Understanding the Course of Alcohol Involvement during Emerging Adulthood

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“If you are young and you drink a great deal, it will spoil your health, slow your mind, make you fat – in other words, turn you into an adult.”

-- P.J. O'Rourke
Emerging Adulthood

- Period from the end of secondary school through the attainment of “adult” status (age 18-25)
- Bridges adolescence and adulthood
- Marked by frequent change and exploration
- Assumption of adult roles and responsibilities
Why This New Developmental Stage?

- Delay in marriage, parenthood
  - Increases in education
  - Changes in women’s roles
  - Birth control pill, standards of sexual morality
- Increased desire for independence, freedom
Many Developmental Tasks Occur During this Stage

- Identity exploration & formation
- Freedom to choose new behaviors & lifestyles
- New social networks
- Separation from families & friends
- Education, intellectual growth
Drinking Can be Maladaptive

- Failure to master tasks $\rightarrow$ frustration and stress $\rightarrow$ alcohol use
- Alcohol use $\rightarrow$ failure to master tasks $\rightarrow$ frustration and stress
- Long-term effects on physical & psychological well-being; implications for attainment of traditional adult roles
Overview

- Describe normative trend in drinking
- Describe factors that explain normative trend
- Account for unexplained variability in change
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Age trends for past-month drinking

Emerging adulthood

From 2003 National Household Survey on Drug Use and Health
Age trends for past-month heavy drinking

Emerging adulthood

From 2003 National Household Survey on Drug Use and Health
Prevalence of DSM IV Alcohol Dependence

From 2003 National Epidemiologic Survey on Alcohol and Related Conditions (Grant et al., 2004)
Age of Onset of DSM IV Alcohol Dependence

From 2003 National Epidemiologic Survey on Alcohol and Related Conditions (Li et al., 2004)
Limitations of Cross-Sectional Designs

- Cross-sectional designs
  - Observe different cohorts at same point in time
  - Confounds age with birth cohort
  - Can’t estimate variability in change

- Prospective designs
  - Observe a single cohort over time
  - Unconfounds cohort and age
Cross-sectional vs. Prospective

Birth Cohort:
- 1988
- 1990
- 1992
- 1994
- 1996

Time of Assessment:
- 1990: Age 10, Age 12, Age 14
- 2006: Age 16
Age-Specific Deaths from Tuberculosis

Death Rate per 100,000

Cohort of 1880

1880

1930
Heavy drinking peaks at age 20-21 and then declines

From 2005 Monitoring the Future data (Johnston et al., 2005)
Trends in Past 6-month Heavy Drinking

From Jackson, Sher, Cooper, & Wood, 2002. Adjusted for sex and ethnicity.
Overview

- Describe normative trend in drinking
- *Describe factors that explain normative trend*
- Account for unexplained variability in change
Factors that Predict Increase in Normative Drinking

- Leaving home
  - Independence from parental restrictions
  - New social environment
- Attainment of legal drinking age
- Stage-specific developmental correlates
Leaving Home Transition Depends on Where You Go

From 2001-2 National Epidemiologic Survey on Alcohol and Related Conditions (Chen et al, 2005)
College Students Show Greater Increase in Drinking

College Students Show Greater Increase in Intoxication

From Missouri Adolescent Female Twin Study (Slutske et al., 2004)
College Students Don’t Look Like their Non-College Peers

- Higher rates of heavy use
- Lower rates of daily drinking
- Lower prevalence of past-year DSM-IV alcohol dependence
- Power of the social environment
Theories Behind the Drinking Increase in College

- Influence (socialization)
- Selection
- Differential socialization hypothesis
Transition to Adult Roles is Associated with the Decline

- End formal education
- Employment
- Marriage
- Parenthood

“Get up and dance, get up and smile, get up and drink to the days that are gone in the shortest while.”

-- Simon Fowler
Role compatibility theory (Kandel)

- Role socialization
  - Individuals change substance use to be compatible with expectations from the social roles

- Role selection
  - Individuals with pre-existing traits (including low substance use) select into certain roles
End Formal Education

- Leave social environment of college
- Enter environments with different standards and reward structures
- End of formal higher education “signals” a period of maturing out of one role into a role with greater responsibility and less freedom
Employment

- Entry into the workforce
- Different norms across type
  - full-time employment
  - unemployment
  - job stress
  - opportunity to drink on job

“Work is the curse of the drinking class.”
-- Oscar Wilde
Marriage

- New responsibilities
- Change in social and recreational activities
- Increased adult contacts
- Engagement
Relationship Transitions and Heavy Drinking – Women

- Single
- Married
- Divorced
- Single->Married
- Married->Divorced
Relationship Transitions and Heavy Drinking – Men

![Graph showing relationship transitions and heavy drinking percentages.]

- Single
- Divorced
- Married
- Single -> Married
- Married -> Divorced
Parenthood

- Pregnancy
- Impacts social life even more than marriage
  - Child care responsibilities
  - Change in social and recreational activities
- Prompts men to reduce drinking
Pregnancy and Heavy Drinking

From Monitoring the Future (Bachman et al., 1997)
Overview

- Describe normative trend in drinking
- Describe factors that explain normative trend
- Account for unexplained variability in change
A Prospective Approach to Studying Development

- Individuals change over time (intra-individual variability)
- There is inter-individual variability in intra-individual change
  - Stability versus instability
  - What predicts change?
History of Taking a Developmental Perspective

- Consider longitudinal course of a disorder when making a diagnosis
- Recent research in trajectory of change
Modeling Individual Change

- Not all individuals stay on the same track
- Describe individual patterns of stability and change
  - stability
  - progression (worsen)
  - regression (recover)
- Are there individual differences?
Illustrative Example 1: Alcohol Consumption

- Young adult sample (N=489; 46% male)
- Prospectively assessed at Years 1, 2, 3, 4, 7, & 11 (~ ages 18 – 28)
- Past 30 day consumption
  - Drank alcohol
  - Felt high from alcohol
  - Felt drunk from alcohol
  - Had five or more drinks on a single occasion
Drink | High | Drunk | 5+

Frequency (AGE 18)
Drink | High | Drunk | 5+

Frequency (AGE 24)
Latent Transition Analysis

- How many groups (classes)?
- What do the classes look like?
- How many in each class?
- Do individuals change classes over time?
How many classes?
What do the classes look like?

From Jackson, Sher, Gotham, & Wood (2001)
How many in each class?

From Jackson, Sher, Gotham, & Wood (2001)
Where Do People Go?

Abstainer
n=62

Ltd Effect
n=37

Mod Effect
n=102

Lrg Effect
n=241

Abstainer

Ltd Effect

Mod Effect

Lrg Effect
Where Do People Go?

Age 18

- Abstainer: n=62
- Ltd Effect: n=37
- Mod Effect: n=102
- Lrg Effect: n=241

Age 21

- Abstainer: n=35
- Ltd Effect: n=14
- Mod Effect: n=11
- Lrg Effect: n=2

35: 14: 11: 2
Where Do People Go?

Age 18
- Abstainer: n=62
- Ltd Effect: n=37
- Mod Effect: n=102
- Lrg Effect: n=241

Age 21
- Abstainer: n=39
- Ltd Effect: n=28
- Mod Effect: n=28
- Lrg Effect: n=5
Where Do People Go?

Age 18

- Abstainer n=62
- Ltd Effect n=37
- Mod Effect n=102
- Lrg Effect n=241

Age 21

- Abstainer n=44
- Ltd Effect n=59
- Mod Effect n=69
- Lrg Effect n=30

Numbers indicate the number of individuals transitioning from one category to another.
Where Do People Go?

Age 18

Abstainer  
$n=62$

Ltd Effect  
$n=37$

Mod Effect  
$n=102$

Lrg Effect  
$n=241$

Age 21

Abstainer  
$n=54$

Ltd Effect  
$n=61$

Mod Effect  
$n=125$

Lrg Effect  
$n=201$
Where Do People Go?

Age 21

Abstainer n=62
Ltd Effect n=37
Mod Effect n=102
Lrg Effect n=241

Age 24

Abstainer n=33
Ltd Effect n=8
Mod Effect n=9
Lrg Effect n=5

33
8
9
5
Where Do People Go?

Age 21
- Abstainer n=62
- Ltd Effect n=37
- Mod Effect n=102
- Lrg Effect n=241

Age 24
- Abstainer n=39
- Ltd Effect n=43
- Mod Effect n=27
- Lrg Effect n=8

Links:
- 33 from Abstainer to Abstainer
- 6 from Ltd Effect to Ltd Effect
- 35 from Mod Effect to Ltd Effect
- 9 from Mod Effect to Mod Effect
- 18 from Lrg Effect to Ltd Effect
- 5 from Lrg Effect to Mod Effect
- 3 from Lrg Effect to Lrg Effect
Where Do People Go?

Age 21

- Abstainer n=62
- Ltd Effect n=37
- Mod Effect n=102
- Lrg Effect n=241

Age 24

- Abstainer n=48
- Ltd Effect n=68
- Mod Effect n=112
- Lrg Effect n=14
Where Do People Go?

Age 21

- Abstainer n=62
- Ltd Effect n=37
- Mod Effect n=102
- Lrg Effect n=241

Age 24

- Abstainer n=56
- Ltd Effect n=82
- Mod Effect n=173
- Lrg Effect n=133

Numbers represent the number of people who moved from one category to another.
What Patterns Do We See?

- **Age 18 → Age 21**
  - 261 remained stable
  - 72 progressed to more severe use
  - 108 regressed to less severe use

- **Age 21 → Age 24**
  - 272 remained stable
  - 49 progressed to more severe use
  - 128 regressed to less severe use
Group Differences

- **INITIAL STATUS**: Influence likelihood of heavy drinking initially (at Year 1)

  First you take a drink, then the drink takes a drink, then the drink takes you.
  -- F. Scott Fitzgerald

- **TRANSITION**: Shape persistence of, progression, or regression from heavy drinking throughout young adulthood
Group Differences in INITIAL STATUS

- Women less likely to be large-effect drinkers at Year 1
- No effect for family history (FH) of alcoholism
Group Differences in TRANSITION

- Women more likely to mature out of large-effect drinking over time
- Having FH delayed transition from large-effect drinking status to a less severe status
Illustrative Example 2: Alcohol Dependence

- Alcohol dependence typically perceived as progressive and chronic
- National Longitudinal Sample of Youth
  - Drinkers only (N=4,003; 60% male)
  - Two waves (1989; 1994), corresponded to ages 24-32 / 29-37
Alcohol Dependence
Symptoms (past-year)

- Tolerance
- Withdrawal
- Using More or for Longer than Intended
- Desire to Quit/Failed Attempts to Cut Down or Quit
- Reduced Activities
- Continued Use Despite Consequences
- Great Deal of Time Spent Drinking or Getting Over Effects
How many classes? What do the classes look like?

Endorsement probabilities

Impaired Control Tolerance Lot of Time Used Despite Withdrawal Give Up Activities Fail to Quit

From Jackson, O’Neill, & Sher (2006)
Do individuals change classes over time?

<table>
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<th></th>
<th>Stable</th>
<th>Progress</th>
<th>Recover</th>
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</thead>
<tbody>
<tr>
<td>No dependence (77%)</td>
<td>89%</td>
<td>11%</td>
<td>--</td>
</tr>
<tr>
<td>Mild dependence (20%)</td>
<td>50%</td>
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<td>40%</td>
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<tr>
<td>Severe dependence (4%)</td>
<td>45%</td>
<td>--</td>
<td>55%</td>
</tr>
</tbody>
</table>

From Jackson, O’Neill, & Sher (2006)
Group Differences in INITIAL STATUS

- Older participants more likely to be in non-dependent class
- Men more likely to be in affected classes
- No effect for race
- FH+ more likely to be in the mild or severe dependence groups
Group Differences in TRANSITION

- No effect for age
- Men more likely to progress from non-dependence to mild dependence
- Non-dependent Whites were more likely to remain so & less likely to progress to mild dependence than Blacks
- No effect for FH
Multiple Trajectory Approach

- Alcohol use can take multiple dynamic trajectories
- Trajectories reflect individual differences in development
- GOAL: Identify distinct, homogeneous subgroups

“There are two types of alcoholism researchers: Those who believe in two types of alcoholism and those who don’t.”
Illustrative Example 1: Heavy Alcohol Consumption

- Monitoring the Future (MTF) panel data
- Cohorts of high-school seniors
- Data taken from Waves 2-5 (Times 1-4)
  - Ages 18-20; 20-22; 22-24; 24-26
- Current study N=32,087 at Wave 1 (44% male; 82% White)
What if We Look at Everybody’s Trajectory?

From Jackson, Sher, & Schulenberg (under review)
Latent Growth Mixture Modeling

- How many classes?
- What do the classes look like?
- How many individuals in each class?
Classify into 4 Heavy Drinking Courses (5+ drinks/2 weeks)

From Jackson, Sher, & Schulenberg (under review)
Illustrative Example 2: Alcohol Use Disorder

- Young adult sample (N=489; 46% male)
- Prospectively assessed at Years 1, 2, 3, 4, 7, & 11 (~ ages 18 – 28)
- DSM III Alcohol use disorder (AUD)
From Jackson & Sher (2005)
What Differentiates Courses?

- Sex
- Family history of alcoholism
- Conduct disorder symptom count
- Novelty seeking
- Lifetime diagnosis with DSM-III depression or anxiety disorder
- Presence of suicidal thoughts in lifetime
- Affect-regulation reasons for drinking
Developmentally Limited vs. Non-diagnose

From Jackson & Sher (2005)
Prediction by Risk Factors

From Jackson & Sher (2005)
Chronic vs. Developmentally Limited

From Jackson & Sher (2005)
Prediction by Risk Factors

From Jackson & Sher (2005)
Chronic High vs. Non-diagnose

From Jackson & Sher (2005)
Prediction by Risk Factors

From Jackson & Sher (2005)
Considerations

- Take care not to over-reify these trajectories
  - What if different measures?
  - What if different developmental phase?
  - What if different timespan (interval, number of waves)?
- Critical to use theory to guide research
Do trajectories based upon different measures…

- Look the same?
- Have the same prevalences?
- Identify the same people?
- Have the same correlates?
Indices of Alcohol Involvement

- Alcohol use disorder (AUD)
- AUD symptom count
- Alcohol consequences
- Alcohol dependence
- Alcohol quantity-frequency
- Heavy drinking

Interview-based

Questionnaire-based
From Jackson & Sher (2005)
Alcohol Quantity-Frequency

From Jackson & Sher (2005)
Heavy Drinking

From Jackson & Sher (2005)
Comparison of Trajectories (Cohen's $\kappa$)

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<th></th>
<th>AUD</th>
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<th>Alc conseq</th>
<th>Alc quant-freq</th>
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Developmentally Limited vs. Non-Diagnose

Alcohol Use Disorder

Alcohol Quantity-Frequency

Heavy Drinking
Chronic vs. Developmentally Limited

Alcohol Use Disorder

Alcohol Quantity-Frequency

Heavy Drinking
Chronic vs. Non-Diagnose

Alcohol Use Disorder

Alcohol Quantity-Frequency

Heavy Drinking
Should We Be Concerned?

- Similar courses were observed
- Predicted prevalences varied considerably
- Small to moderate agreement among trajectories based upon different indices
- BUT, roughly similar patterns of prediction across trajectories
Conclusion

- Individuals show dramatic change in alcohol involvement over emerging adulthood.
- Factors such as marriage, parenthood, school departure explain change.
- We can account for unexplained variability in change by modeling inter-individual differences in intra-individual change.
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