

*The Seventh Annual Guze Symposium on Alcoholism,
February 15, 2007, Washington University in St. Louis*

Alcohol Use, Problems & Disorder in Adolescence

Brooke Molina, PhD
University of Pittsburgh
School of Medicine



February 13, 2007 in Pittsburgh



“Alcohol is the substance most frequently used by youth.”

-Vivian Faden, Recent Developments in Alcoholism, 2005

Monitoring the Future, 2005

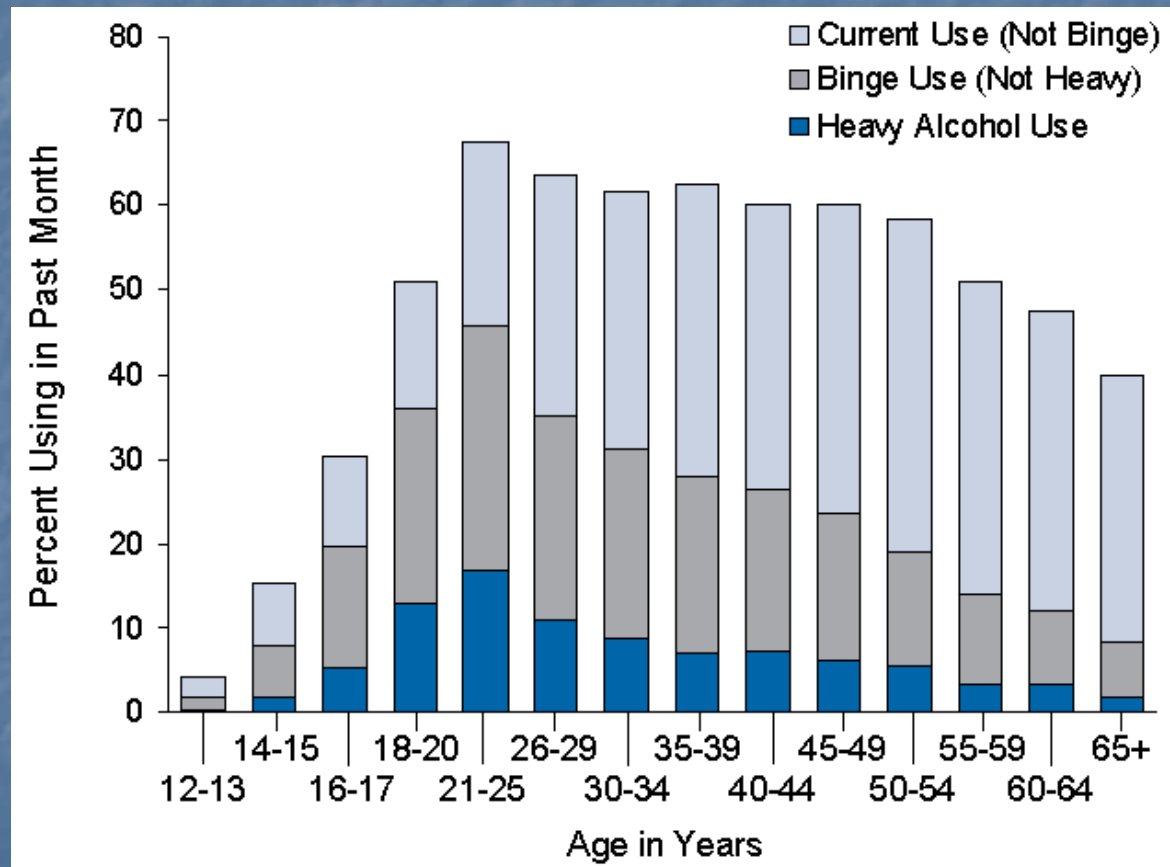
- Three out of every four 12th grade students (75%) have at least tried alcohol
- Four tenths (41%) of 8th graders have tried alcohol
- Been drunk at least once:
 - 58% of 12th graders
 - 41% of 10th graders
 - 20% of 8th graders

Monitoring the Future, 2005

- Daily drinking is infrequent
 - .5 – 3.1% of students
- Binge drinking much more common:
5+ drinks in a row in the past 2 weeks
 - 28% of 12th graders
 - 21% of 10th graders
 - 11% of 8th graders

Alcohol Use by Age in the USA, 2005

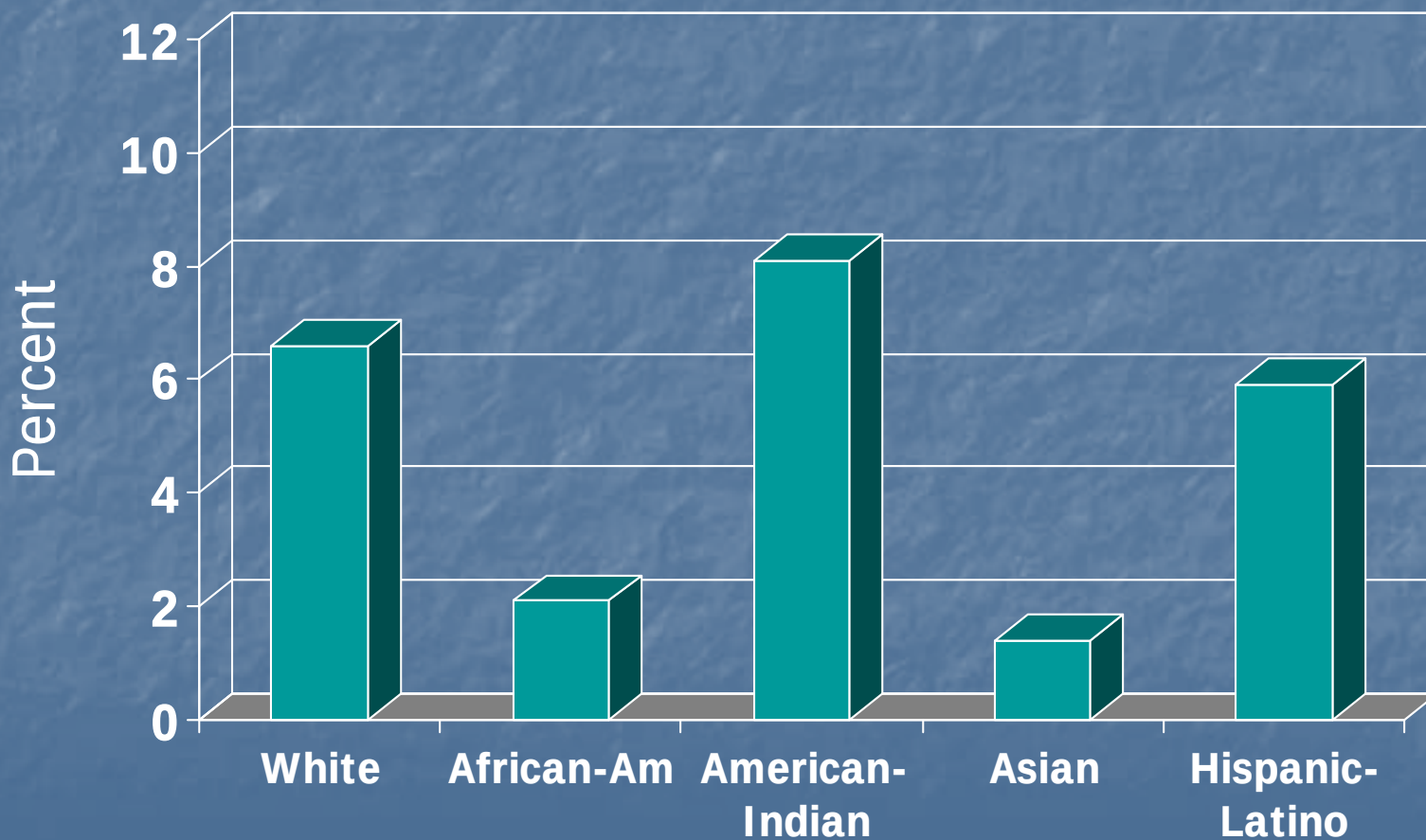
National Household Study on Drug Use and Health



Minority Group Differences in Alcohol Use

- Drinking among Whites/Native Americans > Hispanics > African-Americans/Asians
 - 6% of American Indian seniors drink daily
 - 5% of Mexican/Cuban American seniors drink daily
 - 1% - 3.8% for all other groups (Wallace et al., 2002)

Alcohol Abuse or Dependence Among 12-17 Year Olds by Race/Ethnicity, 2005

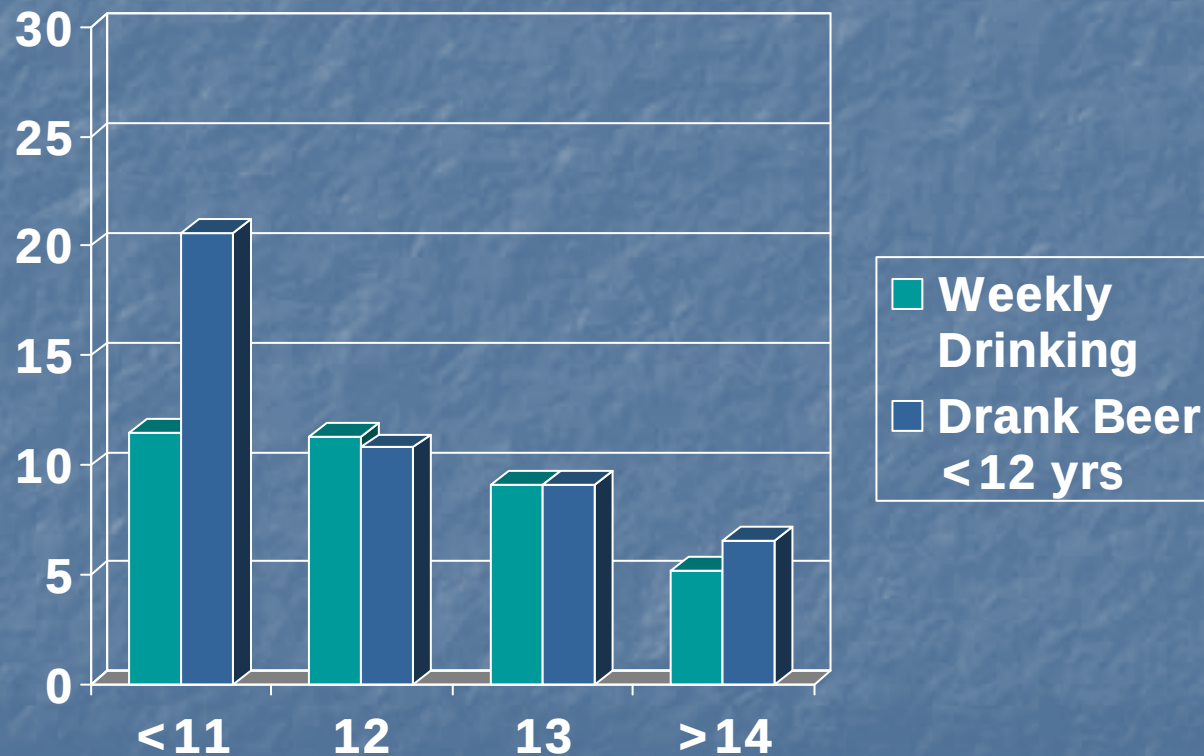


Gender Differences in Alcohol Use

Boys > Girls for heavier drinking at older ages

- Alcohol in past year
 - 70% of 12th grade boys vs. 68% of 12th grade girls
- Drunk in past year
 - 51% of 12th grade boys vs. 44% of 12th grade girls
- Potential gender differences in explanatory processes (e.g., impact of early puberty; Dick et al., 2000)

Potential Impact on Drinking of Early Puberty for Girls



Dick et al., 2000, Developmental Psych; see also Caspi et al., 1993

Initial Experience with Alcohol

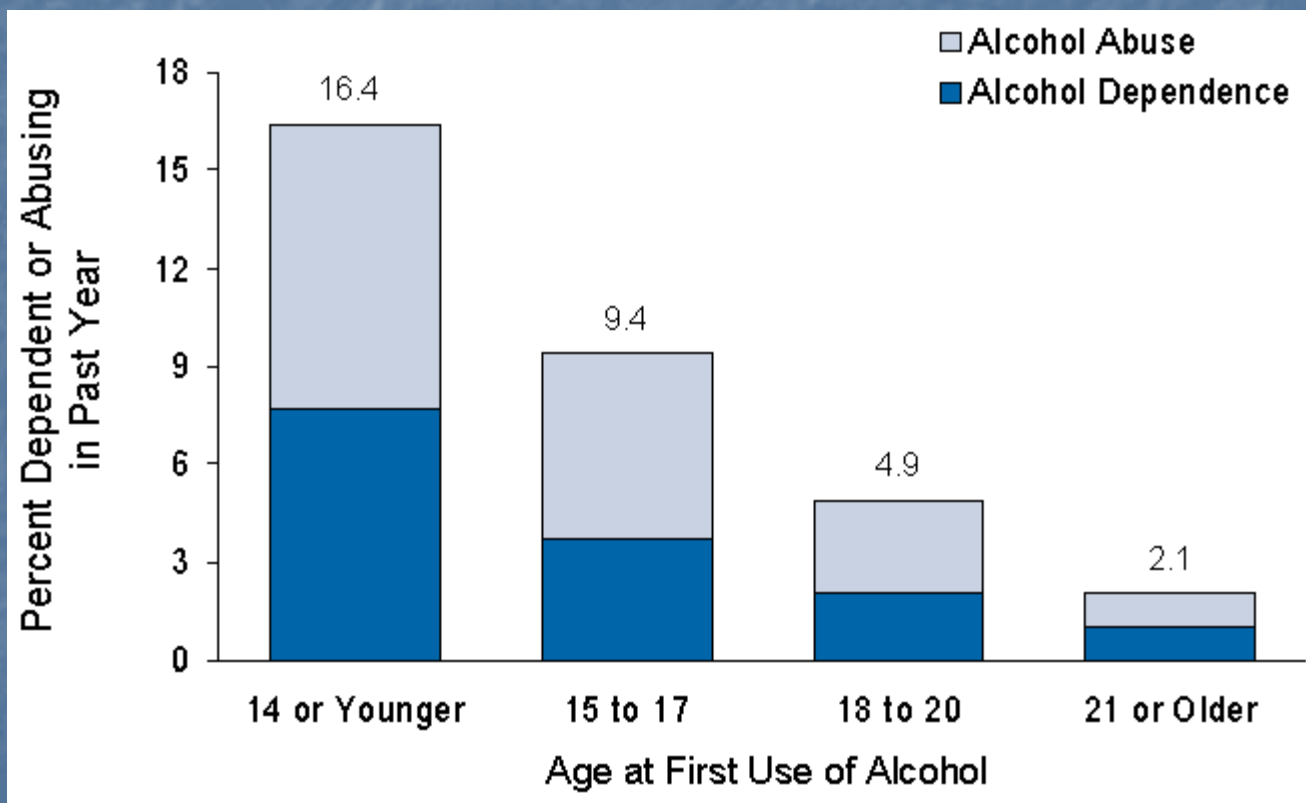
- 10% of 9-10 year olds have had alcohol (Donovan, 2004)
- 1/3 of youth begin drinking before age 13
 - Normative experimentation vs problem exposure
 - Sips vs drinks
 - Initial sips at young age, occurring in family context, not associated with risk factors for problem drinking (*Donovan & Molina, under review*)

Early Initiation into Alcohol

- Drinking alcohol (*more than a sip or taste*) at an early age (~ before age 14) predicts
 - Heavier drinking and other drug use in adolescence (Robins & Pryzbeck, 1985; Hawkins et al 1997)
 - Adult alcohol dependence (Grant & Dawson, 1998)
 - Other adverse outcomes such as vehicular crashes after drinking (Hingson et al., 2002, Accid Anal Prev)

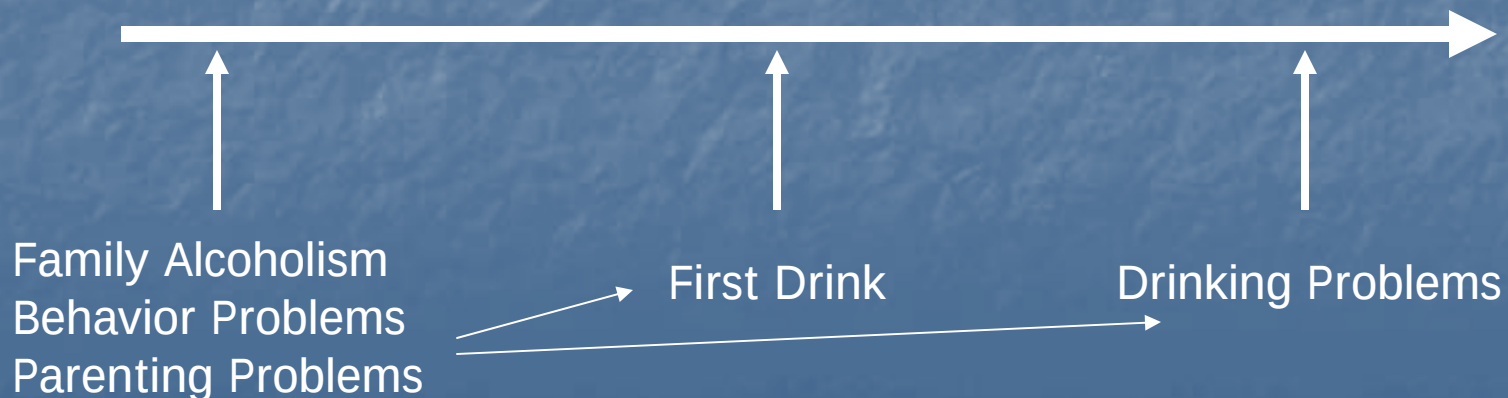
Age First Drink Predicts Adult AUD

from National Household Study on Drug Use & Health



Meaning of Early Drinking

- *Causes* progression to heavier drinking and use/abuse of other substances
- Is a marker of underlying vulnerability



Rates of problem drinking among adolescents

- 5.5% of 12-17 yr olds alcohol abuse or dependence in 2005 (5.1% male; 6.0% female); SAMHSA, 2006
- 5.8% of 12-17 yr olds needed treatment for an alcohol use problem; only 8.1% of this group received specialty treatment (SAMHSA, 2006).
- But limitations of DSM-IV...

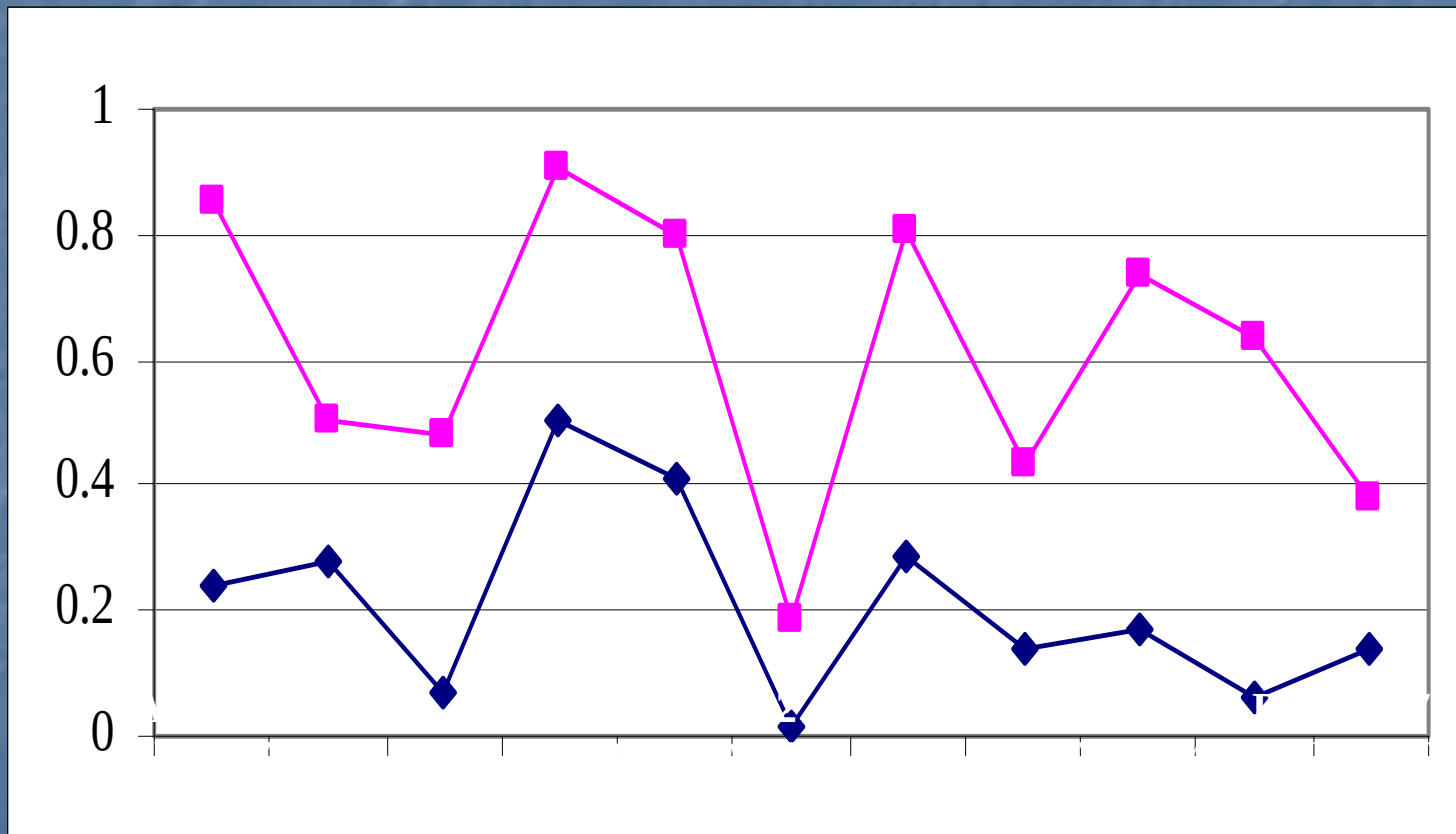
Limitations of DSM-IV Alcohol Abuse/Dependence

- Lack of clear conceptual or empirical distinctions between abuse and dependence symptoms
 - Latent class analyses do not support abuse-dependence distinction for adolescents (*Bucholz et al., 2000; Chung & Martin, 2001*)
- DSM-IV symptoms developed from experience with adults (e.g., problems with tolerance and withdrawal)
- Diagnostic Orphans and Impostors (*Pollock & Martin, 1999*)
- Variation in estimated prevalence of symptoms and diagnoses (*Chung et al., 2002*)
- Problems with 1-symptom threshold (*Langenbucher et al. 1996; ACER*)

Martin, Chris (RSA, 2006)

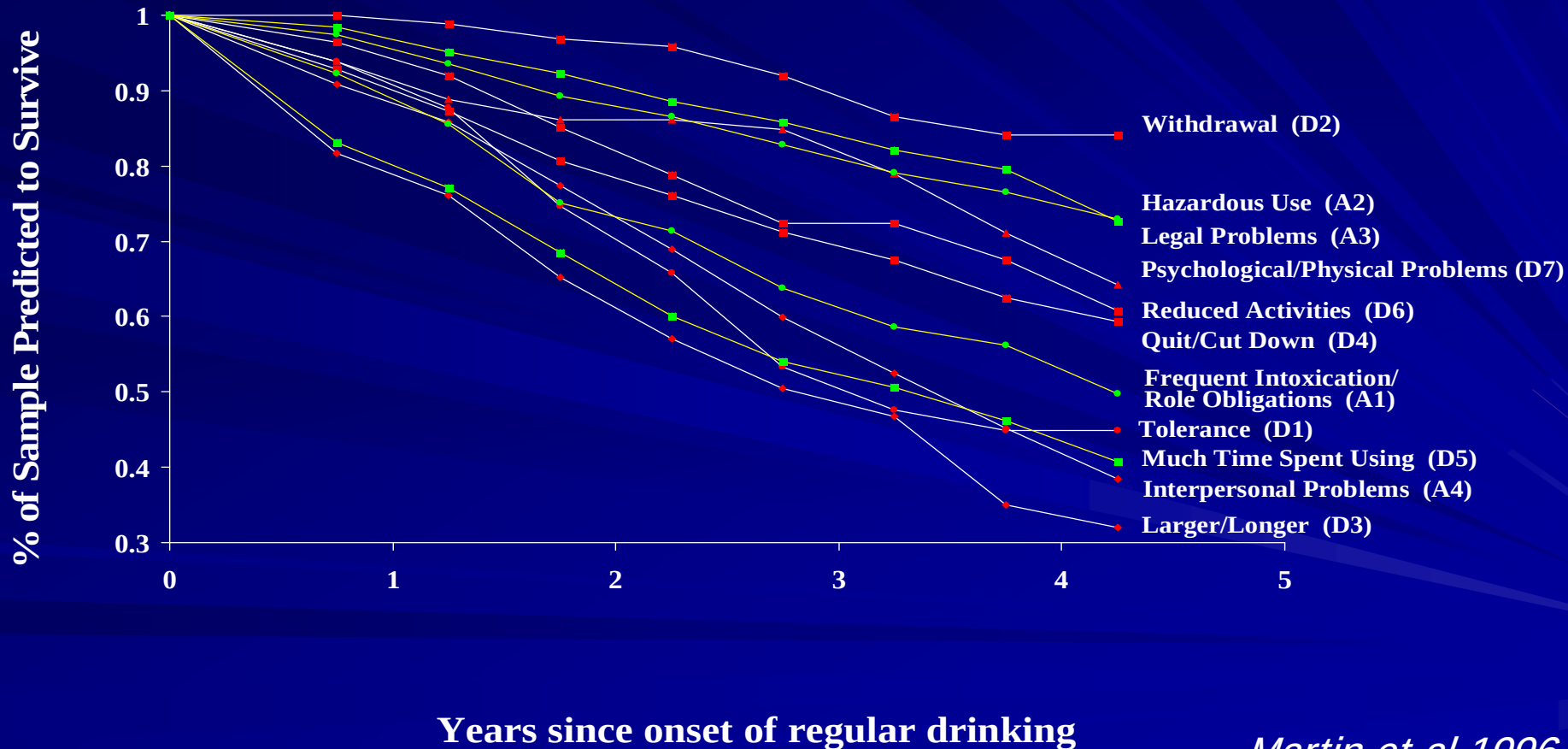
Alcohol Symptom Profiles in Adolescents with AUD
Classes (groups of adolescents with AUD) differ in severity, not profiles of symptoms. Total number of symptoms distinguishes classes better than type of symptom.

SYMPTOM ENDORSEMENT PROBABILITY



Survival Functions for DSM-IV Alcohol Symptoms: Adolescents

Order on Onset Not as Expected based on DSM-IV



Martin et al 1996

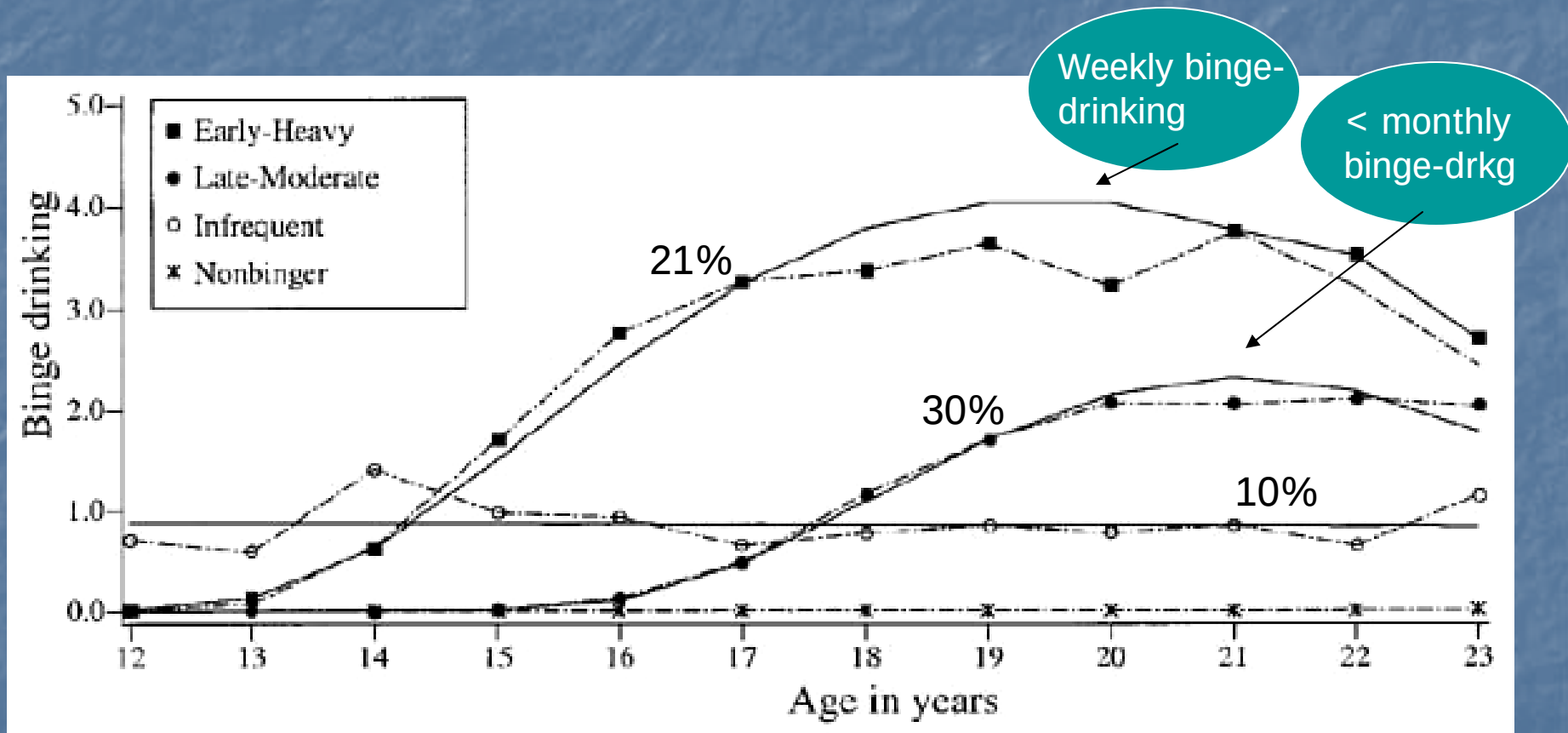
DSM-V Development Process Activities

- Feb 2006 Refining the Research Agenda Conference
- April 2006 Diagnostic Issues regarding adolescents
- 2006 Conference on Dimensional Issues
- 2007 Constitution of DSM-V workgroups
- 2011 (?)Publication of the DSM-V

Course

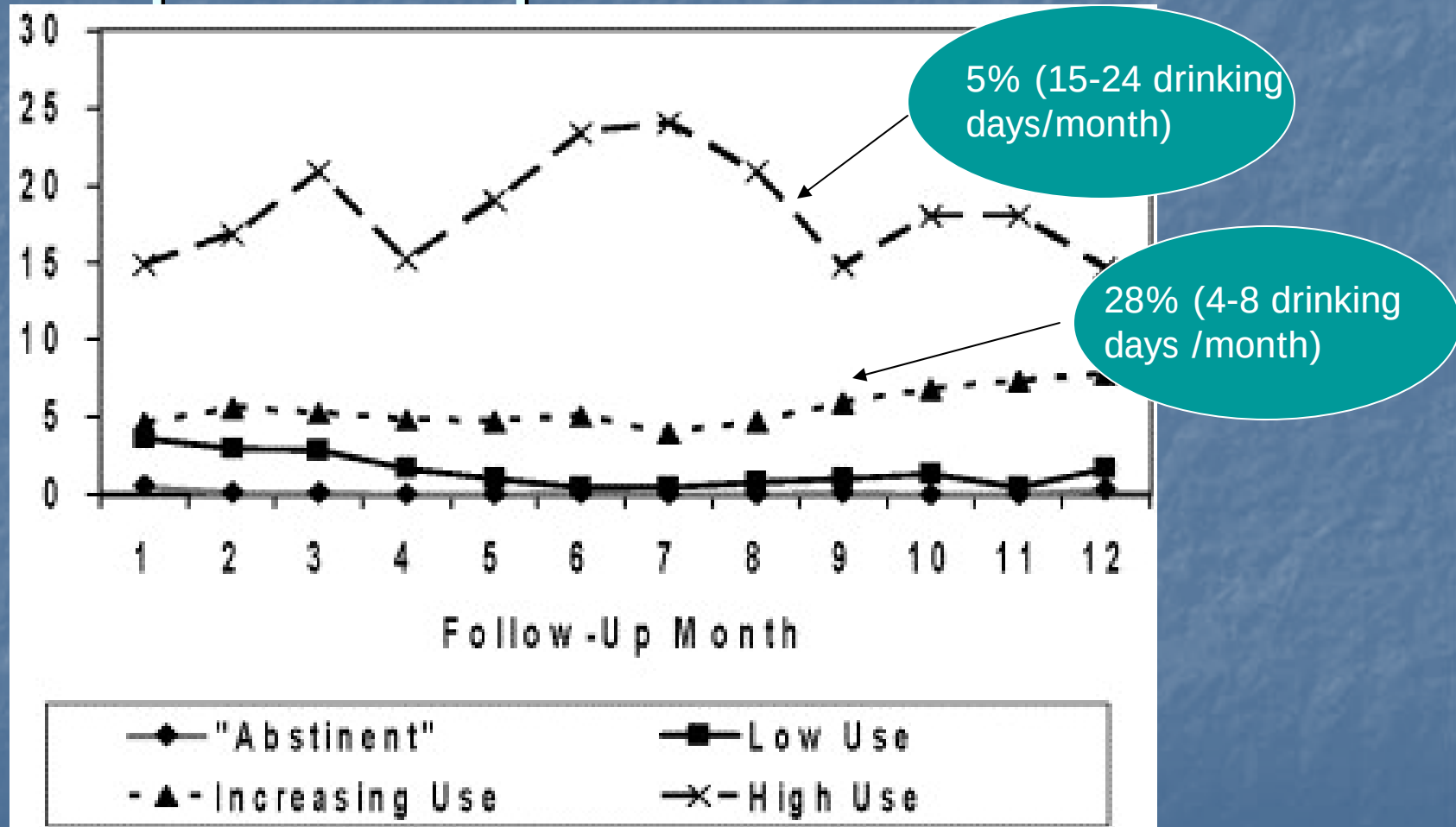
Considerable Variability

Binge Drinking Patterns over Time



Chassin et al., 2002, Journal Consulting Clinical Psychology

Variability in drinking and symptom patterns post-treatment



Development of Alcohol Symptoms in Youth

- AUD symptoms *tend* to emerge in three stages:
 - Heavy and heedless use (larger/longer, interpersonal problems)
 - Dependence symptoms of tolerance and much time spent
 - Alcohol withdrawal (does not occur for most teens)

Course in Community Samples

- Alcohol use diagnosis transient (high rate of transitions into and out of dx over time) *(Nelson & Wittchen, 1998; Rohde et al., 2001).*
- But, teens with AUD sx's (but not dx) more likely to have an AUD by age 24 *(Rohde et al., 2001).*

Mechanisms/Processes

“It is unlikely that any one factor or etiological pathway could explain the development of substance use or substance use disorders.”

-Laurie Chassin et al. (2004), pg 673.

Adolescent Cognition: Time of Development and Vulnerability

- Formal operations not yet in place
- Brain development continues into the 20s
 - Myelination develops prefrontally through the adolescent period
 - Enhanced connectivity and organization in specific regions
 - Synaptic pruning, especially prefrontally
 - Pruning + experience → adult efficient/organized/specialized
 - *See work by J. Giedd (NIMH) and B. Luna (U Pittsburgh)*
- Ability to assess risk and apply effective decision-making potentially immature
 - Estimates of norms for substance use are biased

Models of alcoholism and other substance use disorders

- Sher, 1991, 1999
- Cloninger, 1987
- Tarter et al., 1985; 1999
- Zucker, 1987; 2000

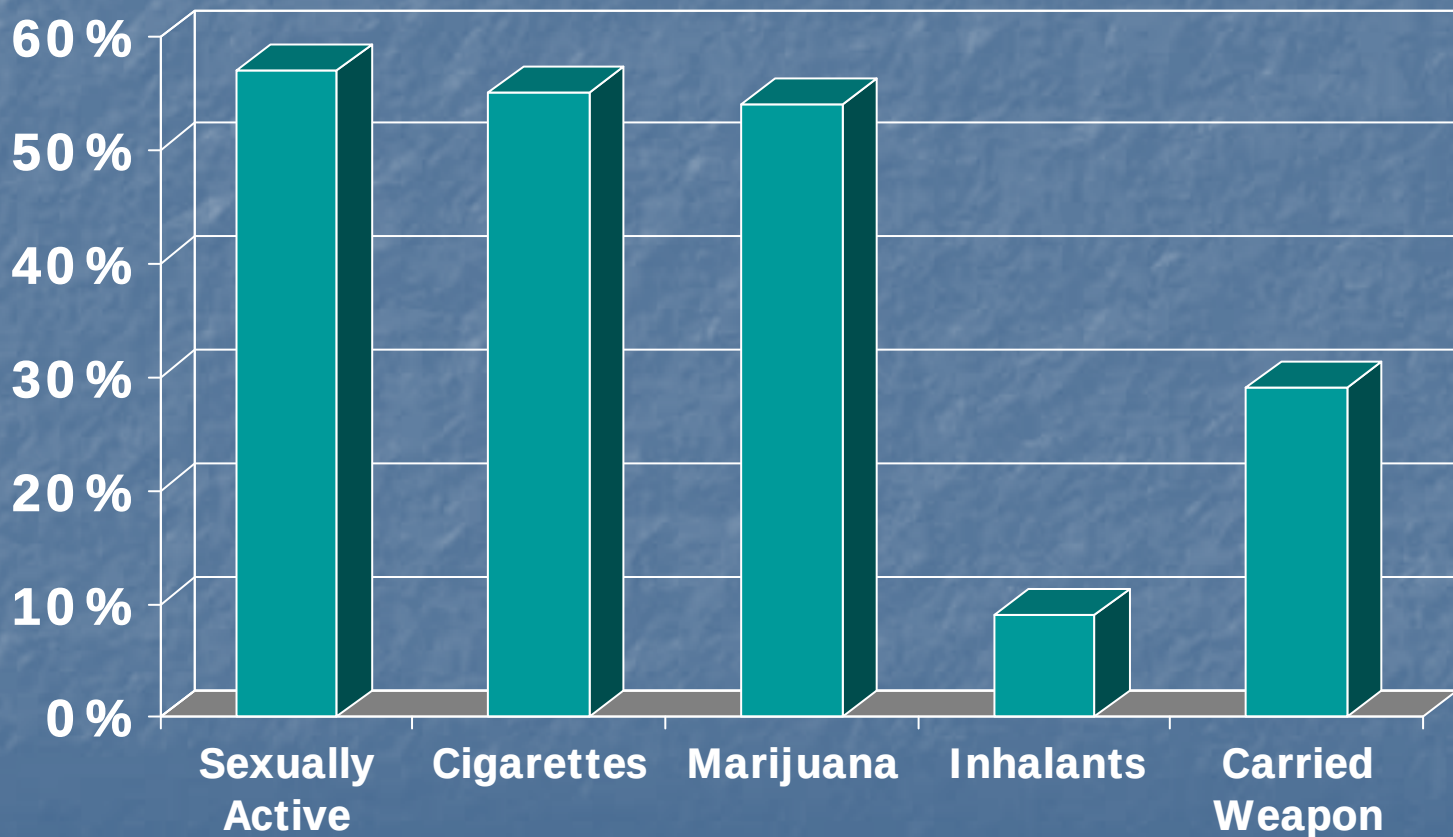
Heritable (genetic), biological, psychosocial and environmental influences.

Transactional processes (*Ge et al., 1996*).

Deviance Proneness

- Problem behavior theory (Jessor et al., 1977)
 - Problem behaviors co-occur in adolescence
 - Risk processes overlap (behavior problems, school difficulties, family adversities/stresses/psychopathologies)
 - Empirical support plentiful (e.g., Petraitis et al. 1995, for review).

Health Risk Behaviors Among Binge Drinkers (5+ drinks in past 30 days)

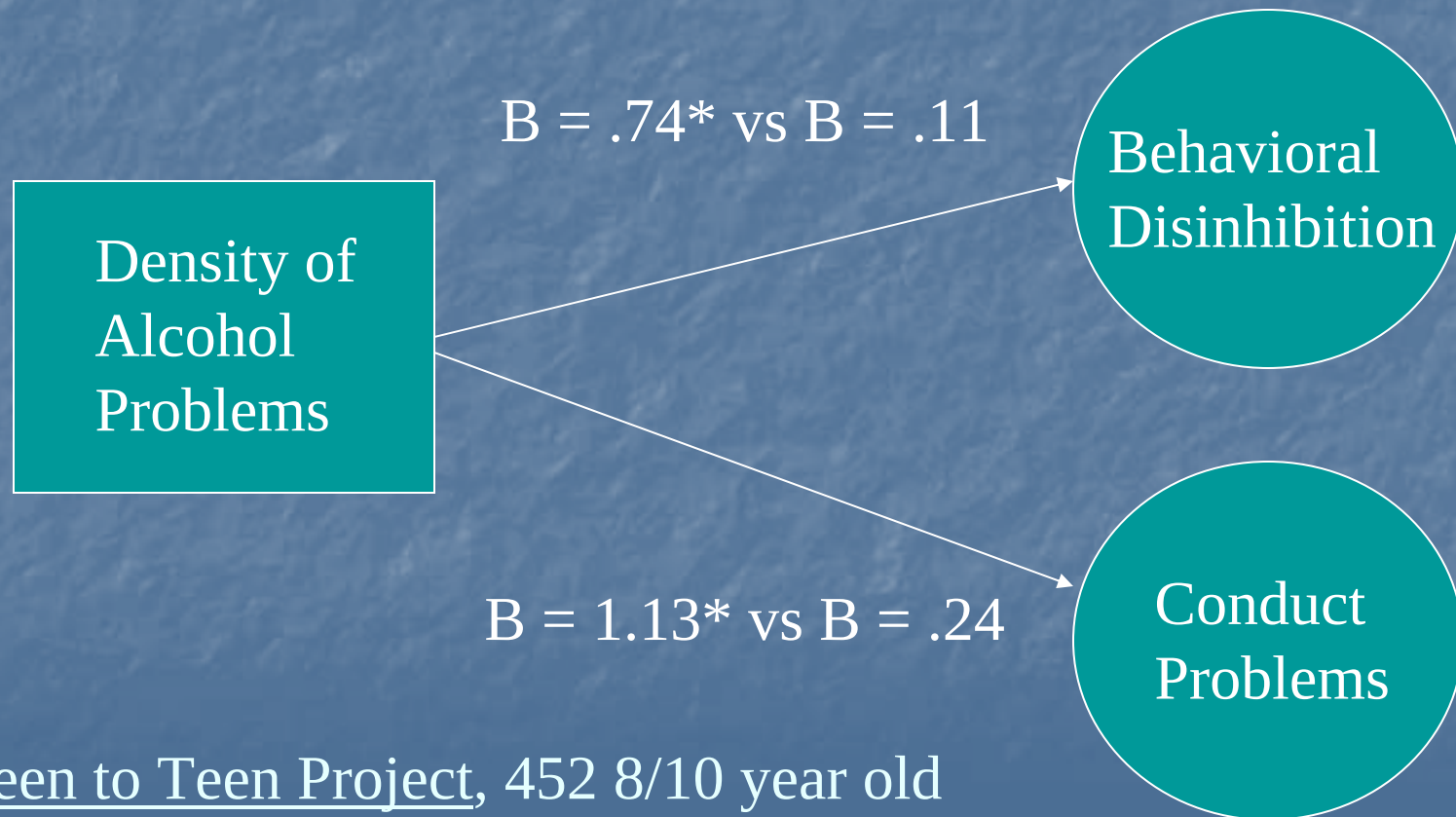


Youth Risk Behavior Survey, 2003

Parenting and Socialization

- Parental monitoring, effective discipline, relationship warmth/low conflict
 - Alcohol- and substance-specific parenting strategies
- Peer influence processes (selection and influence)
- Broader socialization networks (school and community activities such as after-school sports and religious organizations)

Density of alcohol problems in family associated with child behavior, but only in families with lower quality parenting practices.



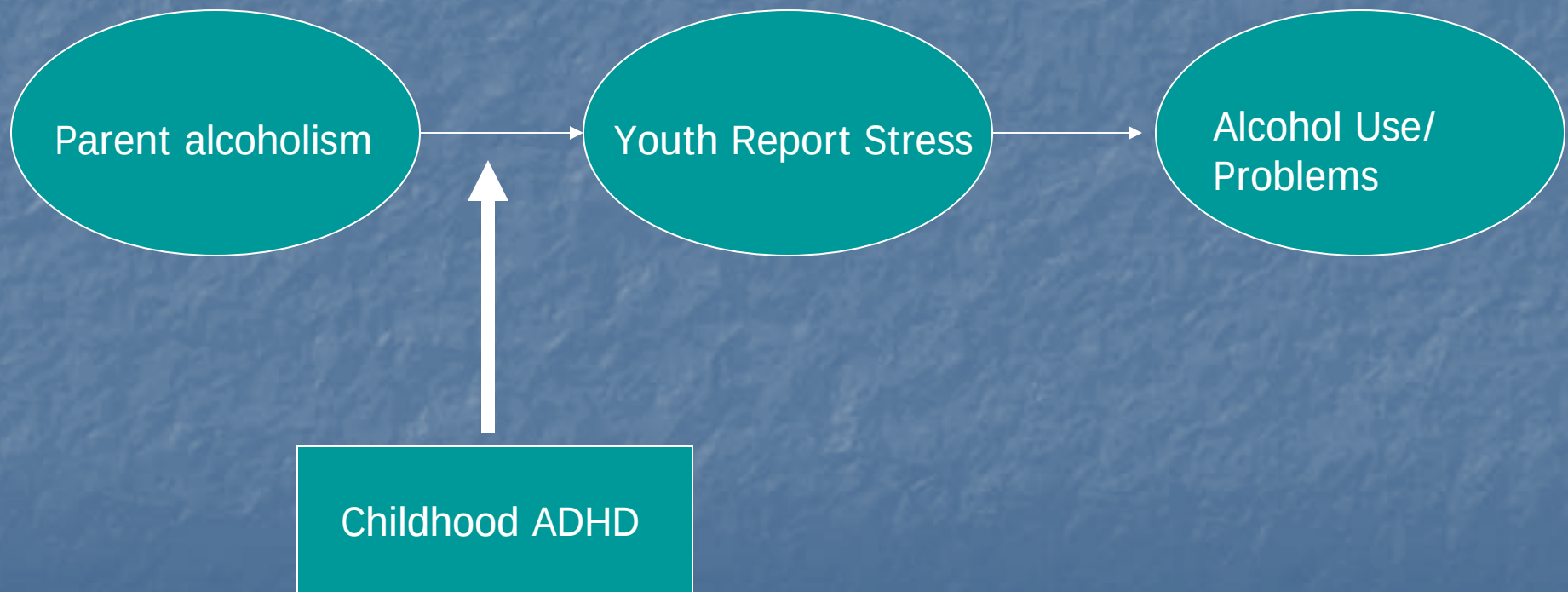
Tween to Teen Project, 452 8/10 year old boys/girls from Allegheny County, PA

#AA12342

Stress and Affect Regulation

- Stress model of drinking – complicated with inconsistent support
 - Parental alcoholism → negative life events/perceived stress → alcohol use
 - Stress or marker for dysfunction/impairment?
 - Stress measurement/time lag (*Hussong et al 2001*)
 - Inconsistent support for responsivity to stress and prospective role of mood/anxiety
 - More refined measurement of stress, affect, and biological underpinnings (e.g., type and severity of negative affect)

Stress Mediates Effect of Parent Alcoholism for Children at High Risk



Marshal et al., in press, ACER (April issue)

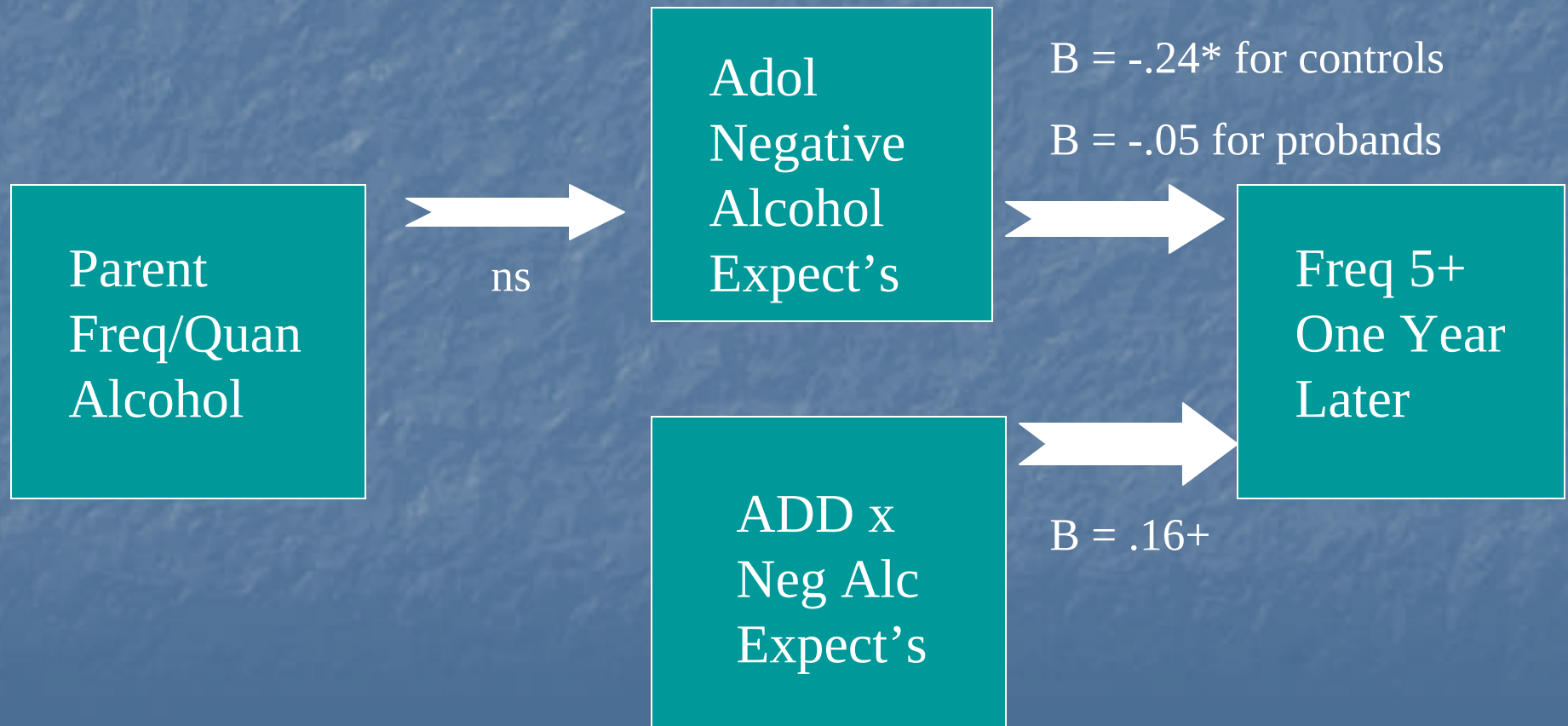
Alcohol Expectancies

- Expectancies: beliefs about the positive and negative effects of alcohol
 - Form in childhood, before alcohol use
 - Predict drinking behavior
 - Shaped by drinking experiences
 - Change with age: increase in +
 - Effects moderated by experiences

Expectancies predict differentially

- Tension-reduction expectancies relevant for anxious individuals (*Kushner et al. 1994*)
- Negative expectancies fail to predict for youth with ADHD

Negative alcohol expectancies^{W1} predict less frequent heavy drinking^{W2} for adolescents, but not for adolescents with childhood ADHD.



Process Models Have Implications for Diverse Treatment Needs

Treatment Considerations

Most teens who could be treated are not

- Assessment and Treating Matching
 - Severity of problem; degree of impairment; comorbidity; age; cognitive functioning; legal mandates
- Comprehensive, Integrated Approach
- Family Involvement in Treatment
- Developmentally Appropriate Programs
- Strategies to Engage and Retain Teens in Treatment
- Continuing Care (2/3 relapse to alcohol in six months)

Treatments with Evidence

- Family therapies
- Behavioral therapy
- Cognitive behavioral therapy
- Motivational interviewing
- Minnesota 12-step model
- Contingency Management Reinforcement
- Combinations of these

State of the Treatment Literature for Adolescent Alcohol and Drug

No one treatment approach stands out over others

Optimal dosage and length of treatment unclear

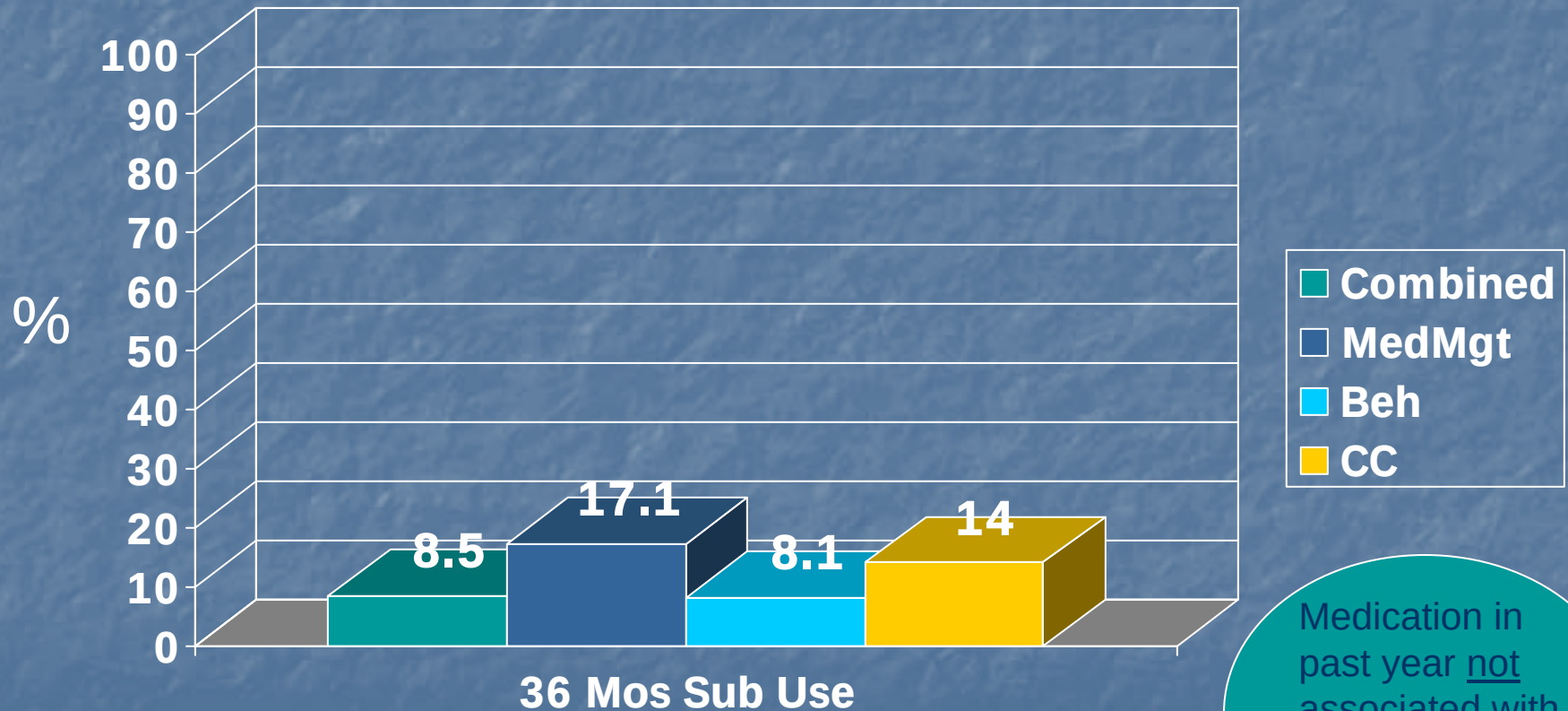
Comorbidities not well researched

Pharmacotherapy studies small in number
(e.g., a few studies of SSRIs for AUD and depression; stimulants being tested)

Multimodal Treatment of ADHD Study (N=579)

Less Substance Use with Behavior Therapy (p=.02)

10 Months after Study Treatment for 14 Months



Molina et al., in press, JAACAP

Medication in
past year not
associated with
substance use at
24, 36 months

References

- National Research Council and Institute of Medicine (2004). Reducing Underage Drinking: A Collective Responsibility. Committee on developing a strategy to reduce and prevent underage drinking, Richard J Bonnie and Mary Ellen O'Connell, Editors. Board on Children, Youth, and Families, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press. Electronic access: <http://www.nap.edu/catalog/10729.html>
- Chassin L., Hussong A, Barrera M, Molina BSG, Trim R, Ritter J (2004). Adolescent substance use. In RM Lerner & L Steinberg (Eds). Handbook of Adolescent Psychology, Hoboken, NJ: John Wiley & Sons, Inc.
- Chung, T, Martin CS, Winters KC (2005). Diagnosis, course, and assessment of alcohol abuse and dependence in adolescents. In M. Galanter (Eds) Recent developments in alcoholism. Vol 17, Alcohol problems in adolescents and young adults. New York, NY: Kluwer Academic/Plenum Publishers.
- Dawes MA, Johnson BA. Pharmacotherapeutic trials in adolescent alcohol use disorders. Opportunities and challenges. Alcohol and Alcoholism, 39.
- Donovan JE (2004) Adolescent alcohol initiation: A review of psychosocial risk factors (in press).
- Johnston, LD, O'Malley, PM, Bachman, JG, & Schulenberg, JE (2006). Monitoring the future national survey results on drug use, 1975-2005: Volume I, Secondary school students (NIH Publication No 06-5883). Bethesda, MD: National Institute on Drug Use.
www.monitoringthefuture.org.
- NIAAA Interdisciplinary Team on Underage Drinking Research (2005). Alcohol and development in youth: a multidisciplinary overview. Alcohol Research and Health, 28, 107-176.NIAAA.
- SAMHSA (Jan 2006). Report to congress: A comprehensive plan for preventing and reducing underage drinking.
www.stopalcoholabuse.gov/media/underagedrinking/pdf/underagerpttocongress.pdf
- SAMHSA (Sept 2006). Results from the 2005 National Survey on Drug Use and Health: National Findings. Dept of Health and Human Services, SAMHSA, Office of Applied Studies.
www.samhsa.gov.
- CDC (2004). Youth Risk Behavior Survey. Centers for Disease Control, Atlanta, GA.