Toward a Developmentally Informed Understanding of Desistance across the Adult Lifespan

Age Differences in Marriage Driven Processes of Problem-Drinking Reduction

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DEPARTMENT OF PSYCHOLOGICAL SCIENCES
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Costs of Problem Drinking in the U.S.

Actual Causes of Death
United States, 2000

<table>
<thead>
<tr>
<th>Cause</th>
<th>Health Care</th>
<th>Overall</th>
<th>Year Estimate Based On</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>$168 billion</td>
<td>$300 billion</td>
<td>2010</td>
</tr>
<tr>
<td>Alcohol</td>
<td>$27 billion</td>
<td>$249 billion</td>
<td>2010</td>
</tr>
<tr>
<td>Illicit Drugs</td>
<td>$11 billion</td>
<td>$193 billion</td>
<td>2007</td>
</tr>
<tr>
<td>Prescription Opioids</td>
<td>$26 billion</td>
<td>$78.5 billion</td>
<td>2013</td>
</tr>
</tbody>
</table>

National Institute on Drug Abuse (2017)

Mokdad et al. (2014)
Costs of Problem Drinking in the U.S.

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National Institute on Drug Abuse (2017)
Problem Drinking and Development

Substance Use Disorder Prevalence by Age

- Nicotine use disorder
- Alcohol use disorder
- Marijuana use disorder
- Non-marijuana drug use disorder

Prevalence

Age Group

Figure adapted from Lee & Sher (in press)
Problem Drinking and Development

NIAAA (2008) Strategic Plan:
The Broad Objective of My Research

To understand developmental differences in mechanisms of problem-drinking desistance

“maturing out” vs. “natural recovery” models

Health related desistance

Lee & Sher (in press)
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Lee & Sher (in press)
The Focus of This Presentation

- Investigated marriage effects on problem-drinking reductions
- Tested age moderation of marriage effects
- Tested various marriage-effect mediators
  - Contrasting various competing mediation hypotheses
  - Assessing age moderation of each mediated process
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Methods

Two longitudinal studies of high-risk samples

Age-binned data for growth modeling

Analyzed combined data via integrative data analysis (IDA)

<table>
<thead>
<tr>
<th>Adult &amp; Family Development Project (AFDP; N=577)</th>
<th>Waves</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>N</td>
<td>527</td>
</tr>
<tr>
<td>Age mean (SD)</td>
<td>20.6 (2.0)</td>
</tr>
</tbody>
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<th>Alcohol, Health and Behavior Project (AHB; N=441)</th>
<th>Waves</th>
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<tbody>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>N</td>
<td>432</td>
</tr>
<tr>
<td>Age mean (SD)</td>
<td>21.3 (0.9)</td>
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Chassin et al. (1992); Sher et al. (1991)
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<tr>
<td>N</td>
<td>527</td>
<td>516</td>
</tr>
<tr>
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<td>25.9 (2.2)</td>
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<td>423</td>
</tr>
<tr>
<td>Age mean (SD)</td>
<td>21.3 (0.9)</td>
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| Table 1: Demographics of Two Longitudinal Studies |
|---------------|----------------|----------------|----------------|----------------|----------------|-----------|
|                | AFDP (N=577)   |                |                |                |                |           |
|                | 18-20 | 21-23 | 24-26 | 27-30 | 31-34 | 35-39 |           |
| N              | 324    | 250   | 330   | 300   | 281   | 65     |           |
| Age mean (SD)  | 19.3 (1.0) | 22.5 (1.0) | 25.3 (0.8) | 29.2 (1.1) | 32.7 (1.1) | 36.8 (1.3) |           |

| Table 2: Demographics of Two Longitudinal Studies |
|---------------|----------------|----------------|----------------|----------------|----------------|-----------|
|                | AIB (N=441)    |                |                |                |                |           |
|                | 18-20 | 21-23 | 24-26 | 27-30 | 31-34 | 35-39 |           |
| N              | --     | 426   | 419   | 378   | 244   | 123   |           |
| Age mean (SD)  | --     | 21.2 (0.5) | 24.4 (0.5) | 28.9 (0.7) | 33.8 (0.5) | 35.2 (0.5) |           |

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<th>Adult &amp; Family Development Project (AFDP; (N=577))</th>
<th>Alcohol, Health and Behavior Project (AHHB; (N=441))</th>
<th>IDA-combined data ((N=1018))</th>
</tr>
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<tr>
<td>Age bins</td>
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Steps of IDA Procedures

1. Identify parallel items

2. Response option harmonization for parallel items

3. EFAs and CFAs in separate samples

4. Moderated nonlinear factor analysis (MNLFA) testing factor invariance by study

5. Derive factor scores from final MNLFA to be used in substantive analyses

Bauer et al. (2016); Curran et al. (2014); Hussong et al. (2013)
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<table>
<thead>
<tr>
<th>AFDP and AHB problem-drinking items</th>
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<tbody>
<tr>
<td>Felt guilty about your drinking</td>
</tr>
<tr>
<td>Used alcohol enough so that you felt like you needed it or depended on it</td>
</tr>
<tr>
<td>Get in trouble at school or work because of your alcohol use</td>
</tr>
<tr>
<td>Pass out or faint because of your alcohol use</td>
</tr>
<tr>
<td>Alcohol use caused you to injure someone else</td>
</tr>
<tr>
<td>Felt guilty about your drinking</td>
</tr>
<tr>
<td>Felt that you needed alcohol or were dependent on alcohol</td>
</tr>
<tr>
<td>Gotten into trouble at work or school because of drinking</td>
</tr>
<tr>
<td>Physical fights when drinking</td>
</tr>
<tr>
<td>Said things while drinking that you later regretted</td>
</tr>
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2. Response option harmonization for parallel items

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   AFDP original item:
   How many of your friends would you estimate drink alcohol regularly?
   1 none (n=195)
   2 a few (n=180)
   3 some (n=136)
   4 many (n=95)
   5 most (n=100)
   6 all (n=27)

   AFDP harmonized item:
   How many of your friends would you estimate drink alcohol regularly?
   0 none (n=195)
   1 a few/some (n=316)
   2 many (n=95)
   3 most (n=100)
   4 all (n=27)

   AHB original item:
   How many of your close friends drink on a regular basis (at least once a month)?
   0 none (n=71)
   1 some (n=128)
   2 half (n=66)
   3 most (n=95)
   4 nearly all (n=108)

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Bauer et al. (2016); Curran et al. (2014); Hussong et al. (2013)
Model-Building Steps
Model-Building Step 1
Unconditional Models of Problem-Drinking Change
Model-Building Step 2
Age Moderation of Marriage Effects

Growth intercept

Problem drinking

Problem drinking

Problem drinking

Problem drinking

Problem drinking

Problem drinking

Growth slope


Ages
18-20
21-23
24-26
27-30
31-34
35-39
Model-Building Step 2
Age Moderation of Marriage Effects

- Growth intercept
  - Problem drinking
    - Became married
      - Ages 18-20
    - Ages 21-23
  - Problem drinking
    - Became married
    - Ages 24-26
  - Problem drinking
    - Became married
    - Ages 27-30
  - Problem drinking
    - Became married
    - Ages 31-34
  - Problem drinking
    - Became married
    - Ages 35-39

- Growth slope
Model-Building Step 2
Age Moderation of Marriage Effects

Growth intercept

Growth slope

Problem drinking
Problem drinking
Problem drinking
Problem drinking
Problem drinking
Problem drinking

Sex
Fam. AUD
Study

Ages 18-20
Ages 21-23
Ages 24-26
Ages 27-30
Ages 31-34
Ages 35-39

Became married
Became married
Became married
Became married
Became married
Became married
Post-marriage
Post-marriage
Post-marriage
Post-marriage
Post-marriage
Post-marriage
Model-Building Step 3
Marriage-Effect Mediation and Moderated Mediation by Age

Growth intercept

Problem drinking
Became married
Ages 18-20

Problem drinking
Became married
Ages 21-23

Problem drinking
Became married
Ages 24-26

Problem drinking
Became married
Ages 27-30

Problem drinking
Became married
Ages 31-34

Problem drinking
Became married
Ages 35-39

Growth slope
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Growth intercept

Growth slope

Problem drinking

Problem drinking

Problem drinking

Problem drinking

Problem drinking

Problem drinking

Mediator

Mediator

Mediator

Mediator

Mediator

Mediator

Became married

Became married

Became married

Became married

Became married

Became married

Ages 18-20

Ages 21-23

Ages 24-26

Ages 27-30

Ages 31-34

Ages 35-39
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Growth intercept

Problem drinking

Mediator

Became married

Ages 18-20

Problem drinking

Mediator

Became married

Ages 21-23

Problem drinking

Mediator

Became married

Post-marriage

Ages 24-26

Problem drinking

Mediator

Became married

Post-marriage

Ages 27-30

Problem drinking

Mediator

Became married

Post-marriage

Ages 31-34

Problem drinking

Mediator

Became married

Post-marriage

Ages 35-39
Model-Building Step 3
Marriage-Effect Mediation and Moderated Mediation by Age

Diagram showing the correlation between problem drinking and growth intercept/slope, with mediators and age categories from 18-20 to 35-39.
Results
Results
Age Moderation of Marriage Effects

Wald $\chi^2$ tests of age moderation:
Omnibus: $\chi^2(4) = 16.80^{**}$ ($p=0.002$)
Linear: $\chi^2(1) = 8.93^{**}$ ($p=0.003$)

Problem drinking

Growth intercept

-0.725**
($p<0.001$)

Became married

Ages 18-20

Problem drinking

Growth slope

-0.366**
($p<0.001$)

Became married

Ages 21-23

Problem drinking

-0.270**
($p=0.001$)

Became married

Ages 24-26

Problem drinking

-0.134
($p=0.096$)

Became married

Ages 27-30

Problem drinking

-0.069
($p=0.640$)

Became married

Ages 31-34

Problem drinking

Became married

Ages 35-39
Results
Age Moderation of Marriage Effects

Wald $\chi^2$ tests of age moderation:
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Problem drinking

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Growth intercept

Growth slope

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Became married

Became married

Became married

Became married

Became married

Ages 18-20

Ages 21-23

Ages 24-26

Ages 27-30

Ages 31-34

Ages 35-39
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Ages
18-20
21-23
24-26
27-30
31-34
35-39
Detour: Competing Mediation Hypotheses

Marital role demands may restrict drinking opportunities
Captured by tests of "contextual/behavioral" mediators:
1. Affiliation with pro-substance peers
2. Overall social activity
Detour: Competing Mediation Hypotheses

Marital role demands may restrict drinking opportunities
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Detour:
Competing Mediation Hypotheses

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Marriage may alter how individuals view their own drinking
Captured by:
  1. Drinking motives
  2. Motives for limiting drinking
  3. Drinking restraint strategies
Detour:
Competing Mediation Hypotheses

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Marriage may spur intrapersonal maturation
  Captured by:
    1. NEO Conscientiousness
    2. NEO Neuroticism
Detour: Competing Mediation Hypotheses

Marital role demands may restrict drinking opportunities
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Marriage may spur intrapersonal maturation
  Captured by:
  1. NEO Conscientiousness
  2. NEO Neuroticism
Results
Mediation by Contextual/Behavioral Changes

<table>
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<tr>
<th>Ages</th>
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<th>Social activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-23</td>
<td>Mediated effect = -0.062</td>
<td>Mediated effect = -0.037</td>
</tr>
<tr>
<td>24-26</td>
<td>Mediated effect = -0.139**</td>
<td>Mediated effect = -0.016</td>
</tr>
<tr>
<td>27-30</td>
<td>Mediated effect = -0.070*</td>
<td>Mediated effect = -0.037**</td>
</tr>
<tr>
<td>31-34</td>
<td>Mediated effect = -0.048</td>
<td>Mediated effect = -0.037*</td>
</tr>
<tr>
<td>35-39</td>
<td>Mediated effect = -0.020</td>
<td>Mediated effect = 0.004</td>
</tr>
</tbody>
</table>
## Results

**Mediation by Contextual/Behavioral Changes**

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</thead>
<tbody>
<tr>
<td>21-23</td>
<td>Marr: -0.09 → Peers: 0.67**</td>
<td>Marr: -0.35 → Soc. activity: 0.11* → Prob. drink.</td>
</tr>
<tr>
<td></td>
<td>Mediated effect = -0.062</td>
<td>Mediated effect = -0.037 **</td>
</tr>
<tr>
<td>24-26</td>
<td>Marr: -0.22** → Peers: 0.64**</td>
<td>Marr: -0.15 → Soc. activity: 0.10 → Prob. drink.</td>
</tr>
<tr>
<td></td>
<td>Mediated effect = -0.139**</td>
<td>Mediated effect = -0.016 **</td>
</tr>
<tr>
<td>27-30</td>
<td>Marr: -0.13* → Peers: 0.53**</td>
<td>Marr: -0.27** → Soc. activity: 0.14** → Prob. drink.</td>
</tr>
<tr>
<td></td>
<td>Mediated effect = -0.070*</td>
<td>Mediated effect = -0.037**</td>
</tr>
<tr>
<td>31-34</td>
<td>Marr: -0.11 → Peers: 0.45**</td>
<td>Marr: -0.31** → Soc. activity: 0.12** → Prob. drink.</td>
</tr>
<tr>
<td></td>
<td>Mediated effect = -0.048</td>
<td>Mediated effect = -0.037*</td>
</tr>
<tr>
<td>35-39</td>
<td>Marr: -0.04 → Peers: 0.49**</td>
<td>Marr: 0.10 → Soc. activity: 0.04 → Prob. drink.</td>
</tr>
<tr>
<td></td>
<td>Mediated effect = -0.020</td>
<td>Mediated effect = 0.004</td>
</tr>
</tbody>
</table>
## Results

**Mediation by Contextual/Behavioral Changes**

<table>
<thead>
<tr>
<th></th>
<th>Affiliation with pro-substance peers</th>
<th>Social activity</th>
</tr>
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<tbody>
<tr>
<td><strong>Ages 21-23</strong></td>
<td><strong>Marr.</strong> → <strong>Peers</strong> → <strong>Prob. drink.</strong>&lt;br&gt;Mediated effect = -0.062</td>
<td><strong>Marr.</strong> → <strong>Soc. activity</strong> → <strong>Prob. drink.</strong>&lt;br&gt;Mediated effect = -0.037</td>
</tr>
<tr>
<td><strong>Ages 24-26</strong></td>
<td><strong>Marr.</strong> → <strong>Peers</strong> → <strong>Prob. drink.</strong>&lt;br&gt;Mediated effect = -0.139**</td>
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</tr>
<tr>
<td><strong>Ages 27-30</strong></td>
<td><strong>Marr.</strong> → <strong>Peers</strong> → <strong>Prob. drink.</strong>&lt;br&gt;Mediated effect = -0.070*</td>
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</tr>
<tr>
<td><strong>Ages 31-34</strong></td>
<td><strong>Marr.</strong> → <strong>Peers</strong> → <strong>Prob. drink.</strong>&lt;br&gt;Mediated effect = -0.048</td>
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</tr>
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<td><strong>Ages 35-39</strong></td>
<td><strong>Marr.</strong> → <strong>Peers</strong> → <strong>Prob. drink.</strong>&lt;br&gt;Mediated effect = -0.020</td>
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</tr>
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</table>
### Results
**Mediation by Drinking Motives**

<table>
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<tr>
<th>Ages</th>
<th>Coping motives</th>
<th>Enhancement motives</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-23</td>
<td>Marr. -0.07 → Coping motives 0.35** Prob. drink.</td>
<td>Marr. -0.55* Enhancement motives 0.37** Prob. drink.</td>
</tr>
<tr>
<td></td>
<td>Mediated effect = -0.024</td>
<td>Mediated effect = -0.204</td>
</tr>
<tr>
<td>24-26</td>
<td>Marr. -0.15* → Coping motives 0.34** Prob. drink.</td>
<td>Marr. -0.12* Enhancement motives 0.29** Prob. drink.</td>
</tr>
<tr>
<td></td>
<td>Mediated effect = -0.050*</td>
<td>Mediated effect = -0.036*</td>
</tr>
<tr>
<td>27-30</td>
<td>Marr. -0.09 → Coping motives 0.28** Prob. drink.</td>
<td>Marr. -0.08 Enhancement motives 0.30** Prob. drink.</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>31-34</td>
<td>Marr. -0.07 → Coping motives 0.26** Prob. drink.</td>
<td>Marr. 0.01 Enhancement motives 0.26** Prob. drink.</td>
</tr>
<tr>
<td></td>
<td>Mediated effect = -0.017</td>
<td>Mediated effect = 0.002</td>
</tr>
<tr>
<td>35-39</td>
<td>Marr. 0.29 → Coping motives 0.18* Prob. drink.</td>
<td>Marr. 0.05 Enhancement motives 0.16* Prob. drink.</td>
</tr>
<tr>
<td></td>
<td>Mediated effect = 0.054</td>
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*Note. No mediation via social drinking motives at any age.*
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**Mediation by Indices of Problem Recognition and Effortful Change**

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<tr>
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<th>Motives for limiting drinking</th>
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</tr>
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<tbody>
<tr>
<td>21-23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marr. 0.07</td>
<td>Motives to limit</td>
<td>Drinking restraint</td>
</tr>
<tr>
<td>Mediated effect = -0.029</td>
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<td>Prob. drink.</td>
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<tr>
<td>24-26</td>
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<tr>
<td>Marr. 0.06*</td>
<td>Motives to limit</td>
<td>Drinking restraint</td>
</tr>
<tr>
<td>Mediated effect = -0.015*</td>
<td>Prob. drink.</td>
<td>Prob. drink.</td>
</tr>
<tr>
<td>27-30</td>
<td></td>
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</tr>
<tr>
<td>Marr. 0.03</td>
<td>Motives to limit</td>
<td>Drinking restraint</td>
</tr>
<tr>
<td>Mediated effect = -0.012</td>
<td>Prob. drink.</td>
<td>Prob. drink.</td>
</tr>
<tr>
<td>31-34</td>
<td></td>
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</tr>
<tr>
<td>Marr. 0.03</td>
<td>Motives to limit</td>
<td>Drinking restraint</td>
</tr>
<tr>
<td>Mediated effect = -0.007</td>
<td>Prob. drink.</td>
<td>Prob. drink.</td>
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<tr>
<td>35-39</td>
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<tr>
<td>Marr. -0.01</td>
<td>Motives to limit</td>
<td>Drinking restraint</td>
</tr>
<tr>
<td>Mediated effect = 0.001</td>
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</table>
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Mediation by Indices of Problem Recognition and Effortful Change

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</tr>
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<td>0.20*</td>
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<td>0.10*</td>
</tr>
<tr>
<td>Mediated effect</td>
<td>-0.015*</td>
<td>Mediated effect = -0.031*</td>
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<td><strong>Ages 27-30</strong></td>
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<td>Marr.</td>
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<td><strong>Ages 35-39</strong></td>
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<td>Mediated effect = -0.004</td>
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**Mediation by Personality Change**

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<th>Neuroticism</th>
</tr>
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<tbody>
<tr>
<td><strong>21-23</strong></td>
<td>Marr. -0.24 → Conscientiousness -0.16** → Prob. drink.</td>
<td>Marr. -0.27 → Neuroticism 0.22** → Prob. drink.</td>
</tr>
<tr>
<td><strong>Mediated effect = 0.037</strong></td>
<td>Mediated effect = -0.060</td>
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</tr>
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Conclusions
Young-adult specificity of marriage effects

Also replicated in U.S.-representative NESARC data (Lee & Sher, in preparation)

Suggests a need to investigate other desistance mechanisms for potential developmental specificity
Young-adult specificity of marriage effects

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Suggests a need to investigate other desistance mechanisms for potential developmental specificity
Implications regarding role timing

Pertinent to demographic shifts toward later role adoption
Could suppress young-adult maturing out in the population
Implications regarding role timing

Pertinent to demographic shifts toward later role adoption

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Pertinent to demographic shifts toward later role adoption

Could suppress young-adult maturing out in the population

Lee & Sher (in press)
Implications of mediation findings

Provided a comprehensive study of various potential mediators

Confirmed mediation via context/behavior change

Surprising mediation via indices of problem recognition and effortful change

Surprising lack of mediation via personality change

Results may hold clinical implications

Treatment can aim to initiate/amplify naturally-occurring role preparation/adaptation
Implications of mediation findings

Provided a comprehensive study of various potential mediators

- Confirmed mediation via context/behavior change
- Surprising mediation via indices of problem recognition and effortful change
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Acknowledgements

Mizzou alcohol research group:
- Kenneth Sher
- Ellen Yeung
- Yoanna McDowall
- Cassandra Boness
- Douglas Steinley
- Alvaro Vergés

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Publications reported in this presentation:


Other references ctd.

National Institute on Alcohol Abuse and Alcoholism. (2008). The National Institute on Alcohol Abuse and Alcoholism Five Year Strategic Plan: FY09-14 “Alcohol Across the Lifespan”.


National Institute on Alcohol Abuse and Alcoholism. (2008). The National Institute on Alcohol Abuse and Alcoholism Five Year Strategic Plan: FY09-14 “Alcohol Across the Lifespan”.


