

Marijuana prevention in a shifting legal environment

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Pre-conference workshop at the Meeting
of the Minds 2015 Area 5 Spring
Conference, Kansas City, Missouri

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Looking back a few years ago...

- Amethyst Initiative - 2008
- 2010 California Prop 19 Didn't Pass, but...
 - Since 2010: 11 States and DC became medical marijuana states. It took 13 years for 13 states to start this off (1996-2009)
 - California Decriminalized in 2011
 - Washington and Colorado legalized in 2012
 - Oregon, Alaska and DC legalized in 2014

It's spreading

Victory Checklist

2014

- ☒ Alaska
- ☒ Oregon
- ☒ Washington, D.C.



2016

- ☐ Maine
- ☐ Arizona
- ☐ California
- ☐ Nevada
- ☐ Massachusetts

Together we can end the failed war on marijuana.
Join the fight today at www.mpp.org

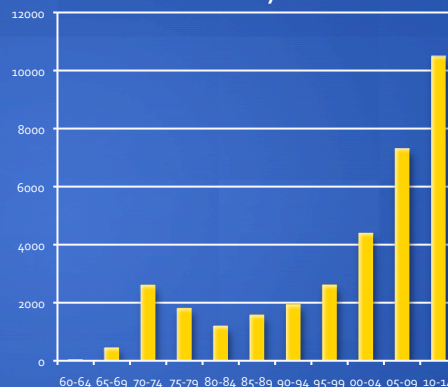
Explosion of Research

MEDLINE & PsychINFO database search
by year.
Search Term "Cannabis; Marijuana;
Marihuana"

Within last...
10 Years: 52%
5 Years: 30%

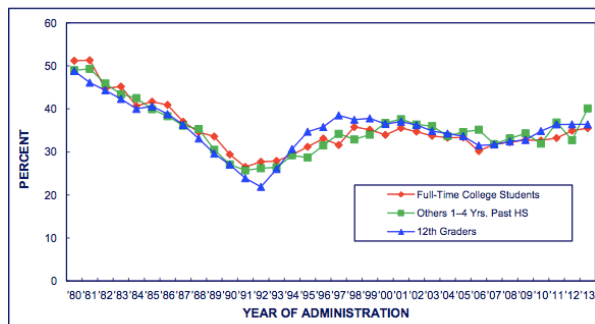
Publication Milestones:
✧ Isolation of THC (1964)
✧ Existence of CB receptor confirmed (1984)
✧ First studied endogenous CB agonist (1992)
✧ First U.S. general population study on health conditions published (2010)

Articles by Year



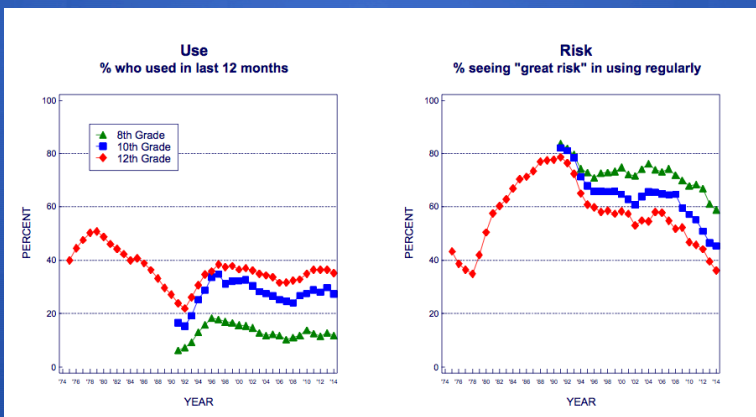
What about actual use

FIGURE 9-3a
MARIJUANA
Trends in Annual Prevalence among College Students vs. Others
1 to 4 Years beyond High School
(Twelfth graders included for comparison.)



Most recent college MTF (up to 2013)

High School Use and Perceived Risk: Our future college students



Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (December 16, 2014). "Use of alcohol, cigarettes, and number of illicit drugs declines among U.S. teens." University of Michigan News Service: Ann Arbor, MI. Retrieved 12/16/2014 from <http://www.monitoringthefuture.org>

Predictors predict until they don't

Quotes from MTF Press Release: 12/16/14

Marijuana use, after five years of increasing among teens, actually declined slightly in 2014, with use in the prior 12 months declining from 26 percent to 24 percent for the three grades combined.

"The belief that regular marijuana use harms the user, however, continues to fall among youth, so changes in this belief do not seem to explain the change in use this year, as it has done over most of the life of the study," Johnston said.

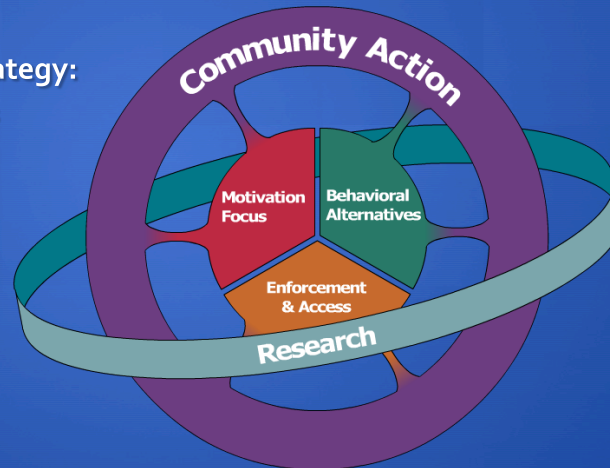
A bit about AOD Initiatives at SDSU

- Since implementing our Comprehensive Strategy...
 - Reduction in alcohol related medical transports
 - Reduction in alcohol related campus judicial referrals
 - Increase in Freshman claiming alcohol-abstinence
 - Have not been listed in any publications "party school" lists
- Our Aztec Nights program has been featured by the U.S. Department of Education
- We were the first (or nearly so) to publish on... Ritalin abuse in the west coast; Salvia use by college students; BAC definitions of binge drinking; the association between marijuana and binge drinking in college parties

Prevention Approach

- Comprehensive Strategy:

- Motivational focus
- Alternative focus
- Access focus



Where does marijuana fit within the AOD issues at SDSU?

- Drug Free Schools and Community Act requires all IHEs to certify that it has a program to prevent illicit drugs. Illicit would be defined federally.
- The CSU System has made clear that medical marijuana is not permitted on its campuses.
- SDSU Student Health Services will not recommend marijuana to students.
- Use eCheckUptoGo-Marijuana as needed.
- Policy: Grounds upon which student discipline can be based... Use, possession, manufacture, or distribution of illegal drugs or drug-related paraphernalia, (except as expressly permitted by law and university regulations) or the misuse of legal pharmaceutical drugs. SDSU does not permit the possession or use of marijuana even with a medical recommendation.

GOT WEED?

Don't Bring It To Campus!

SDSU policy will remain unchanged...

- Possession, use or sale of marijuana on SDSU campus, including within residence halls, will continue to be prohibited.
- Possession, use or sale of marijuana in connection with any SDSU sanctioned activity will remain prohibited.
- Impaired driving laws will remain strictly enforced around campus.
- Counseling and Psychological Services remains open to those who may feel marijuana is causing problems for themselves or their friends.
- Students can take the Marijuana eCHECKUP TO GO to explore their use in an anonymous and confidential way.



QUESTIONS? CONTACT AOD@MAIL.SDSU.EDU

Just in Case

2010 Prop 19 Flyer
& perhaps for 2014

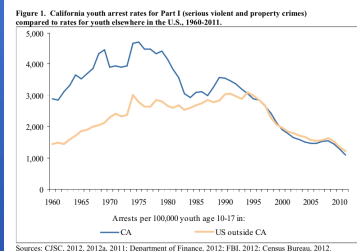
Even Without Prop 19

Table 2. Youth drug offense arrests, 2011 versus 2010.

Drug offense	2010	2011	Change
Marijuana possession	14,991	5,831	-61%
Other drug possession	2,106	1,770	-16%
Marijuana felonies	2,206	1,952	-12%
Narcotics felonies	1,363	1,174	-14%
Other drug felonies	2,628	1,671	-36%

Source: CJSC, 2012, 2012a, 2011.

Males, Mike. *California Youth Crime Plunges to All-Time Low*. Research Brief. San Francisco, CA: Center on Juvenile and Criminal Justice, October 2012. http://www.cjcj.org/files/CA_Youth_Crime_2011.pdf.



The Medicine

- The FDA has this to say "... has not been proven to have a positive impact"
- No peer-reviewed publication of randomized development trials showing benefits.
- Reported adverse side effects include: Psychotic behavior (hallucinations, impulsive/destructive behavior) vehicle crashes, and even suicide.

Of course *the* "Medicine" here is...

Tamiflu

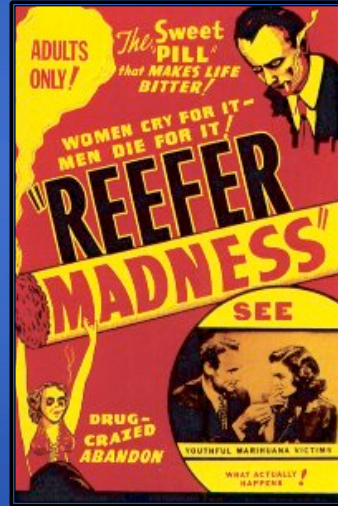
British medical journal claims there is no proof that Tamiflu can stop influenza

INFLUENZA | NOVEMBER 14, 2012 | BY: JEANNIE STOKOWSKI-BISANTI | [Subscribe](#)

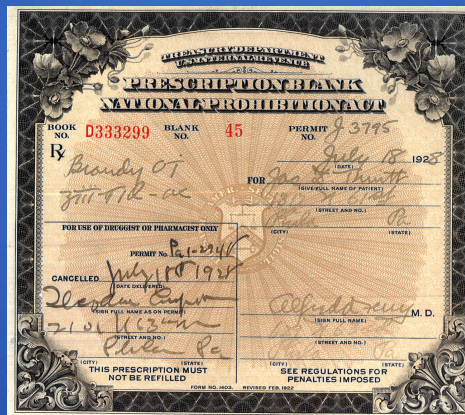


College Students are Hypocrisy, Faux-Expert, and Bias Detectors

- We are faced with an educated, skeptical and capable group.
- The ghost of *Reefer Madness* is always hanging over our efforts.
- Sometimes they are right and we need to approach this with a proper sense of historical and public health understanding.
- However, like all of us, they can suffer from confirmatory biases.



Is this déjà vu? From a distance, it seems to be.



1921 to 1933

ONLY 9 STATES GET BEER AS MEDICINE

Brewers Are Preparing to Supply It—Seven Plants to Open in Milwaukee.

DRYS' COUNSEL SEES HOPE

Believes People Will Resent Turning 'Drug Stores Into Booze Shops'—Rush Expected Here.

Brewers in the nine States where beer may be legally prescribed as medicine began preparations yesterday for the

ONLY 9 STATES GET BEER AS MEDICINE. (1921, October 26). *The New York Times*. Retrieved from <http://www.nytimes.com>

Prohibition Nears Its Doom As 6 States Vote Today

By The Associated Press

Voters in half a dozen widely scattered states today are inscribing the answer to whether thirteen years of national prohibition shall end next month.

Lindberghs Forced Back into Holland

AMSTERDAM, Nov. 7.—(AP)—Col. and Mrs. Charles A. Lindbergh returned to Holland today, when unfavorable flying conditions prevented them from continuing to Geneva after a flight over Belgium and France in a heavy fog. They hopped off this morning.

A dispatch from Geneva, where they were expected to land shortly before nightfall, said a large crowd had waited for them several hours at the Nautical Club in Geneva.

Confidence that the balloting in Pennsylvania, Ohio, North and South Carolina, Kentucky and Utah would climax the administration's campaign to restore liquor was expressed by Postmaster General Farley.

Wet organization leaders forecast anti-prohibition majorities in at least three of the six states voting—all that is necessary to assure elimination of the Eighteenth Amendment from the Constitution—while dry organization captains said there were good chances for halting the hitherto unbroken anti-dry parade.

Although voters express themselves today, actual repeal could not materialize until the first week in December. The balloting takes place

Rochester Evening Journal (1933, November 7). Retrieved July 3, 2013, from <http://news.google.com/newspapers>

Today



sLkYX.jpg (JPEG Image, 640 × 428 pixels). (n.d.). Retrieved July 12, 2013, from <http://i.imgur.com/sLkYX.jpg>

Border Towns – Mexico and States



Federal Legislation, Executive, Judicial Action



Compassionate Access, Research Expansion and Respect States (CARERS) Act introduced March 10, 2015

Is pot as bad as LSD? Heroin? Judge to rule on 1970 law



Is pot as bad as LSD? Heroin? Judge to rule on 1970 law. (n.d.). Los Angeles Times. Retrieved from <http://www.latimes.com/local/politics/la-me-marijuana-lsd-heroin-controlled-substances-act-20150113-story.html#page=1>



Obama Predicts Marijuana Will Be Rescheduled

BY MIKE ADAMS - THU MAR 19, 2015

M. A. - T. M., 2015. Obama Predicts Marijuana Will Be Rescheduled. Retrieved March 23, 2015, from <http://www.hightimes.com/read/obama-predicts-marijuana-will-be-rescheduled>

What happens on campus if/when marijuana is de-scheduled

- ADA and fair housing may force medical marijuana on campus
- Age-21 restrictions become meaningless for medical users. This may also include allowing growing own.
- Smoking bans may or may not apply if focus on nicotine and tobacco. Eatables will be difficult to control.

How to respond: Tell us how to argue...

- We must acknowledge that many of the moral and even public health oriented arguments against marijuana use are fraught with shaky foundations
 - Lung health: Cigarette analogy fails both on research-based harms and legal grounds. It also does not address other forms of consumption. Second-Hand smoke harms not studied.
 - "Medical" vs. *Recreational* distinction fails on epistemological grounds
 - Both Gateway Drug and Amotivational Syndrome have failed to be confirmed
 - Risk of dependence true, but legal and use guidelines are inconsistent with other drugs
 - Impaired driving is true, but legal and use guidelines are inconsistent with other drugs
 - THC-level inflations: Partially true, but public health implications have not been documented. Synthetic cannabinoids are not a model for informing this debate due to their action on CB₁ and also the lack of countervailing chemicals such as CBD.

College Population Considerations

- 18-24, and sometimes much older
- Well educated, critical and have the means to do independent study
- Activated towards social change, and social justice
- Experimenting with agency, leadership and protests
- Understand concepts of relative risk. Have a much better experiential-based understanding of the set and setting of actual use.

Marijuana Use Trajectories

"Specifically, infrequent, increasing, and chronic/heavy marijuana use patterns were associated with significantly increased risk for discontinuous enrollment (adjusted odds ratio = 1.66, 1.74, and 1.99, respectively) compared with minimal use."

The Trajectories also correlated with use of other drugs: Alcohol, Illicit and Rx.

Reasons for discontinuous enrollment were not identified, and could include suspension, expulsion and transfer.

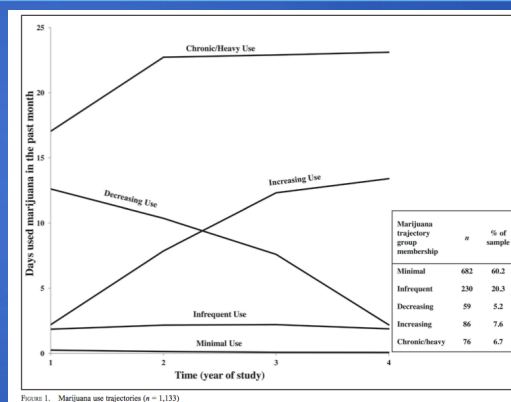


FIGURE 1. Marijuana use trajectories (n = 1,133)

Arria, Amelia M, Laura M. Garnier-Dykstra, Kimberly M. Caldeira, Kathryn B. Vincent, Emily R. Winick, and Kevin E. O'Grady. "Drug Use Patterns and Continuous Enrollment in College: Results From a Longitudinal Study." *Journal Of Studies On Alcohol And Drugs* 74, no. 1 (2013): 71-83.

Earlier Start Trajectories

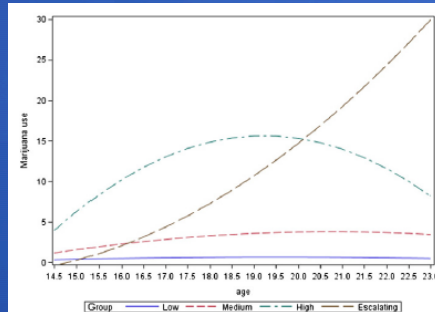


Fig. 1. Illustration of estimated trend lines for the three classes of non-escalating users (i.e., low, medium and high groups) and one class of escalating users. "Marijuana use" is defined as follows: 0 = zero time; 1 = once a month or less; 3 = more than once a month but less than once a week; 9 = more than once a week but less than daily; 27 = every day.

Cigarette smokers over sampled

Passarotti, A. M., Crane, N. A., Hedeker, D., & Mermelstein, R. J. (2015). Longitudinal trajectories of marijuana use from adolescence to young adulthood. *Addictive Behaviors*, 45, 301–308. <http://doi.org/10.1016/j.addbeh.2015.02.008>

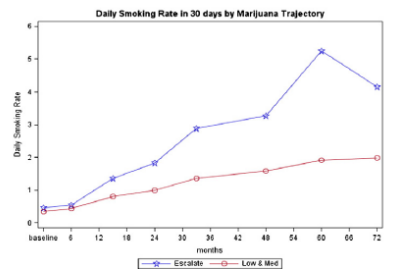
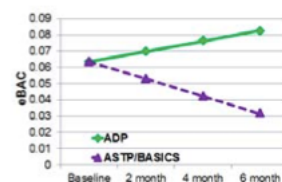


Fig. 2. Daily cigarette smoking rate in 30 days, in Escalators and Non-escalators, from baseline to 72 months. Cigarette smoking rate is defined in terms of cigarettes per day.

Predictor of Escalating/High:
Baseline: Males, Cigarettes, GPA
6 Yr: Lower Education Status,
Cigarettes

Don't just do something, stand there!

Project AIMS: Intervention Effects



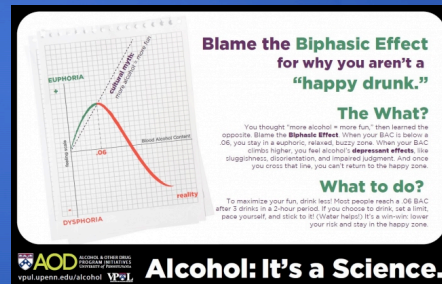
Logan, Diane, Jason R. Kilmer,
and Timothy C. Marchell.
"Connection versus
Enforcement: Lessons Learned
from the 'Teachable Moments.'"
San Diego, CA, 2014.

Following the sanction effect the
ADP approach... "suggests that
the immediate effects may be
undermined or at least not
maintained in an education-only
program."

Logan, D. E., Kilmer, J. R., King, K. M., & Larimer, M. E.
(2015). Alcohol Interventions for Mandated Students:
Behavioral Outcomes From a Randomized Controlled
Pilot Study. *Journal of Studies on Alcohol and Drugs*, 76(1),
31–37.

Flexible and realistic alcohol prevention efforts

- BASICS
- ASTP
- SHAHRP
- Many Online Programs
- All these acknowledge a desired effect of alcohol, and seek to instruct the drinkers (even underage) how to maximize those, and minimize the negative.
- Implicit recognition that there is social or personal value "Consumer Surplus" to the activity that should be accepted by the prevention messaging.
- Some have argued that doing this for highly addictive substances with well documented harms (i.e., tobacco) is flawed logic (Chaloupka, Gruber, & Warner, 2015)



Responsible Use: What is it?

Illegality made the question of "responsible use" problematic; though for alcohol this is often considered on college campus.

Medical exemption appears to be exploited; Discomfort with the ethics of "cosmetic" medicines

Do we agree on what abuse or irresponsible use looks like?

A moving target and often based on socially constructed sense of "problems" Gusfield (1996)



Question: "Any plans to do a "Baked History" where pot is legal? GREAT SHOW!"

no way. That show would never end. It would be boring and very slow. Trust me.

IamA (Derek Waters, Creator of Drunk History) AMA! (2014). Retrieved March 26, 2015, from <http://interviewly.com/i/derek-waters-jul-2014-reddit>

Societal Definitions Change

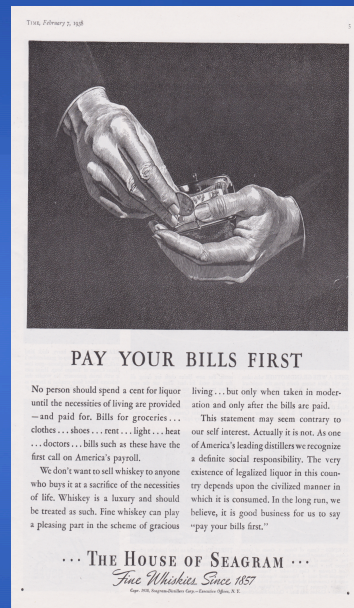
Drunk driving was a concern since cars existed (Lange, 2008). But rarely mentioned by prohibitionists in the early 1900's.

Now it's a major source of our justification for alcohol restrictions.

Technology may impact our definitions of reckless

Age 21, Age 18 and the various concerns over time

Various measures include "Hangovers". Are we also trying to prevent Munchies?



Medical Exemption Exploitation

Sampled 335 ads placed in major weekly newspapers from all states with medical marijuana laws as of June 2010.

Coded them using a variety of methods

Found three main themes:

- Traditional medicine
- Holistic/alternative medicine
- Counterculture/recreation

Varies substantially by state.



DEA “Abuse” vs. DSM “Abuse”

- Abuse: “When drugs are used in a manner or amount inconsistent with the medical or social patterns of a culture.” (p.32 DEA, 2011)
- DEA Working* Definition of Potential for Abuse:
 - Taking the drug in amounts that create hazard to health and safety.
 - Significant diversion from legitimate drug channels.
 - Taking on own accord.
- Drugs are abused to “alter mood, thought, and feeling.”
- “The ‘feel good’ effects of the drugs contribute to their abuse.”

*Abuse not defined within CSA.

DEA. (2011). Drugs of Abuse: A resource guide. Drug Enforcement Administration, U.S. Department of Justice.

Ethical discomfort with “Cosmetic psychopharmacology”

the growing power to manage our mental lives pharmacologically threatens our happiness by estranging us not only from the world but also from the sentiments, passions, and qualities of mind and character that enable us to live in it well. . . . mood altering drugs pose a fundamental danger to our pursuit of happiness. . . . What is to be particularly feared about the increasingly common and casual use of mind-altering drugs, then, is . . . that they will seduce us into resting content with a shallow and factitious happiness. (pp. 303–5)

The medicalization of psychic pain, however necessary as a path to providing much needed relief for the sick, indicates (whether intended or not) a great advance for biological reductionism against the citadel of mind and soul, a march that knows no natural stopping place, and that at each point along the advance threatens to reduce further the dignity of our inner life—or at least our self understanding of it. (p. 296)

- President’s Council on Bioethics (2003):
- Criticism (Cerullo, 2006) includes better description of SSRIs as not mood-brighteners; Disputes the literal suggestion pain is necessary for dignity and “soul”.
- Today’s Council (2014) discusses neurological enhancements as creating concerns of equity and access. Differentiation between right to treatment vs. access to enhancements
- Ultimately, these ethical questions seem to devolve quickly when comparing marijuana to other approved medicines/drugs like Viagra, caffeine, birth control.

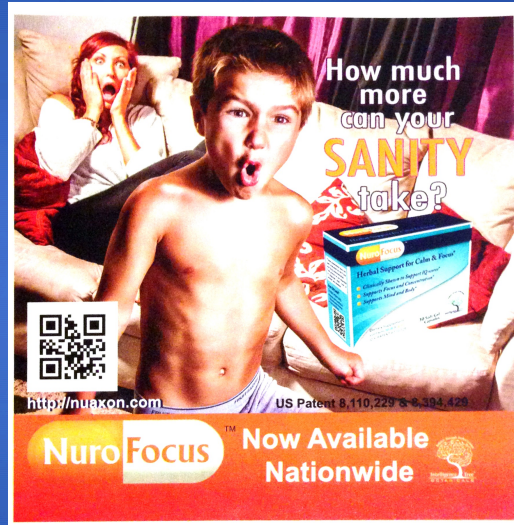
Institutional definition of medicine

Often rests on FDA approval, and medical consensus to define a substance as "medicine".

Roots run deep in counter narcotic, prohibition and Patent Medicines

Long tradition of cultural acceptance of alternative remedies

Sometimes medication "works" without our clear understanding of why. SSRI/Depression example (Anderson et al, 2015)



Consumption quantities

Alcohol example

Age 21

No Binge (5/4)

Weekly limit 14/7

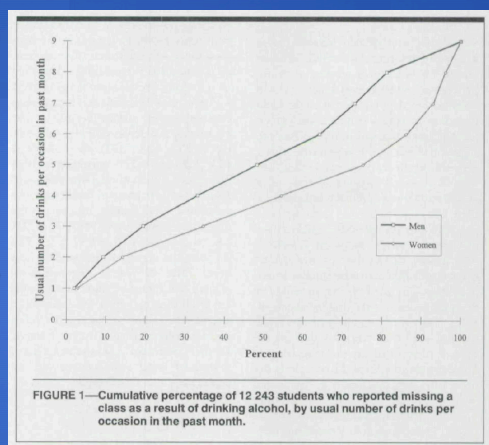
Opposite of Responsible

Reckless - fights, noise, crashes, sexual assaults and other crimes

Harmful - Long term health effects, addiction, relational impacts

Our quantity measures tend to focus on "Reckless" consequences, while Frequency tend to "harmful" consequences.

What if the user avoids these? Are they then "Responsible?"



Wechsler, H., Dowdall, G. W., Davenport, A., & Rimm, E. B. (1995). A gender-specific measure of binge drinking among college students. *Am J Public Health*, 85(7), 982-985.

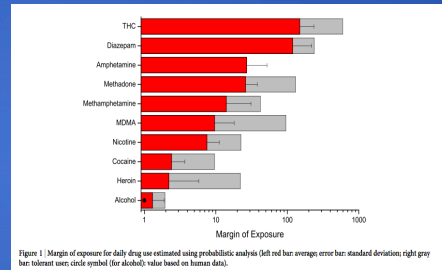
Comparative risk based on overdose

Lachenmeier, D. W., & Rehm, J. (2015). Comparative risk assessment of alcohol, tobacco, cannabis and other illicit drugs using the margin of exposure approach. *Scientific Reports*, 5.

LD₅₀ ≈ 575 mg/kg (150 lbs = 39,032mg (39g or 1.4 oz)

Human threshold dose = .04 mg/kg (150 lbs = 2.7mg)

MOE is "defined as the ratio between the point on the dose response curve, which characterizes adverse effects in epidemiological or animal studies." The lower the MOE, the higher the risk the substance poses



What's too frequent?

Table IV. Accuracy predicting at least one harm from use in past 12 months ($n = 881$)^a.

	Cannabis use daily	CUDIT6+	CUDIT8+	ASSIST4+	ASSIST8+
Sensitivity (%)	38.7	63.0	47.9	81.5	68.9
Specificity	80.8	82.9	89.3	46.5	77.2
AUC	59.8	73.0	68.6	64.1	73.1
PPV	24.5	37.3	41.9	19.7	32.7
NPV	89.1	93.3	91.4	94.0	93.9
Efficiency	75.0	80.1	83.5	51.3	76.0

Note: ^aAmong past 3-month cannabis users who reported no other illicit drug use in the past 12 months (participants who indicated past 12-month use of cocaine, speed, methamphetamine, ecstasy, or hallucinogens were excluded).

Thake, Jennifer, and Christopher G. Davis. "Assessing Problematic Cannabis Use." *Addiction Research & Theory* 19, no. 5 (October 2011): 448–58. - (1179 Canadian Adult Last 3-month Users)

Impaired Driving

Issues:

- Awareness
- Effective enforcement strategies
- Legal constraints and opportunities
- Legalized on-sale consumption
- Promotion solutions: What's possible?

Mixing with Alcohol

- Even very low levels of each can cause dramatic increases in impairment.
- THC level beginning to show impairment was 5 ng/mL dropped to 2.3 ng/mL when any alcohol was present.
- Grotenhermen et al. (2007) note that cannabis impaired automatic functions first (5-10 ng), while alcohol (BAC .05-.11) impaired controlled and automatic functions. Thus the compensatory ability of marijuana users is impaired by even small amounts of alcohol.

38

Roadside Breath and Saliva Survey of Weekend Drivers in CA (N=1,314)

Lacey, John, Tara Kelley-Baker, Edmund Romano, Katharine Brainard, and Anthony Ramirez. *Results of the 2012 California Roadside Survey of Nighttime Weekend Drivers' Alcohol and Drug Use*. Calverton, MD: Pacific Institute for Research and Evaluation, November 13, 2012. http://www.ots.ca.gov/Media_and_Research/Data_and_Statistics.asp.

- Impaired Driving Estimates
 - 7.4% positive for marijuana
 - 7.3% positive for alcohol
 - 11% of marijuana-experienced drivers believed it *harmed* their driving. Many (1/3 of those admitting any effect) believed it *improved* their driving.
 - 2/3 of recent marijuana smokers reported that they smoked every day for past month.
 - 3.7% of drivers had a medical marijuana permit and most of those drivers (65.8%) had used their permit to buy marijuana.

Recommendations for Driving

- *Still very much an open question:*
 - Some advocate zero tolerance
- Others look for an impairment *per se* level
 - *per se* limit set at 7-10 ng/mL. WA has set it at 5 ng/mL. Note that some talk of whole blood, others plasma. All *per se* discussions at this time involve THC.
 - Advise users to wait 3 (though some say 3-5) hours before driving.
 - Drivers should not mix even low amounts of alcohol with cannabis.

Suicide: Possible Reckless or Harmful crossover

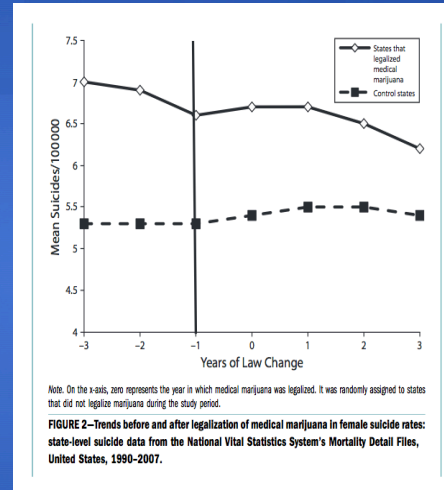
Conflicting evidence:

Legalization effect on suicide rates. Significant for men ages 20-29.

But news reports of incidents of apparently intoxication related suicide.

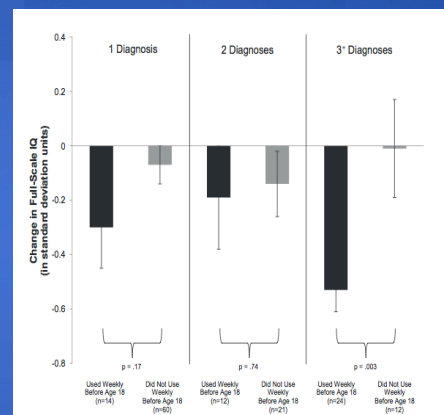
Role of setting and access to weapons not investigated.

Anderson, D. M., Rees, D. I., & Sabia, J. J. (2014). Medical Marijuana Laws and Suicides by Gender and Age. *American Journal of Public Health*.



Harmful: How many IQ Points do you lose?

- N=1,037
- Use at 18, 21, 26, 32, 38
- IQ at 18, 38
- 8 pt drop only for the 24 subjects who initiated before 18, were judged dependent 3 times within the 20 years compared with the 12 subjects who did not start before 18, but still judged dependent.



Meier, M. H., Caspi, A., Ambler, A., Harrington, H., Houts, R., Keefe, R. S. E., ... Moffitt, T. E. (2012). Persistent cannabis users show neuropsychological decline from childhood to midlife. *Proceedings of the National Academy of Sciences*, 109(40), E2657–E2664.

Education

Grant, Julia D., Jeffrey F. Scherrer, Michael T. Lynskey, Arpana Agrawal, Alexis E. Duncan, Jon Randolph Haber, Andrew C. Heath, and Kathleen K. Bucholz. "Associations of Alcohol, Nicotine, Cannabis, and Drug Use/Dependence with Educational Attainment: Evidence from Cotwin-Control Analyses." *Alcoholism: Clinical and Experimental Research* 36, no. 8 (August 1, 2012)

Table 4. Unadjusted and Adjusted Conditional Logistic Regression Results: Likelihood (ORs and 95% CIs) of the At-Risk Twin (Based on Substance Use History) Having Lower Educational Attainment than His Cotwin^a

Predictor	Number of discordant pairs	Unadjusted conditional odds ratio	Adjusted conditional odds ratio ^b
Early drinker	889	1.47 (1.05 to 2.05)	1.44 (1.02 to 2.05)
Daily nicotine use ^c	702	2.42 (1.50 to 3.89)	2.54 (1.55 to 4.17)
Early cannabis use	276	1.32 (0.76 to 2.29)	1.35 (0.76 to 2.41)
Cannabis initiation	947	0.86 (0.64 to 1.16)	0.90 (0.65 to 1.24)
Alcohol dependence	1,023	1.67 (1.24 to 2.25)	1.76 (1.27 to 2.44)
Nicotine dependence	1,059	1.34 (1.00 to 1.80)	1.31 (0.98 to 1.77)
Cannabis dependence	282	0.93 (0.56 to 1.56)	0.93 (0.48 to 1.78)
Any illicit drug dependence	379	1.39 (0.89 to 2.18)	1.23 (0.72 to 2.09)

^aThe only significant interaction between zygosity and risk behavior was for daily nicotine use in the adjusted model ($p = 0.04$; all others $p > 0.20$), conditional logistic regression analyses were collapsed across zygosity for all measures except daily nicotine use (for which the interaction was retained in both the unadjusted and adjusted models).

^bAll adjusted models included 4 covariates: depression, conduct disorder, Southeast Asia service, and posttraumatic stress disorder; no covariates were significant at $p < 0.05$.

^cInteraction OR = 0.51 (0.25 to 1.04) in the unadjusted model and 0.46 (0.22 to 0.97) in the adjusted model.

Bold text indicates significant at $p < 0.05$.

Brain Development and Cannabis

Development likely continues at least until age 25

Cross sectional studies found both alcohol binge and marijuana use predictive of white matter integrity in fronto-parietal tracts.

Only a few longitudinal studies. One found alcohol effects. But the authors state "Deleterious effects might be more attributable to binge drinking than marijuana, as preliminary studies suggest that cannabis may have a less effect ...and may actually serve a neuroprotective role in attenuating...heavy alcohol use."

Note that a non-alcohol-bingeing marijuana-using teen is almost non-existent

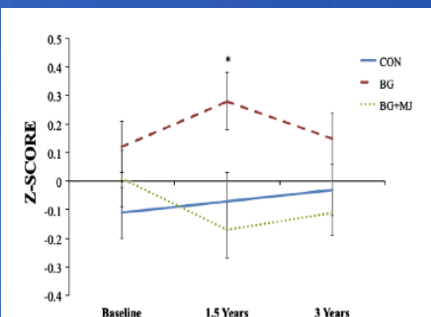


Fig. 4. Observed global neuropsychological performance at baseline, 18-month follow-up and 3-year follow-up (Controls (CON), $n = 15$; Binge Drinkers (BG), $n = 17$; Binge Drinkers with Heavy Marijuana Use (BG+MJ), $n = 19$). * $p < 0.01$.

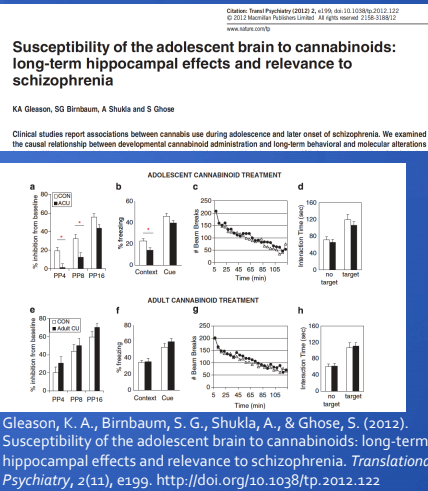
"However, it remains surprising that our marijuana users do not show a marked decrease in tissue integrity compared to the binge drinkers given their consistent and heavy co-occurring use."

Jacobus, J., Squeglia, L. M., Bava, S., & Tapert, S. F. (2013). White matter characterization of adolescent binge drinking with and without co-occurring marijuana use: A 3-year investigation. *Psychiatry Research: Neuroimaging*, 214(3), 374–381.

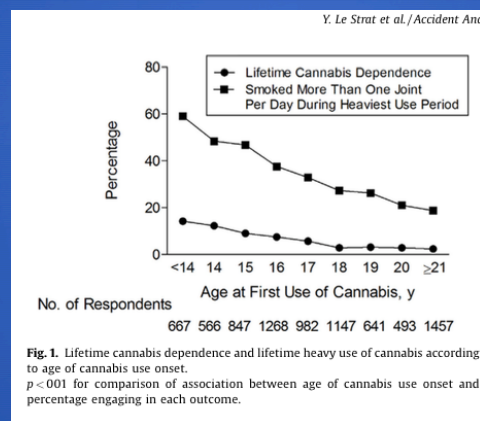
But is there convergence

Maybe, but it won't help you win arguments...

- Definition of early onset appears to be before college age (this study used 30 day/60 day probably about age-13/age-20 equivalent).
- Animal models do not allow for effect size estimates or understanding countervailing environmental factors
- Many of these studies do not use cannabis, but instead a synthetic CB₁ agonist like WIN 55, 212-2 – Much higher affinity to CB₁ than THC
- Often not replicated and/or mechanism not yet understood. Example this study had 10 mice in the ACU condition.



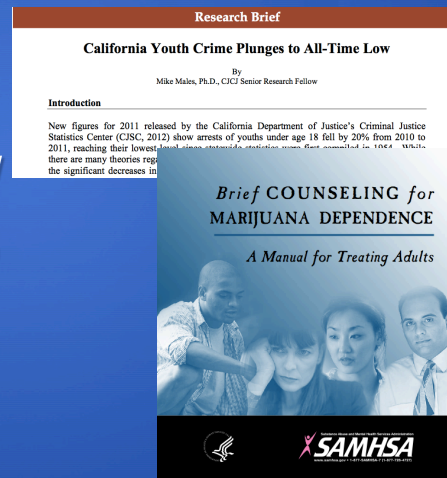
What's Early?



Le Strat, Yann, Caroline Dubertret, and Bernard Le Foll. "Impact of Age at Onset of Cannabis Use on Cannabis Dependence and Driving under the Influence in the United States." *Accident Analysis & Prevention* 76 (March 2015): 1-5.

Clinical Aspect

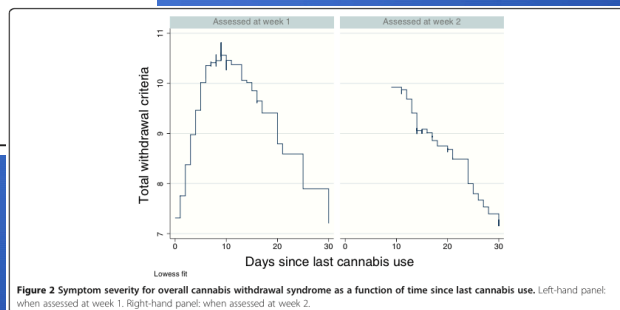
- Changes to DSM
 - DSM V removes legal consequences as diagnosis criteria.
- Legal contact as an identifier/Referral
- Motivation for treatment in a de-stigmatized social environment. 2 of the 3 examples related to stigmatized use as the main problem.



Withdrawal Symptoms

Table 5 Time course descriptions

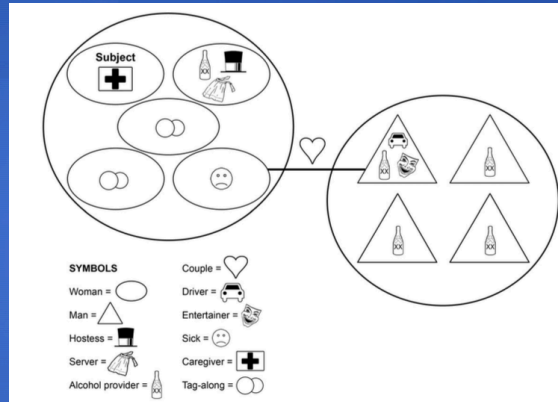
	Peak in days since last cannabis use	Peak from Budney study [11]
Irritability/anger	14	18.33
Nervousness	4	9
Insomnia	1	
Loss of appetite	5	
Restlessness	6	
Depression	5	
Physical symptoms	5	
Vivid dreams	11	



Hesse, Morten, and Birgitte Thylstrup. "Time-Course of the DSM-5 Cannabis Withdrawal Symptoms in Poly-Substance Abusers." *BMC Psychiatry* 13, no. 1 (2013): 258. doi:10.1186/1471-244X-13-258.

Social Context

- Source of benefits, protection, *and* risks
- We know, or at least have documented, very little about the social context of marijuana use.
- Context will change in legalized environment.



Lange, J. E., Devos-Comby, L., Moore, R.S., Daniel, J., and Homer, K. "Collegiate Natural Drinking Groups: Characteristics, Structure, and Processes." *Addiction Research & Theory* 19, no. 4 (August 2011): 312–22.

It matters who you drink with...Does is matter who you smoke with?

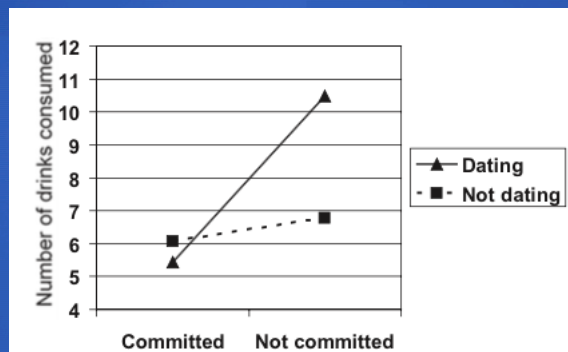


Figure 2 Interaction between relationship commitment and dating on alcohol consumption in the natural drinking group, controlling for gender.

Devos-Comby, Loraine, Jason Daniel, and James E. Lange. "Alcohol Consumption, Dating Relationships, and Preliminary Sexual Outcomes in Collegiate Natural Drinking Groups." *Journal of Applied Social Psychology* 43, no. 12 (2013)

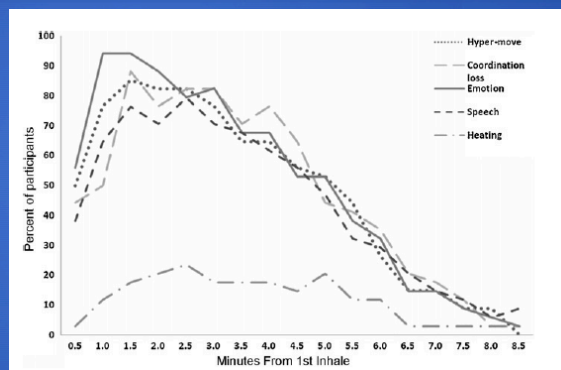
We need to better understand Use

- Let's watch a few people use...

Direct Observation is Helpful

First use of YouTube in
behavior observation
research

Lange, J. E., Daniel, J., Homer, K.,
Reed, M. B., & Clapp, J. D. (2010).
Salvia divinorum: Effects and use
among YouTube users. *Drug and
Alcohol Dependence*, 108, 138–140.



Salvia videos looked something like this

<https://youtu.be/1ntVEk79UY4>

Internet Best Videos - Edited

4,328 Subscribers

Viewed 327,598



Marijuana Videos Are Variable

Stay high friends

4:20 Sesh. - Edited

Subscribers 55

Views 4,698

Downloaded 3/27/15



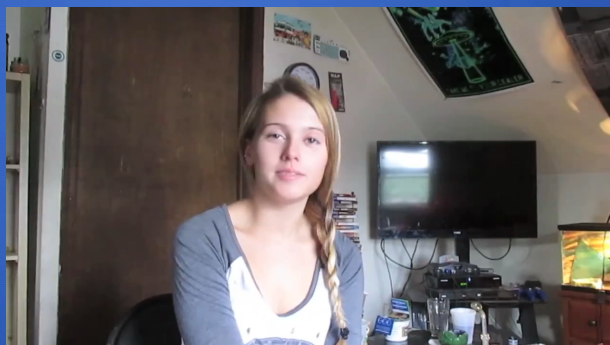
Some give hints to social settings of regular use

The O.Pen Vape - edited
Theguythatcouldfly
49,704 Subscribers



Hints into motivation and use history

The First Time I Smoked Weed &
Why I Smoke it - Edited
Allie in Weedyland
24,151 Subscribers
Viewed 231,952



So what do we say on college campuses? Consider these issues:

1. It's illegal and against campus policy. There is no age variance on this.
2. Since almost all are over 18, therefore most of the research on early onset does not apply
3. Discontinuity of enrollment is a risk, but unclear at what level of use
4. Regular use (definition likely will fall somewhere between weekly and daily) is associated with more problems.
5. Occasional use can be safer if not associated with:
 1. Driving
 2. Other substances including alcohol and tobacco
6. High dose and especially oral use may prolong impairments substantially
7. And most importantly, any or all of this is subject to change at any moment

Various Directions

- *Motivational Interviewing* approaches appear to reduce use and problems.
- Argumentative and counter marketing approaches are not appearing to reduce use. These often rely on abstinence-only approach that may not be adaptable to legalized environments.
- Information campaign to change the views on driving may be warranted. Roadside survey found marijuana common (7.4%). Only 11% thought it harmed their driving. (Lacey et al, 2012).
- *Promotion instead of Prevention* messaging to avoid internal counter-arguing.

Caffeine Exercise

- Find the meaningful issues
- Understand their causes
- Consider the strategies to promote the positives and prevent the harms
- Gain permission for helping and facilitate change talk



Local Sales Restrictions: Is there a model yet?

- Perhaps a conditional use permit model for local restrictions; some things to think about:
 - No on-premise use-
Since there is no unimpaired use level, on-premise responsible sales will necessarily lead to intoxication.
 - No per-hit sales.



DOPE Magazine July '13 "The Travel Issue." Issuu. Retrieved July 12, 2013, from http://issuu.com/dlistmagazine/docs/dope_july13_web_

Suggestions Cont.

- No single dose (joint) sales. Would apply also to eatables. —*Just as single serving drinks appeal to youth with little spending money, so too will single joint sales.*
- Advertising restrictions: Similar to tobacco restrictions. *Prohibit ads that appeal to youth and also highly sexualized, irresponsible behavior (Includes strain naming).*
- Location restrictions to include college campuses.

Coupon

Beverly Hills Dollatella
Los Angeles, CA

New 2 Gram DOGO on select strains New low price DOGOS. FTP patients pick btw rice crispie, indi cream, or joint For 420 we will be giving out free gram of hash.
NEW LOW Price on all concentrates

Strawberry Diesel Wax	23 .5g
Alien Space Fucker	23 .5g
Jupiter Dust	23 .5g
Batman (Dark Nights) Wax	23 .5g
Astlavista Gold Dust	23 .5g
Paris OG KIEF	4 .5g



Facebook | 10 GREEN HILL ROAD (310) 4-420-8040 | orders@420@gmail.com | 420greenhill.com

Suggestions Cont.

- No concurrent alcohol sales-*Restricts the growth of industry. Also recognizes the synergistic effect on impairment*
- Support tools for enforcement and data collection
- California's medical legalization without regulated sales has lead to an extremely ad hoc and chaotic system.

"California has a very mature marijuana industry and it's just not regulated," ... "We're the worst of all worlds. This report bears out the fact that we haven't answered a lot of questions."

"Why California Is The 'Worst Of All Worlds' When It Comes To Marijuana." *The Huffington Post*. Accessed March 29, 2015. http://www.huffingtonpost.com/2015/03/27/gavin-newsom-marijuana_n_6953750.html.

Things that worry me

- Delivery services
- THC-based edibles and drinkables – Detection, overdose and accidental use
- Sudden changes in federal law or legal interpretation: Policy wholes like vaping or ADA accommodation justifications.
- Impaired driving
- High frequency off-campus users. Incoming earlier initiators



Other Strange Directions with Continued Fed/State Conflict

- Drop Boxes: Federal law is guiding us, but there is apparently tolerance for an amnesty and disposal approach.
- Legislative restrictions on resources for enforcement
- Schedule II Effects. Does this trigger ADA and Fair Housing Accommodations. Does it remove medical use from DFSCA restrictions?



Springs Airport Installing Amnesty Boxes For Pot Surrender. Retrieved January 15, 2014, from <http://www.kktv.com/home/headlines/Springs-Airport-Installing-Amnesty-Boxes-For-Pot-Surrender-240261661.html>

Avoid looking foolish, hypocritical and cherry-picking thin research



"Audiences know what to expect, and that is all they are prepared to believe in."

-The Player: Rosencrantz and Guildenstern are Dead.

- I've been accused of smirking when I say "medical." I am almost always accused by someone in the audience of having a "bias", though the direction of bias seems to reflect more on the listener... there is only so much I can do.
- Remember that students are on guard to rebut any attempt to dissuade use. They'll see *Reefer Madness* hidden behind any negative health claim.
- MI approach: "The Good' and the 'Not So Good effects.'" - Jason Kilmer and colleagues

Adapting prevention strategies in the era of marijuana legalization

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For reprints visit the Report Vault
at www.iPrevention.com

