

## Underage Drinking in Its Developmental Context

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## NIAAA Task Force on College Drinking

- Chairs:
  - Rev. Edward Malloy (Notre Dame)
  - Dr. Mark Goldman (South Florida)
- Members:
  - college presidents
  - researchers
  - students
- Timeframe: 1998 – 2002

## Task Force Roster: *Presidents*

- |   |   |
|---|---|
| • Rev. Edward Malloy, Notre Dame (co-chair) | • William Jenkins, LSU                    |
| • Tomas Arciniega, Cal. State Bakersfield   | • William Kirwan, Ohio State              |
| • Robert Carothers, URI                     | • James Lyons, Cal. State Dominguez Hills |
| • John Casteen, UVA                         | • Susan Resneck Pierce, U. of Puget Sound |
| • Edward Foote, U of Miami                  | • Judith Ramaley, U of Vermont            |
| • Michael Hooker, UNC Chapel Hill           |   |

## Task Force Roster: *Researchers and Practitioners*

- Mark Goldman, USF (co-chair)
- Marilyn Aguirre-Molina, Columbia U.
- David Anderson, George Mason
- Michael Fleming, Wisc-Madison
- Bill DeJong, HEC
- Ellen Gold, Eastern Michigan
- Ralph Hingson, BU
- Harold Holder, PIRE
- Patrick Johnson, CASA
- Donald Kenkel, Cornell
- G. Alan Marlatt, U of Washington
- Marcus Rothschild, VA Med. Cntr
- Robert Saltz, PIRE
- Kenneth Sher, U of Missouri
- Henry Wechsler, Harvard
- Sharon Wilsnack, U. of North Dakota
- Robert Zucker, U of Michigan

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## Task Force Report

### • Key Features:

- Analysis and extent of the problem
- Research-based recommendations for presidents & administrators
- Recommendations for future research
- Recommendations to NIAAA for supporting future research
- “3 in 1” Framework
- 4 Tiers

Originally published April 9, 2002

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## Related Materials

### • Related materials include--

- 2 Panel Reports
- Journal articles
- 3 Brochures
- Planning and Evaluation Handbook



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## New College Drinking Web Site [www.collegedrinkingprevention.gov](http://www.collegedrinkingprevention.gov)

- Important information is more easily accessible to users from the homepage.
- The new site better highlights the main conclusions of the Task Force.
- Improved usability makes navigation more intuitive for the user.



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## New College Bulletin to update aspects of the Report



- Research Update on Individual and Environmental Interventions for College Students
- New Statistics
- New Definition of Binge Drinking
- New Discussion of Alcohol Poisoning
- New Chart of Drinking Patterns during Freshman Year
- Updates on NIAAA's "Rapid Response" Grant Program and "Underage Steering Committee"

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## Update on College Drinking Consequences: 1998 compared to 2001

- **Deaths: 1400/ 1700 Alcohol-Related Unintentional Injury Deaths**
- **Injuries: 500,000/ 599,000 unintentional injuries**
- **Assault: 600,000/ 696,000 assaults**
- **Sexual Assaults or Date Rapes: 70,000/ 97,000**

Source: Hingson et al. 2002 and 2005

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## Recommendations

The **3-in-1 Framework** -- "a useful introduction to encourage presidents, administrators, college prevention specialists, students, and community members to think in a broad and comprehensive fashion about college drinking"

- Individuals, including at-risk or alcohol-dependent drinkers
- Student body as a whole
- College and surrounding community

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## Recommendations

- Tier 1** Evidence of Effectiveness Among College Students
- Tier 2:** Evidence of Success With General Populations That Could Be Applied to College Environments
- Tier 3:** Evidence of Logical and Theoretical Promise, But Require More Comprehensive Evaluation
- Tier 4:** Evidence of Ineffectiveness

### **Tier 1: Effective with College Students**

- Combined cognitive-behavioral skills /norms clarification /motivational enhancement
- Brief motivational enhancement
- Alcohol Expectancies (now controversial)

### **Tier 2: Effective with General Populations**

- Increased enforcement- MLDA laws
- Restrict retail density
- Increased price and excise tax
- Responsible beverage policies
- Formation of campus/community coalitions

### **Tier 3: Promising**

- Adopt specific campus-based policies (e.g. reinstate Friday classes)
- Increased enforcement at campus events
- Increasing publicity of enforcement
- Enforce disciplinary action of violations
- Marketing campaigns correcting students misperceptions about alcohol use
- Awareness of personal liability
- Informing new students/parents about alcohol policies and penalties

### **Tier 4: Ineffective**

- Educational interventions when used alone
- Sobriety tests

Recent findings from my lab:

Del Boca et al. (2004). JCCP

Greenbaum et al. (2005). JCCP

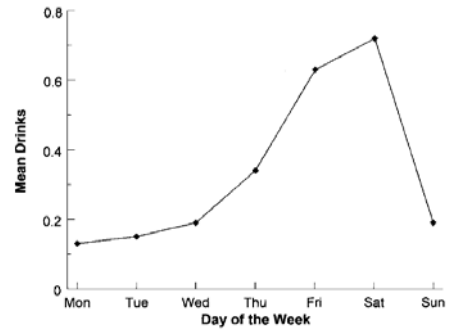


Figure 1. Mean quantity of alcohol consumed by day of the week.

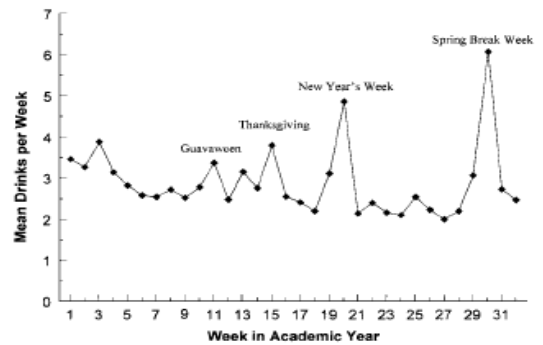
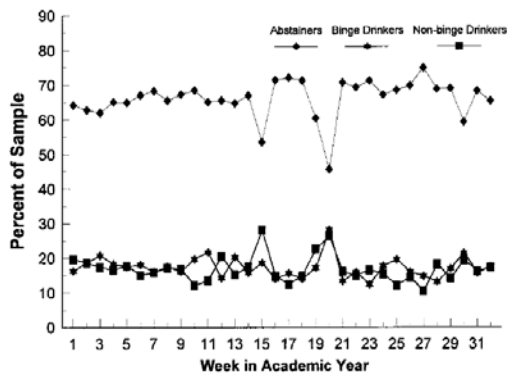


Figure 3. Weekly quantity of drinking during the freshman year.

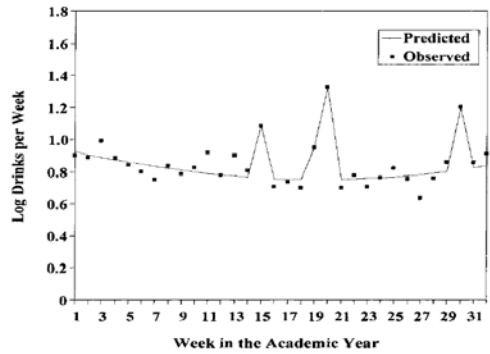


Figure 4. Observed and predicted weekly quantity of drinking during the freshman year.

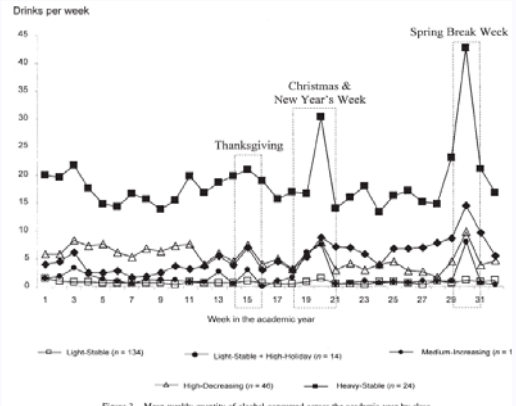


Figure 2. Mean weekly quantity of alcohol consumed across the academic year by class.

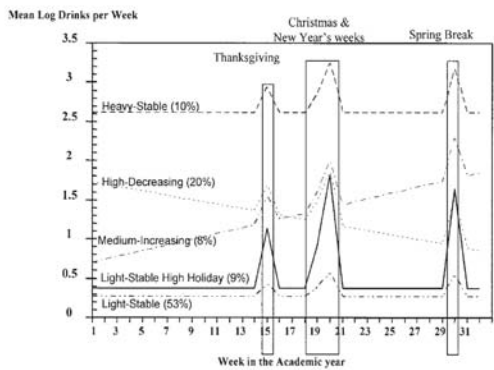


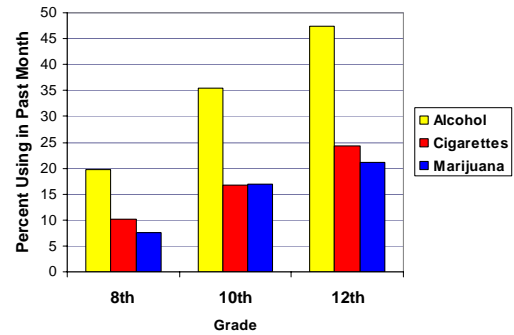
Figure 1. Fitted drinking trajectory classes from the unconditional model (without adjustment for covariates).

**But the problem begins  
before college...**

“What the NIAAA task force called a culture of drinking leads many students to harm themselves or others and clearly is antithetical to academic success. The task force is right that we will need a concerted and coordinated effort if we are to change this culture...sadly and tragically, the serious problem of alcohol abuse and misuse on college campuses persists with students often coming to our campuses with histories of excessive drinking.”

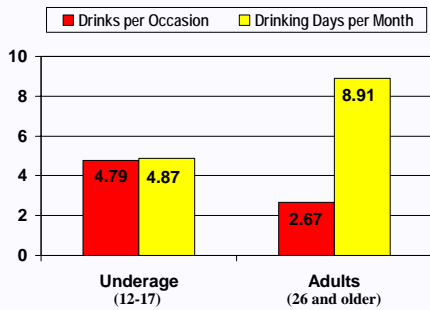
(Susan Resneck Pierce, former President U of Puget Sound).”

### Alcohol is the Drug of Choice Among Adolescents



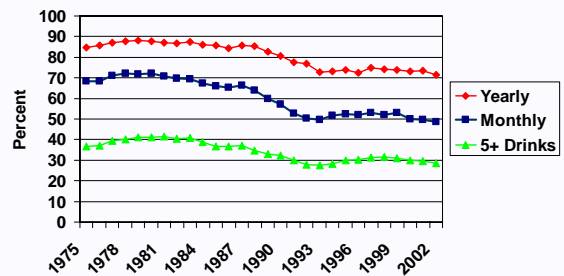
Source: Monitoring the Future, 2003

### Youth drink less frequently than adults, but drink more per occasion



Source: SAMHSA National Survey on Drug Use and Health, 2002

### Drinking Trends Among High School Seniors, 1975-2002



Source: Monitoring the Future, 2002

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- About 50% of kids start drinking by the 8<sup>th</sup> grade.
- Binge drinking (past 2 weeks):
  - 12% of 8<sup>th</sup> graders
  - 22% of 10<sup>th</sup> graders
  - 28% of 12<sup>th</sup> graders
- Drunk (ever):
  - 20% of 8<sup>th</sup> graders
  - 40% of 10<sup>th</sup> graders
  - 60% of 12<sup>th</sup> graders

Source: Monitoring the Future, 2003



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## Direct Consequences

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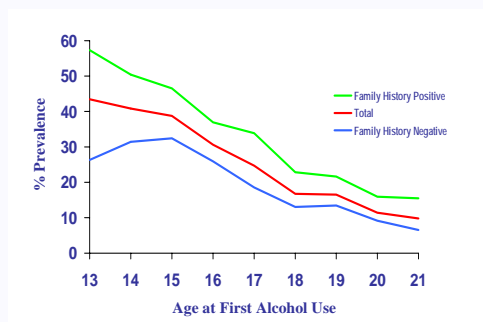
- **Annually, about 5,000 youth under 21 die from alcohol-related injuries.**
- **Often a factor in physical and sexual assault and unintended sexual activity.**
- **Contributes to academic problems.**
- **Exposure of the developing brain to alcohol *might* have long-lasting effects.**

## Second-Hand Effects

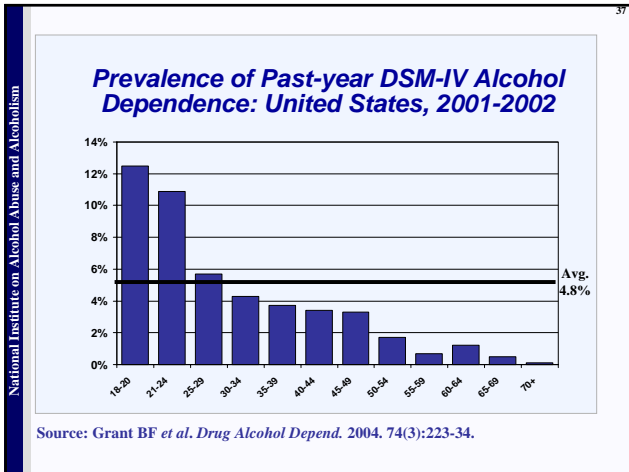
- **Half of all persons who die in traffic crashes involving drinking drivers under age 21 are persons other than the drinking driver.**
- **Among college students under age 21 alone, 50,000 experience alcohol-related date rape, and 430,000 are injured by another student who has been drinking.**

## Alcohol Dependence

Prevalence of Lifetime Alcohol Dependence by Age of First Alcohol Use and Family History of Alcoholism



Source: Grant and Dawson. *J Subst Abuse*. 1998, 10(2):163-73.



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## The Dilemma of Adolescence and Drinking

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- ### Adolescence (in Humans):
- The period between **sexual maturation** and the attainment of **adult roles** and responsibilities.
  - Many **body systems** are restructured.
  - **Number, types, and connectivity of brain cells** is changed.

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- ### With Puberty, Adolescents (in many species) Increase :
- **sexual interest**, romantic motivation, emotional intensity, sleep/arousal regulation, appetite.
  - **risk-taking**, novelty-seeking, sensation seeking.
  - **motivation for social status.**

### In Contemporary Society (U.S.):

- Average age of **menarche** is now age **12**; average age of **first marriage** for females is **26**.
- Many **adult social roles**--starting careers, owning a home, becoming parents--are now **occurring a decade or more after puberty**.
- Adolescence has expanded from a **2-4 year interval** to an **8-15 year interval** in contemporary society.

### Health Paradox of Adolescence:

- Adolescence is the **healthiest and most resilient period** of the lifespan.

#### YET:

- Overall **morbidity and mortality rates** increase **200-300%** between middle childhood and late adolescence/early adulthood.

### Morbidity and Mortality Due to:

- Problems with **control of behavior and emotion**.
- **Increase in risk-taking, sensation-seeking, and erratic (emotionally-influenced) behavior**.
- **Early onset of co-occurring illnesses including depression, eating disorders, alcohol and other substance use disorders.**

### Solving the Conundrum of Adolescent Risk/Alcohol-Related Casualties

**How do we reduce alcohol-related risk in adolescence despite the normal risk-inducing processes inherent to adolescence?**

## Related Questions:

- Does alcohol **distort normative adolescent development**?
- How do the processes of adolescence **contribute to immediate and lifetime alcohol risk**?
- Are adolescents particularly **vulnerable to alcohol-induced organ damage**?
- How can we design **policy/prevention/intervention** appropriate to transitional stages?

**What do we know now?**

**Neurobiological Mechanisms**

## Adolescent Alcohol Sensitivity (New Findings, Animal Research)

**Less sensitive:** aversive effects of acute alcohol intoxication (sedation, hangover, ataxia).

**More sensitive:** social facilitation.

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**Role of Early Exposure to Alcohol and Stress**  
**(New Findings, Animal Research)**

- Prenatal or early postnatal alcohol exposure increases alcohol preference during infancy and adolescence.
- Under separation stress, adolescent nonhuman primates double their rates of alcohol consumption--related to changes in corticotrophin and cortisol levels or serotonin.
- Adolescent rats show an attenuated corticosterone response to ethanol, with gender differences.

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**Consequences of Adolescent Alcohol Use on the Developing Brain**  
**(New Findings, Animal Research)**

- Binge-like episodes produce long-lasting changes in memory, and damage to frontal-anterior cortical regions.
- Prolonged ethanol exposure enhances withdrawal-related behavior and produces long-lasting neurophysiological changes in cortex and hippocampus.

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**Consequences of Adolescent Alcohol Use on the Developing Brain**  
**(New Findings, Human Studies)**

**Adolescents with severe alcohol abuse/ dependence disorders have:**

- neuropsychological impairments
- reduced brain hippocampal volumes

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**Genetics of Adolescent Alcohol Use**

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**In Adults:**

- **Genetic component** (from twin, family, adoption studies)
- **Environmental Factors**
  - Alcohol availability & access
  - Life experiences and events
  - Societal customs
  - Peer relationships
  - Family interactions
  - Stress
  - Trauma

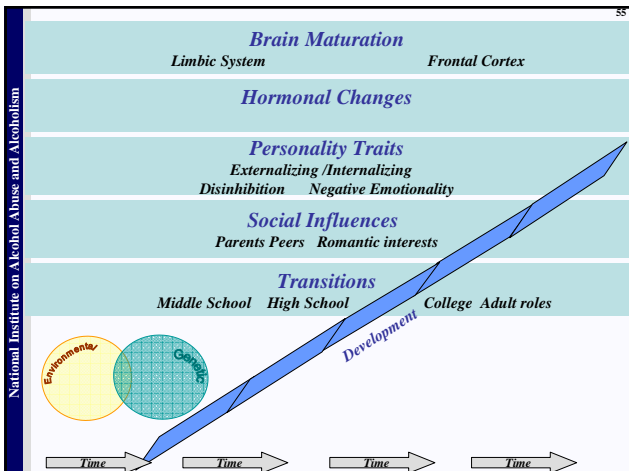
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**But in adolescents?**

The **genetic contribution** to early substance use may be small relative to the **environmental contribution**.

- Progression leading to and desistance from alcohol abuse and dependence
  - Initiation of drinking:
  - Continuing use: **Dynamic Interplay of genetic and environmental risk factors**
  - Problem use:
  - Termination:



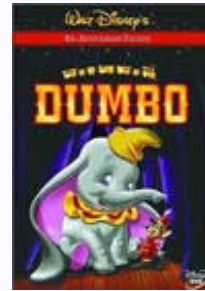
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**Psychosocial Processes  
of Risk and Protection**

**Personality:**

- **Behavioral Disinhibition**
  - Antisocial Personality
  - Conduct disorder
  - Impulsivity
  - Sensation seeking
- **Negative Emotionality**
- **Internalizing/Externalizing**

**Expectancies about alcohol:**

- **Develop on average before age 9 and sometimes before age 5.**
- **Can be found in children before drinking begins.**
- **Shift from primarily negative at about age 9 to primarily positive by age 13.**

- **Correlate with drinking.**
- **Predict drinking prospectively.**
- **Influence drinking decisions.**
- **Mediate Biological and Psychosocial Risk.**

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**Cognitive Development and Adolescent Decision-Making:**

- Immaturity of cognitive processing leads to risky decisions.
- Or... reason-based decision-making overridden in social-emotional contexts.
- Or... adolescent decision-making is configured for adolescent transitions—without intervention (scaffolding), there will be casualties.

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**Parents, Peers, and Community Influences:**

- Warm, loving parents are protective; child-parent conflict increases risk (not well supported).
- Involvement with problem peers increases risk (better supported).
- Supportive communities may be protective (e.g., availability of after school programs).

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**Alcohol Advertising**

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- Youth are routinely exposed to appealing alcohol advertising (television, radio, magazines).
- Cross-sectional studies have found **small but positive correlations** between exposure to and awareness of alcohol advertising and drinking beliefs and behaviors among youth.

## Alcohol Price

- **Alcohol beverage prices and taxes are associated with lower levels of alcohol consumption and alcohol-related problems.**
- **But, wide variability in the extent of the impact — particularly for underage.**

## Drinking Laws

- **Minimum legal drinking age and zero tolerance laws have reduced death and injuries due to alcohol-impaired driving. But:**
  - \*enforcement is inconsistent.
  - \*youth have been found to be unaware of zero tolerance laws.
  - \*enforcement can have unintended adverse impact.

## Prevention and Treatment

Can be Difficult to Distinguish in Adolescents

Both Designed to Change Developmental Pathways

## Intervening Is Complicated

- Because **adolescence is complicated.**
- Because **multiple systems** are involved in complex behaviors.
- Because **what resonates with kids changes frequently and is different for different kids.**
- Because we want **enduring effects.**

## Scaffolding Can Facilitate Healthy Adolescent Development



- **Positive Peer Groups**
- **Parental Monitoring**
- **Alternative Activities**
- **School Connectedness**



**YOUTH  
ADOLESCENCE  
CULTURE**

**ALCOHOL**

**The End**  
**Thank you**