers.





Sex Differences: The Numbers

All Age Groups

vs.

Adolescents





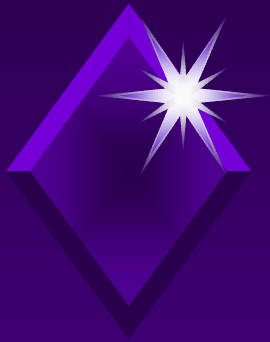
Sex Differences: The Numbers

Monitoring the Future Survey 1975 - Present

Annual prevalence of “illicit drug use other than marijuana”

- 12th graders: > for **boys** than girls
(exceptions: 1975 & 1981 girls > boys)
- 10th graders: > for **girls** than boys (since 1991)
- 8th graders: > for **girls** than boys (since 1991)





Sex Differences: The Numbers

Dependence Given Use: Adolescents (age group 12-17)

Alcohol: males = females

Marijuana: males = females

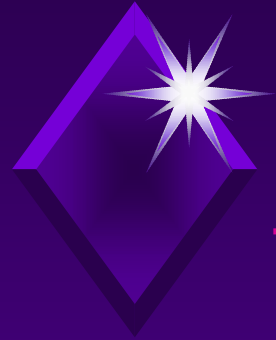
Nicotine: males = females

Cocaine : > females (17.4% v. 4.7%)

Kandel et al. (1997)

Data Source: 1991, 1992, 1993 NHSDA



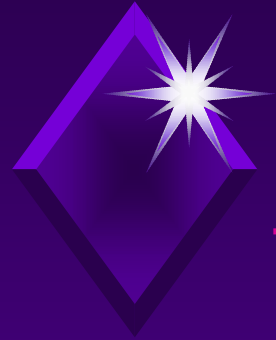


Sex Differences: The Numbers

Do males and females differ in their use patterns?

- Daily use?
- Weekly use?
- Quantity used?



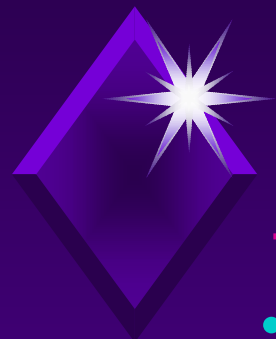


Sex Differences: The Numbers

- **Women** more likely than men to be **daily** users:
 - Cocaine
 - Heroin
 - Sedatives & Barbiturates

Wechsberg et al. (1998) – DATOS





Sex Differences: The Numbers

- Women use cocaine & heroin more times per week than men :

	Cocaine	Heroin
Women	5.4	6.7
Men	4.6	5.2

Fiorentine et al. (1997)

- Women use more cocaine per week than men :

Women: 14.0 grams
Men: 9.5 grams

Hayes et al. (1999)





Sex Differences: The Numbers

DATOS Intake Data (n=10,010, 96 programs, 11 cities, 4 modalities)

Women, compared to men, were

- less likely to have graduated from high school
- almost half as likely to be employed
- more likely to report
 - prior drug treatment
 - depression, suicidal attempts & thoughts
 - being troubled over current emotional/psychological problems
 - health problems
 - weekly or daily illegal activity (but < likely to be CJ involved)
- more likely to report physical, sexual abuse or both
 - in year prior to treatment
 - occurring more than a year prior to treatment

Wechsberg et al. (1998)





Sex Differences: The Numbers

Myth: Females are less vulnerable to drugs than females

1. If given the opportunity, females are as likely as males
 - to use drugs
 - to become dependent
2. Adolescent females, compared to males,
 - in 8th and 10th grades are more likely to use “any illicit drugs other than marijuana”
 - are more likely to become dependent on cocaine given use





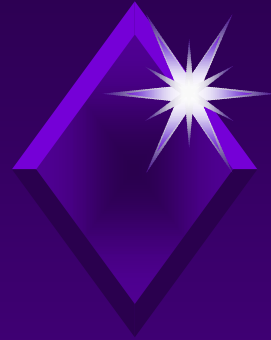
Sex Differences: The Numbers

Myth: Males are more vulnerable than females

3. Use patterns suggest that women
 - are more likely to use daily – cocaine, heroin, barbiturates
 - use more times per week – cocaine & heroin
 - use more grams per week – cocaine

4. Women presenting for treatment have poorer levels of functioning.
 - Does this reflect a greater vulnerability to the impact of drugs on women?
 - Are women with poorer levels of functioning more vulnerable than men with poorer levels of functioning?

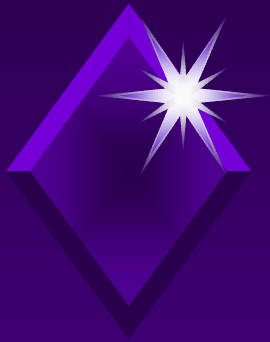




Sex Differences in Drug Abuse

- ◆ Sex Differences: The Numbers
- ◆ Sex Differences: Predictors & Progression
- ◆ Sex Differences: Treatment

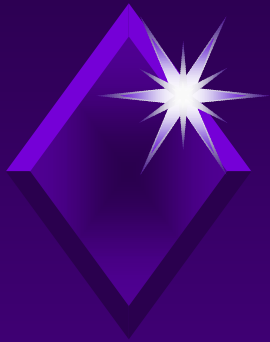




Sex Differences: Predictors & Progression

- **Depression:** greater predictor of drug use by **male** than by female adolescents (Costello et al., 1999)
- **Conduct disorders:** greater predictor of drug use and dependence by **female** than by male adolescents (Costello et al., 1999)
- **Aggressiveness:** predictor of drug use by **boys**, but not girls (Ensminger et al., 1992)

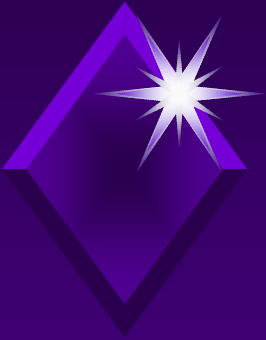




Sex Differences: Predictors & Progression

- **Cigarette use:** greater predictor of progression to illegal drug use by **girls** than by boys (Kandel et al., 1992,1998)
- **Smoking during pregnancy:** associated with smoking by preadolescent **female** offspring, but **not male** (Kandel et al., 1994; Weissman et al., 1999)



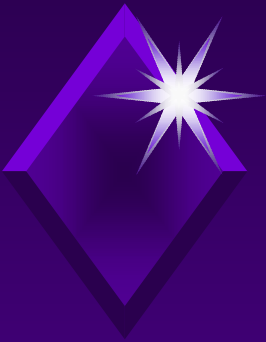


Sex Differences: Predictors & Progression

- Early vs. Late Drug Initiation
 - **Boys** who develop drug abuse or dependence initiate drug use *earlier* than boys who do not.
 - **Girls** who develop drug abuse or dependence initiate drug use *later* than girls who do not.

Costello et al. (1999)



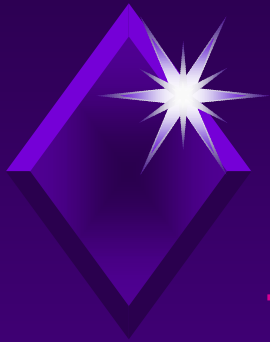


Sex Differences: Predictors & Progression

- Among youth who did not become dependent before age 16, no sex difference in age of onset of first use.
- Among youth who became dependent before age 16, boys used earlier than girls:
 - Cannabis 2.0 years earlier
 - Smoking 3.5 years earlier
 - Any substance 2.5 years earlier

Costello et al. (1999)



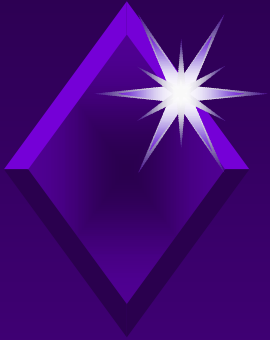


Sex Differences: Predictors & Progression

Family characteristics more predictive of drug use in females than males:

- Maternal
 - alcoholism (Boyd et al., 1993)
 - drug abuse (Boyd et al., 1993)
- Low parental
 - attachment (Ensminger et al., 1982; Brook et al., 1993)
 - monitoring (Krohn et al., 1986)
 - concern (Murray et al., 1983)
- Unstructured home environment (Block et al., 1988)
- Dysfunctional family (Chatham et al., 1999)





Sex Differences: Predictors & Progression

Childhood Sexual Abuse





Sex Differences: Predictors & Progression

Wilsnack et al. (1997)

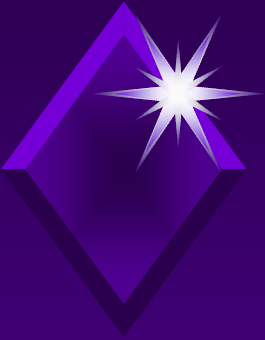
Population-based face-to-face survey

- 1,099 women age 21 older
- 278 reported childhood sexual abuse (CSA)

CSA respondents were more likely to report

- lifetime use of prescribed psychoactive drugs (63.4% vs. 52.9%)
- lifetime depressive episode (44.3% vs. 23.2%)
- lifetime use of illicit drugs (34.9% vs. 13.5%)





Sex Differences: Predictors & Progression

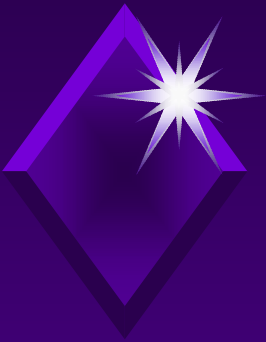
“Childhood Sexual Abuse and Adult Psychiatric and Substance Use Disorders in Women,” Kendler et al. (2000)

- Population-based Virginia Twin Registry (1,411 female twins)
- 4 types of childhood sexual abuse (CSA)
 - Any CSA
 - Nongenital CSA
 - Genital CSA
 - Intercourse
- 6 disorders: drug dependence, alcohol dependence, major depression, GAD, panic disorder, bulimia nervosa

Results:

- All 6 disorders significantly correlated with intercourse
- Only drug and alcohol dependence significantly correlated with all types of CSA





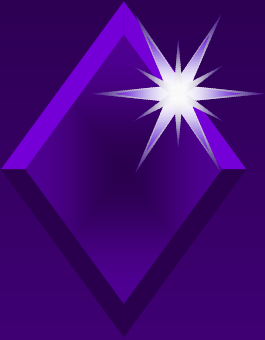
Sex Differences: Predictors & Progression

Females may use for a shorter period of time than males before becoming dependent

- Cocaine Griffin et al., 1989
- Heroin Hser, 1990
- Marijuana Mezzich et al. 1994
- Alcohol Blume, 1986; Mezzich et al. 1994

Females gamble for a shorter period of time than males before becoming dependent (Tavares et al., 2001)





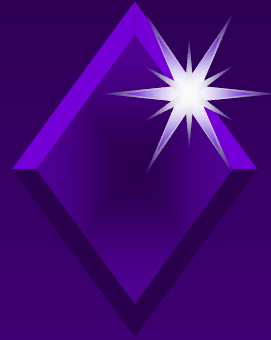
Sex Differences: Predictors & Progression

Predictors of drug use, progression, and dependence are often

- gender-sensitive
- gender-specific

Will addressing these gender-based predictors in treatment and prevention efforts improve outcomes for both men and women?

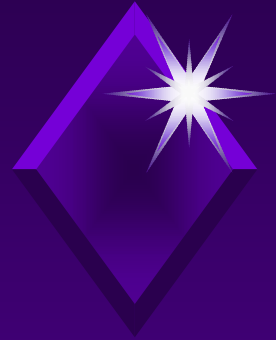




Sex Differences in Drug Abuse

- ◆ Sex Differences: The Numbers
- ◆ Sex Differences: Predictors & Progression
- ◆ Sex Differences: Treatment Issues
 - Women-Only vs. Mixed-Gender Programs
 - Pharmacotherapy
 - Relapse





Sex Differences: Treatment Issues

WOMEN-ONLY vs. MIXED-GENDER PROGRAMS





Sex Differences: Treatment Issues

WOMEN-ONLY vs. MIXED-GENDER PROGRAMS

Dahlgren & Willander (1989): Female alcoholics

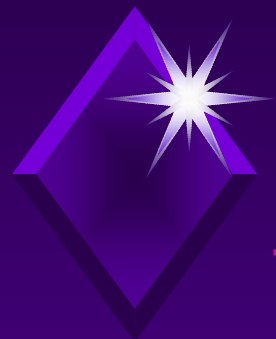
- 200 women randomly assigned women-only or mixed-gender program
- In-patient followed by out-patient – duration of at least 1 year

Two-year follow up:

Women-only program (vs. mixed-gender)

- better abstinence rates
- consumed less per day during relapse
- fewer blackouts
- less reports of irritation and anger while intoxicated





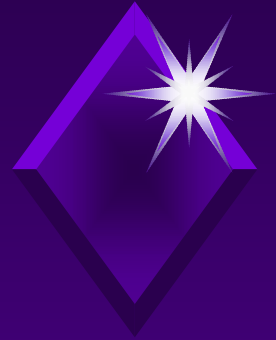
Sex Differences: Treatment Issues

WOMEN-ONLY vs. MIXED GENDER PROGRAMS

Grella et al. (1999)

- Tx outcomes in 4,117 women treated in publicly-funded residential treatment programs in Los Angeles County.
- Compared women-only programs vs. mixed-gender
 - time in treatment
 - treatment completion



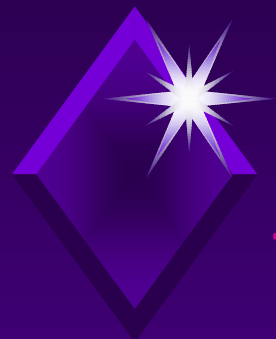


Sex Differences: Treatment Issues

WOMEN-ONLY vs. MIXED-GENDER PROGRAMS

Grella et al. (1999)





Sex Differences: Treatment Issues

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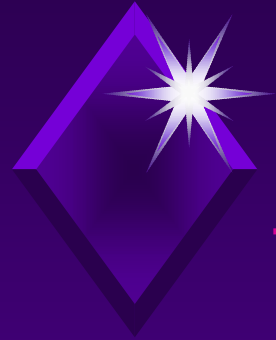
Women in women-only programs (vs. mixed-gender)

- spent more time in treatment
- were over twice as likely to complete treatment

Questions

- Results hold for males?
- Results hold under random assignment? (v. matching)
- Relevant components of the women-only programs?
- Similar benefit occur in mixed-sex programs with a gender-sensitive approach?





Sex Differences: Treatment Issues

PHARMACOTHERAPY





Sex Differences: Treatment Issues

NICOTINE DEPENDENCE PHARMACOTHERAPY

Better outcomes in men than women

- Nicotine Replacement Therapies
 - Patch
 - Gum
 - Spray

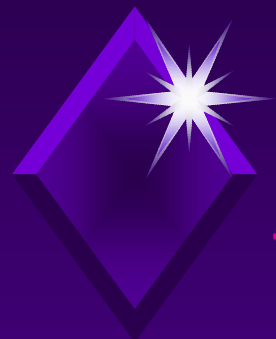
Better outcomes in women than men

- Nicotine inhaler
- Bupropion

Efficacious only in women

- Mecamylamine + nicotine patch
- Clonidine (more effective w depression history)
- Naltrexone (depression history only)





Sex Differences: Treatment Issues

CHRONIC DEPRESSION: IMIPRAMINE VS SERTRALINE

Kornstein et al. (2001)

- double-blind, randomized parallel group study
- 400 women & 235 men

Men: Better outcome with imipramine than sertraline

Imipramine: 61% response

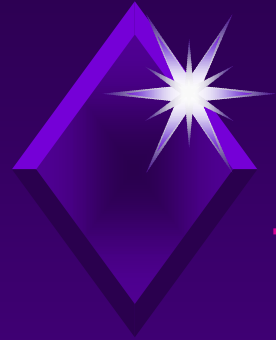
Sertraline: 56% response

Women: Better outcome with sertraline than imipramine

Sertraline: 56% response

Imipramine: 45% response

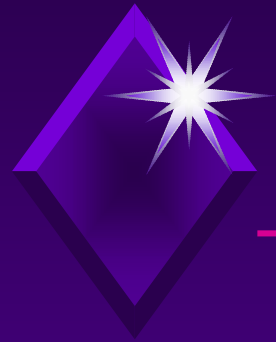




Sex Differences: Treatment Issues

RELAPSE





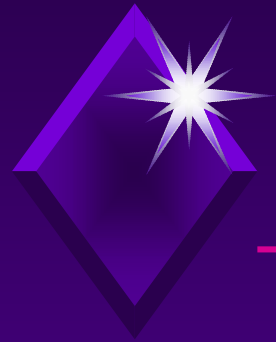
Sex Differences: Treatment Issues

Are women more likely to relapse than men ?

Yes	Wong et al. (1997)
Less likely	Weiss et al. (1997)
Equally likely	Kosten et al. (1993); Lundy et al., (1995)

Do male and females relapse for the same reasons?



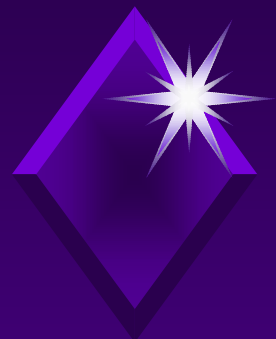


Sex Differences: Treatment Issues

Sex-specific predictors:

- Fiorentine et al. (1997)
 - Prospective longitudinal study of 330 clients in 26 outpatient tx programs in Los Angeles County
 - Depression in past 6 mos: female-only predictor
 - Anxiety in past 6 mos: male-only predictor





Sex Differences: Treatment Issues

Sex-specific predictors on cocaine relapse:

- McKay et al. (1996)

Ss: 98 cocaine-dependent research subjects

Retrospective reports from prior 18 months

Prior to relapse

♀: Report negative emotions and interpersonal problems.
Relapse impulsively.

♂: Report positive experiences.

After relapse

♀: Engage in help-seeking.

♂: Self-justification, rationalization.





Sex Differences: Treatment Issues

Implications for relapse prevention

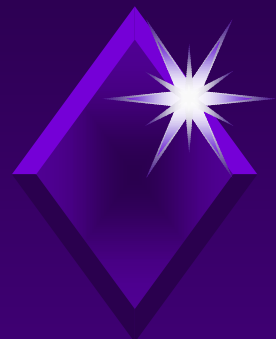
Women

- Strategies that target
 - negative emotions &
 - interpersonal problems as relapse triggers
- Self-control strategies to handle drug use impulsivity

Men

- Strategies to avoid letting guard down when life is good
- Seek help immediately upon relapse
- Emphasize that self-justification & rationalization is typical for males



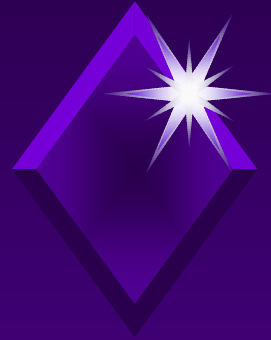


Sex Differences: Treatment Issues

Possible Implications:

Can retention, time in treatment, treatment outcomes, and relapse for both males and females be improved by gender-sensitive strategies?





Sex Differences: Summary & Conclusions

Caveats

- Some studies very exploratory, descriptive, correlational
- Some studies are the “first and only”



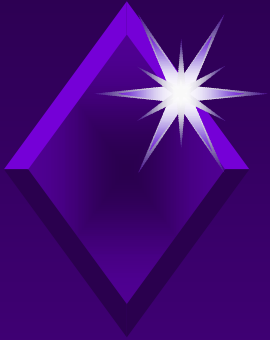


Sex Differences: Summary & Conclusions

THREE MAJOR POINTS

1. Epidemiological data do not support the notion that males are more vulnerable to drug use or dependence than female
2. Some of the predictors of drug use, progression, and dependence are gender-sensitive or gender-specific.
 - Do these gender-based predictors affect prevention and treatment outcomes?
 - Can prevention and treatment outcomes for both males and females be improved by addressing them?
3. Treatment outcomes are affected by gender and may be improved by gender-sensitive strategies.





Thank You

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