New Research Directions in Young Adult Marijuana Use, Consequences, and Prevention

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Research questions related to a changing legal climate

☐ How will use by youth and adolescents be affected?
  ☐ 19% of seniors said they would try mj or increase use if legalized

Source: Kilmer & Lee (2013)
Research questions related to a changing legal climate

- How will use by youth and adolescents be affected?
  - 19% of seniors said they would try marijuana (mj) or increase use if legalized
- How is DUI reliably measured, and how long after use should one wait before driving?
- Will increased availability result in increased use (regardless of age group)?

Source: Kilmer & Lee (2013)

Impact of Outlet Density for Alcohol

- Restrictions on alcohol retail outlet density.
  - Higher density of alcohol outlets is associated with higher rates of consumption, violence, other crime, and health problems.
  - Higher level of drinking rates associated with larger number of businesses selling alcohol within one mile of campus

From: "A Call to Action: Changing the Culture of Drinking at U.S. Colleges," NIAAA Task Force

Research questions related to a changing legal climate

- How will use by youth and adolescents be affected?
  - 19% of seniors said they would try marijuana (mj) or increase use if legalized
- How is DUI reliably measured, and how long after use should one wait before driving?
- Will increased availability result in increased use (regardless of age group)?
- What, if any, are the harm reduction guidelines for marijuana use?
- Will an illegal market truly be avoided through legalization & sales through state-regulated stores?

Source: Kilmer & Lee (2013)
How do we approach this situation?

Similarities between marijuana and alcohol

- Regardless of what state we’re talking about, it is illegal for those under 21 to use and possess
- Illegal to drive while under the influence of marijuana
- Adolescents/students may see several positive reasons for use

Motivations for Use

- Largely consistent with the alcohol literature, social, enhancement, and coping motivations are positively related to marijuana use.
- Coping motivations singled out as particularly important for predicting marijuana use and negative consequences.
- Limitation – prior work utilized adapted measure of motivations for alcohol use.

Lee, Neighbors, & Woods (2007)
Motivations for Use

- We utilized qualitative open-ended responses for using marijuana among incoming first year college students to identify which motivations were most salient to this population.

Lee, Neighbors, & Woods (2007)

### Motivations for Use

<table>
<thead>
<tr>
<th>Motive Category</th>
<th>Proportion of motivations, overall</th>
<th>Proportion of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relaxation (e.g., to feel happy, get high, enjoy feelings)</td>
<td>82.14%</td>
<td>39.05%</td>
</tr>
<tr>
<td>Conformity (e.g., peer pressure, friends do it)</td>
<td>42.81%</td>
<td>16.62%</td>
</tr>
<tr>
<td>Experimentation (e.g., new experience, curiosity)</td>
<td>41.72%</td>
<td>20.09%</td>
</tr>
<tr>
<td>Social enhancement (e.g., bonding with friends, hang out)</td>
<td>26.51%</td>
<td>8.06%</td>
</tr>
<tr>
<td>Reduce (e.g., something is do, feeling better at do)</td>
<td>24.98%</td>
<td>1.81%</td>
</tr>
<tr>
<td>Relaxation (e.g., to relax, helps me relax)</td>
<td>24.49%</td>
<td>6.97%</td>
</tr>
<tr>
<td>Coping (e.g., depressed, stress)</td>
<td>15.14%</td>
<td>5.15%</td>
</tr>
<tr>
<td>Availability (e.g., easy to get, if I want it)</td>
<td>13.07%</td>
<td>2.09%</td>
</tr>
<tr>
<td>Motivation to try risk (e.g., low health risk, no hangover)</td>
<td>16.86%</td>
<td>0.88%</td>
</tr>
<tr>
<td>initial sanction or perceptions (e.g., to enhance experiences)</td>
<td>10.98%</td>
<td>1.81%</td>
</tr>
<tr>
<td>Alcohol enhancement (e.g., makes sounds better, every day activities)</td>
<td>6.99%</td>
<td>0.88%</td>
</tr>
<tr>
<td>Relaxed (e.g., feeling better, less stress, more relaxed)</td>
<td>5.23%</td>
<td>0.52%</td>
</tr>
<tr>
<td>Alcohol intoxication (e.g., high drunk)</td>
<td>4.42%</td>
<td>0.47%</td>
</tr>
<tr>
<td>Food enhancement (e.g., eats good food, feels better)</td>
<td>3.78%</td>
<td>0.52%</td>
</tr>
<tr>
<td>Anxiety reduction (e.g., to feel less anxious)</td>
<td>3.51%</td>
<td>0.52%</td>
</tr>
<tr>
<td>Experience enhancement (e.g., to be cool, to feel cool)</td>
<td>2.89%</td>
<td>0.52%</td>
</tr>
<tr>
<td>Celebration (e.g., special occasion, to celebrate)</td>
<td>1.29%</td>
<td>0.18%</td>
</tr>
<tr>
<td>Habit (e.g., feeling wax addicted, becomes a habit)</td>
<td>0.89%</td>
<td>0.09%</td>
</tr>
</tbody>
</table>

Lee, Neighbors & Woods (2007)
Motivations for Use

<table>
<thead>
<tr>
<th>Motive</th>
<th>Proportion of participants</th>
<th>Proportion of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvisation (e.g., be happy, get high, enjoy looking)</td>
<td>62.1%</td>
<td>38.8%</td>
</tr>
<tr>
<td>Creativity (e.g., new experience, creative)</td>
<td>12.3%</td>
<td>13.8%</td>
</tr>
<tr>
<td>Experimentation (e.g., try new things, curious)</td>
<td>25.1%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Socialization (e.g., having fun, hanging out)</td>
<td>25.6%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Relaxation (e.g., to relax, helps me sleep)</td>
<td>28.8%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Culture (e.g., mainstream, relative stress)</td>
<td>18.1%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Availability (e.g., easy get, feels different)</td>
<td>10.6%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Relative harm (e.g., low health risk, no hangover)</td>
<td>10.8%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Attitudinal beliefs or perspectives (e.g., to relieve experiences, create legal social link)</td>
<td>12.8%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Activity enhancement (e.g., makes sounds better, every day activities more interesting)</td>
<td>9.8%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Reward (e.g., feeling against parent, risk of something illegal)</td>
<td>5.2%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Alcohol elevation (e.g., no alcohol)</td>
<td>4.7%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Pain alleviation (e.g., very good for, headache in particular)</td>
<td>7.5%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Music/rhythm (e.g., be too dry, feel less tense)</td>
<td>3.5%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Image enhancement (e.g., to be cool, to feel cool)</td>
<td>2.5%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Consumption (e.g., aerial cannabis, have a headlock)</td>
<td>7.8%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Usage (e.g., high use additive, become a habit)</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

Jane Metrik’s balanced-placebo research from Brown University

Withdrawal: Cannabis

Diagnostic Criteria

292.0 (F13.288)

A. Cessation of cannabis use that has been frequent and prolonged (i.e., usually daily or almost daily use over a period of at least a few months).

B. Three (or more) of the following signs and symptoms develop within approximately 1 week after Criterion A:
1. irritability, anger, or aggression.
2. Nervousness or anxiety.
3. Sleep difficulty (e.g., insomnia, disturbing dreams).
4. Decreased appetite or weight loss.
5. Restlessness.
6. Decreased mood.

C. The signs or symptoms in Criterion B cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The signs or symptoms are not attributable to another medical condition and are not better explained by another mental disorder, including intoxication or withdrawal from another substance.
Similarities between marijuana and alcohol

- Regardless of what state we’re talking about, it is illegal for those under 21 to use and possess
- Illegal to drive while under the influence of marijuana
- Adolescents/students may see several positive reasons for use
- Misperceptions of the prevalence of use exist
  - Most sizeable misperceptions come from heaviest users

NORM PERCEPTION

- In survey of 5990 participants, 67.4% of students said they had never used MJ in the past year
  - Thus, “most” students don’t use marijuana
- Only 2% of students got this right!
  - 98% of students perceived the typical student to use at least once per year
- Misperceptions were related to use and consequences

Kilmer, et al. (2006)

NORM PERCEPTION

- Perception of more frequent marijuana use by friends was associated with one’s own use
  - Significantly more so when friends were perceived as being more approving of marijuana use
- Relationship to consequences was more complex
  - Descriptive norms were positively associated with consequences
  - Only in the context of higher social expectancies, injunctive norms were negatively associated with consequences, particularly when accompanied by perceptions of frequent use

Neighbors, Geisner, & Lee (2008)
Similarities between marijuana and alcohol

- Regardless of what state we’re talking about, it is illegal for those under 21 to use and possess.
- Illegal to drive while under the influence of marijuana.
- Adolescents/students may see several positive reasons for use.
- Misperceptions of the prevalence of use exist.
  - Most sizeable misperceptions come from heaviest users.
- If target population is mandated students, these individuals did not choose to be in attendance at a class or workshop and may be resistant.
- Brief motivational enhancement approaches seem promising for making an impact.
- Mixed messages around enforcement could impact behavior.

**SPD BLOTTER**

“Officers Shall Not Take Any Enforcement Action—Other Than to Issue a Verbal Warning—For a Violation of I-502.”

Getting baked outside? Seattle police to look other way

KING 5, 12/6/12:

“Oat least for now, Seattle Police plan to look the other way on the latter part until people get used to the new law.”

**NEW JERSEY 101.5**

Seattle Police Release Hilarious Statement About Legalized Marijuana

KING 5, 12/6/12:

“Oat least for now, Seattle Police plan to look the other way on the latter part until people get used to the new law.”

**HEMPFESTERS!**

We thought you might be hungry. We also thought now might be a good time for a refresher on the do’s and don’ts of I-502.

DO NOTs:
- Drive while high.
- Don’t give, sell, or shotgun weed to people under 21.
- Don’t use pot in public. You could be cited but we’d rather give you a warning.
- Don’t do listen to Dark Side of the Moon at a reasonable volume.
- Do enjoy Hempfest.

Remember: respect your fellow voters and familiarize yourself with the rules of I-502 at seattle.gov/police/marijwhatchow ♡ SPD.
What are the differences/challenges?

- Unlike alcohol, no clear guidelines for a point at which risks are minimized
- Unlike alcohol, hard to estimate standard amount, intoxication levels, potency, etc.
  - Established measures of use and consequences are much less available
  - Those that are tend to be adapted from alcohol measures
- Being “into” marijuana use may reflect much larger lifestyle/identity

IDENTITY

- Students who use marijuana identified more strongly with “typical students” than with other marijuana using students
- Implications for motivational enhancement based interventions
  - Discrepancies
  - Impact of judgments or labels

Neighbors, Foster, Walker, Kilmer, & Lee (2013)
What are the differences/challenges?

- Unlike alcohol, no clear guidelines for a point at which risks are minimized
- Unlike alcohol, hard to estimate standard amount, intoxication levels, potency, etc.
  - Established measures of use and consequences are much less available
  - Those that are tend to be adapted from alcohol measures
- Being “into” marijuana use may reflect much larger lifestyle/identity
- Perceived risk for future consequences, even if ones already experienced by the student, can be low

RISK PERCEPTION

- 43% of marijuana users experienced a past year academic consequence
  - Only 20% perceived risk for a future academic consequence, compared to 71% of abstainers
- 35% of marijuana users experienced a past year social consequence
  - Only 9% perceived risk for a future social consequence compared to 55% of abstainers

Kilmer, et al. (2007)

What do the data tell us about rates of use right now?
## Substance Use Data from Monitoring the Future Study

<table>
<thead>
<tr>
<th>Past Year MJ Use</th>
<th>Past 30 day MJ Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 11.4% of 8th graders</td>
<td>• 6.5% of 8th graders</td>
</tr>
<tr>
<td>• 28.0% of 10th</td>
<td>• 17.0% of 10th</td>
</tr>
<tr>
<td>• 36.4% of 12th</td>
<td>• 22.9% of 12th</td>
</tr>
<tr>
<td>• 34.9% of college students</td>
<td>• 20.5% of college students</td>
</tr>
<tr>
<td>• 30.2% of young adults</td>
<td>• 17.7% of young adults</td>
</tr>
</tbody>
</table>

Source: Johnston et al. (2013)

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## Information relevant to the school setting

**America's Dropout Crisis:**

The Unrecognized Connection To Adolescent Substance Use

"There is no problem so bad that alcohol and drugs will not make it worse."

Robert L. Shafritz, MD*1
Kimberly M. Goldberg, MS1
Helene S. Shafritz, M.D.*2
Kathryn R. Yarrow, M.D.1
Corinne L. Henz, M.D.1
Anella M. Artis, PhD1

March 2013

http://www.cls.umd.edu/docs/AmerDropoutCrisis.pdf

- "Of all the problems that contribute to dropping out, substance use is one of the easiest to identify and one of the most easily stopped by interventions including treatment."

- "Research evidence shows that when adolescents stop substance abuse, academic performance improves."
America’s Dropout Crisis: The Unrecognized Connection To Adolescent Substance Use

"There is no problem so bad that alcohol and drugs will not make it worse."

Robert L. Schuman, M.D.1
Kendry M. Galbana, M.S.1
Melvin S. Shapiro, M.D.1
Kathryn P. Yacono, M.A.2
Corey L. Shea, M.B.A.1
Andrea M. Arria, Ph.D.1,2

March 2013
http://www.cls.umd.edu/docs/AmerDropoutCrisis.pdf

1Institute for Behavior and Health, Inc. (IBH), 6131 Executive Boulevard, Rockville, MD 20852.
2Center for Young Adult Health and Development (CYAHD), University of Maryland School of Public Health, 11429 School of Public Health Building, College Park, MD 20742.

• Substance using students are at increased risk for academic failure, including drop out
• Marijuana has stronger negative relationship to GPA and other outcomes and risk for dropout than alcohol use
• "The more severe the substance use, the more likely the impact on academic performance and risk for dropout."

Marijuana use trajectories: Source: Arria, 2013
relationship to “discontinuous” enrollment

<table>
<thead>
<tr>
<th>Marijuana Use Trajectory</th>
<th>% of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic/Heavy Users</td>
<td>40.8% stop-out</td>
</tr>
<tr>
<td>Recreational Use</td>
<td>36.1% stop-out</td>
</tr>
<tr>
<td>Single Use</td>
<td>24.9% stop-out</td>
</tr>
</tbody>
</table>

Chronic/Heavy marijuana users were 2.0 times as likely as "minimal users" to have discontinuous enrollment — even after controlling for demographic, personality, and high school GPA.

Considering Responses:
What Works and What Lessons Can We Learn From Alcohol?
Eliciting Information

“What are the good things about marijuana use for you?”

“What are the not-so-good things about marijuana use?”

“What would it be like if some of those not-so-good things happened less often?”

“What might make some of those not-so-good things happen less often?”

What are the negative consequences associated with young adult marijuana use?

MARIJUANA CONSEQUENCES MEASURES

- Most college student marijuana consequence measures adapted from established alcohol measures
- May not adequately capture experiences of students
- Particularly important to capture unwanted effects if hoping to provide feedback on “consequences” in motivational enhancement programs.
- Students (n=207) were asked to identify up to five effects of marijuana use that “may not have been so good”
  - 805 separate effects identified
  - 193 students listed at least one consequence/effect
  - 88% of these listed 3 or more consequences
Sample list of consequences offered by students in open-ended survey

**Top 10 Endorsed Marijuana Consequences: Study 1**

1. Eating (e.g., eating too much)
2. Sleep problems
3. Productivity, apathy, motivation issues, or boredom
4. Cognitive abilities, attention, or concentration problems
5. Memory problems
6. Problems with lungs or coughing
7. Feeling antisocial or experiencing social awkwardness
8. Physical difficulties outside of lungs, cough, mouth, or throat (e.g., feeling dizzy, sick, uncoordinated, etc.)
9. Not getting things done
10. Spending too much money

Notes: preliminary analyses suggested that among the top ten types of consequences generated by participants, only two (not getting things done and financial impact) were detected in family from the RMPI, and these two were the ninth and tenth most mentioned consequences.

Walter, Kilmer, Logan, & Lee (2012)
Lee, Kilmer, Neighbors, Walters, Garberson, & Logan (in prep)

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**MEASURE DEVELOPMENT**

- 22 item College Marijuana Consequence Scale was developed
- Compared responses to the 18-item Rutgers Marijuana Problem Index (RMPI)
- 410 students who used marijuana at least once in the past 30 days

<table>
<thead>
<tr>
<th>College Marijuana Consequence Scale</th>
<th>Rutgers Marijuana Problem Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 376 listed at least one consequence</td>
<td>• 290 listed at least one consequence</td>
</tr>
<tr>
<td>• 85.3% listed 3 or more consequences</td>
<td>• 56.9% listed 3 or more consequences</td>
</tr>
<tr>
<td>• Average number of consequences = 6.8</td>
<td>• Average number of consequences = 3.3</td>
</tr>
</tbody>
</table>

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**CONCLUSIONS/NEXT STEPS**

- Relevant consequences may not be captured on other measures of YA harms/risks
- Independent of what studies say about “negative effects,” if there’s a consequence/harm/effect identified by a student as unwanted, this can prompt consideration of change
- Understand the relevance and salience of consequences to the population we’re working with
- Future studies can test usefulness with non-college samples
Setting the stage for brief interventions, education, prevention, and outreach

Personalized Feedback Interventions


individualized College Health for Alcohol and Marijuana Project (R21DA025833)
Participants

- Two public PNW universities/colleges
- Screening criteria:
  - 5+ days use MJ past month
- Demographics (N = 212)
  - 45.3% Female
  - 74.8% White
- Mean Use at Screening
  - 7.6 joints per week / 14.2 days past month (Campus 1)
  - 10.5 joints per week / 18.3 days past month (Campus 2)

Procedures

- Screening / Baseline
- In-person Personalized Feedback Intervention
- 3- and 6-month Follow-up

Your Marijuana Use

- Using the past 30 days, how much marijuana or hash did you use? (in gries)
- How often?
- Use functional skills, you report using it tolerable with a typical or in a problem role
- The last time you used it, what was your past 30 days? (in gries)
- You consumed marijuana in your past 30 days, you are not using it tolerably, please you, please you. When you used it, what was your past 30 days? (in gries)
- You used it in your past 30 days, you are not using it tolerably, please you, please you. When you used it, what was your past 30 days? (in gries)
- You used it in your past 30 days, you are not using it tolerably, please you, please you. When you used it, what was your past 30 days? (in gries)
- You used it in your past 30 days, you are not using it tolerably, please you, please you. When you used it, what was your past 30 days? (in gries)
Norm Perception

What percentage of adults use marijuana more than you in the past 30 days?

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Survey</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-30</td>
<td>60%</td>
<td>13%</td>
</tr>
<tr>
<td>31-40</td>
<td>45%</td>
<td>21%</td>
</tr>
<tr>
<td>41-50</td>
<td>30%</td>
<td>18%</td>
</tr>
<tr>
<td>51-60</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>61+</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Reasons for Using Marijuana

You showed passion about some reasons for using marijuana.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street</td>
<td>30%</td>
</tr>
<tr>
<td>Social</td>
<td>25%</td>
</tr>
<tr>
<td>Medication</td>
<td>20%</td>
</tr>
<tr>
<td>Pain</td>
<td>15%</td>
</tr>
<tr>
<td>Mood</td>
<td>10%</td>
</tr>
</tbody>
</table>

Consequences Associated with Marijuana Use

Consequences You Endured

These are the consequences you experienced in the past 30 days:

- Mental/Emotional
  -يار دل فیلم هر فک کن
  - مبتلا به مشکلات ذهنی
  - قدرت نگه داشتن عقل
  - کمک به تقویت ذهن
  - کمک به کنترل تحرکات

- Social/Interpersonal
  - کمک به تقویت روابط
  - کمک به تقویت روابط
  - کمک به تقویت روابط
  - کمک به تقویت روابط
  - کمک به تقویت روابط

- Physical
  - کمک به تقویت بدن
  - کمک به تقویت بدن
  - کمک به تقویت بدن
  - کمک به تقویت بدن
  - کمک به تقویت بدن

Consequences Related to Abuse/Dependence

These are the consequences you experienced in the past 30 days:

- 4 out of 10 consequences which are signs of marijuana abuse.

- 3 out of 5 consequences which are signs of marijuana dependence, including:
  - کمک به تقویت روابط
  - کمک به تقویت روابط
  - کمک به تقویت روابط
  - کمک به تقویت روابط
  - کمک به تقویت روابط

Money

You said that in a typical month, you have approximately $500 to spend on marijuana. In a typical month, you said that you spent about $800 on marijuana.

- کمک به تقویت روابط
- کمک به تقویت روابط
- کمک به تقویت روابط
- کمک به تقویت روابط
- کمک به تقویت روابط

If You Changed Your Marijuana Use

You said you would expect the following to happen if you stopped or cut back on your marijuana use:

- کمک به تقویت روابط
- کمک به تقویت روابط
- کمک به تقویت روابط
- کمک به تقویت روابط
- کمک به تقویت روابط

11/20/2013
Our Findings

- **3 Month Outcomes**
  - # Days in last 30
  - # Joints per week
  - Hours high per week
  - Consequences

- **6 Month Outcomes**
  - # Days in last 30
  - # Joints per week
  - Hours high per week
  - Consequences
At 3 months, intervention participants reported 24% fewer joints smoked per week relative to control participants.

At 3 months, intervention participants reported 21% fewer hours being high per week relative to control participants.

**Thoughts from iCHAMP**

- Very encouraging results!
- No difference in # of days used, but how students are using within day
- Six months?
  - Assessment effects?
  - Seasonal effects?
  - Need for booster sessions?
- Attendance rates
  - 85% received feedback; 55% in-person
  - How do we get non-treatment seeking, non-mandated individuals to attend an intervention?
Interventions for Mandated College Students

Interventions for marijuana use with mandated students

- Need for group had been established.
- No “Tier I” type of interventions for marijuana use
- Motivational-enhancement based interventions have demonstrated success with mandated students for alcohol
- Motivational-enhancement based groups can impact drug use in the general adult population
- MOD was developed using ASTP as a model
- Using measure from past ABRC/CSHRB studies, pilot data were collected to see if the workshop “performs” the way a motivational-enhancement based program should

MOD Content

- Elicit the “good” things and the “not-so-good” things about marijuana use from students
- Where applicable, bring in what the science says about the consequences students have identified
- Where applicable, highlight ways in which these “not-so-good” things can be reduced or eliminated
- Explore what would make some of those “not-so-good” things happen less often
- Review other substances when relevant and/or of interest to the participants
Sample list of “not-so-good” things generated by students

- Red eyes
- Impact on quality of sleep
- Laziness
- Paranoid
- Memory problems
- Not socially acceptable
- Groggy the next day
- Lung health
- Cost (money)
- Socially awkward
- Not saying anything in social situations
- Endurance
- Hard to quit even if you want to
- Mental addiction
- Hard to focus
- Concentration goes down
- Hard to sustain attention on one thing for long
- Coughing
- Legal risks and concerns
- How viewed by others
- Assumptions from others
- Self-conscious
- Things get weird
- Never truly satisfied (and want to get high more often)
- Less motivated
- Weight gain

Surveys from 54 completers during the 2011-2012 academic year

Contemplation of change:

- The information I received will cause me to think differently about my pattern of substance use
  - 88.7% strongly agree or agree
  - 7.5% are undecided
  - 3.8% disagree or strongly disagree
Intent to change:

- The information I received will cause me to change my pattern of substance use
  - 39.6% strongly agree or agree
  - 45.3% are undecided
  - 15.1% disagree or strongly disagree

- I left the presentation with a specific goal in mind about changing my substance use
  - 31.4% strongly agree or agree
  - 45.1% are undecided
  - 23.5% disagree or strongly disagree

Next steps...

- Now that two years of post-intervention surveys have been collected as pilot data, move toward follow-up with behavioral outcomes (collaboration with SUNY-Albany)
- Continue to incorporate new scientific findings into conversations with students
- Examine elements/components contributing to intent to change and/or actual change
- Further identify strategies for reducing harm

Future directions:

Administrative Supplement!

R01AA018276
Alcohol Use Trajectories and Prevention: A US-Sweden Comparison
Administrative Supplement

- Evaluate the impact of recent legislation on adolescent perceptions of risks, access to marijuana, and marijuana trajectories as they transition to adulthood
- Recruited data from HS seniors in 2010 and 2011, with follow-up every 6 months
- Quasi-natural experiment to explore impact of I-502 among adolescents

Study Timeline

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2010</td>
<td>Cohort 1 HS Seniors Recruited</td>
</tr>
<tr>
<td>Fall 2011</td>
<td>Cohort 2 HS Seniors Recruited</td>
</tr>
<tr>
<td>Fall 2012</td>
<td>MJ legislation passes in Nov 2012</td>
</tr>
<tr>
<td>Fall 2013</td>
<td>Cohort 1 in follow-up</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>Cohort 2 in follow-up</td>
</tr>
<tr>
<td>Spring 2014</td>
<td>State licenses to be distributed</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>Retail outlets opening</td>
</tr>
<tr>
<td>Spring 2015</td>
<td>Cohort 2 in follow-up</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>Cohort 1 &amp; 2 in follow-up</td>
</tr>
</tbody>
</table>

Research questions related to a changing legal climate

How will use by youth and adolescents be affected?

Source: Kilmer & Lee (2013)
Specific Aims of Supplement

Examine associations between MJ legislation and changes in MJ use trajectories among youth initially assessed in HS.

- Will MJ use be higher after passage of I-502 beyond what is expected by time trends?
- Will increases be high among those who still live in WA?

Examine perceptions of risk and perceived access to mj pre/post-December 2012

- Will perceived risk be lower and perceived access be higher after I-502?
- Will hypothesized decreases in PR and increases in PA will be higher for those still living in WA?

Research questions related to a changing legal climate

Will increased availability result in increased use (regardless of age group)?

Source: Kilmer & Lee (2013)

Specific Aims of Supplement

Examine density/proximity of MJ retail outlets and relationship to use, risk perception, and perceived access

- Will individuals living in areas with a higher density of retail outlets and in closer proximity to outlets will report greater increases in use, consequences, perceived access, and perceived descriptive marijuana norms and greater decreases in perceived risk?

Examine understanding of laws and perceptions of enforcement and relation to personal MJ use

- The degree to which each component of state law is understood
- The degree to which there is support for/opposition to each component
- Perceptions of the enforcement of what remains illegal under I-502 (e.g., use by minors, use in public, dealing, etc.).
Thank you!

Special thanks to:
- ADAI
- NIDA & NIAAA
- Theresa Walter

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