Debunking the "Gateway" Myth

The vast majority of people who use marijuana *do not* go on to use other illicit drugs

February 2017

Research simply does not support the theory that marijuana is a "gateway" drug – that is, one whose use results in an increased likelihood of using "more serious" drugs such as cocaine and heroin. However, this flawed gateway effect is one of the principal reasons cited in defense of laws prohibiting the use or possession of marijuana.

Research shows that marijuana could more accurately be described as a "terminus" drug because the vast majority of people who use marijuana do not go on to use other illicit drugs.[1,2]

Marijuana has never been proven to have an actual "gateway effect."[3] However, a more critical interpretation of this and further research suggests that *those who use drugs may instead have an underlying propensity to do so that is not specific to any one drug.*[4,5,6]

Significant amounts of research as well as measures implemented in other countries suggest that there are far more effective and less harmful strategies for decreasing youth use of marijuana and reducing the potential harms of other illicit drug use than using the "gateway" myth as a scare tactic. New evidence suggests that marijuana can even serve as an "exit drug," helping people to reduce or eliminate their use of more harmful drugs such as opiates or alcohol by easing withdrawal symptoms.

Origin

The term "gateway drug" was popularized in 1984, during Reagan's renewed war on drugs, by Dr. Robert L. DuPont, Jr. in *Getting Tough on Gateway Drugs: A Guide for the Family*.[7] DuPont posited that if young people do not use marijuana it is relatively unlikely that they will use other illegal drugs, but he did not make the claim that marijuana use *causes* young people to use other drugs.[8,9] He simply made a limited observation based on some of the young people with whom he came into clinical contact.[10]

The demonization of marijuana as *the* gateway drug stems from DuPont's broader observation that if young people did not use alcohol or tobacco, they would be less likely to use other drugs, such as marijuana.[11] Marijuana's illicit status may have separated it from alcohol and tobacco in the minds of many in the political sphere, but DuPont's main conclusion was that a young person's willingness to use *any* drug, and particularly to use it frequently, may remove a psychological barrier to using another drug.[12]

A Logical Fallacy: Correlation Does Not Equal Causation

Marijuana is the mostly widely used illicit substance in the world.[13] Therefore, if the gateway theory were true, we would expect to see many more users of other illicit substances than we do. However, *the vast majority of people who use marijuana do not go on to use other illicit drugs.*[14]

The gateway theory falls victim to the mistaken assumption that correlation alone implies causation.[15] Using the same logic, one could argue that drinking milk is a gateway to illicit drug use since most people who use illicit drugs also drank milk as young people. The *correlation* between marijuana use and the use of other drugs should not be equated with *causation*.[16,17] The evidence suggests a much simpler explanation.

We know that some people are more willing to try drugs than others, and people who are willing to try drugs are more likely to have used multiple drugs in their lifetime than people who don't use drugs at all.[18,19] Because marijuana is the most widely available and most widely used illicit substance in the world,[20] someone who has used less available and less

popular drugs (cocaine, heroin, etc.) in their lifetime is more likely to have also used marijuana than someone who has not used any of these substances.[21,22,23,24]

Among people who have tried a range of drugs, people are likely to have used marijuana before they had the means or opportunity to try any other illicit substance, because marijuana is the most easily-obtainable of the group.[25,26]

Simply stated, people who have used other drugs are more likely to have also used marijuana. Not the other way around.

Defying the Myth

Evidence that directly contradicts the "gateway" theory is not difficult to find. Marijuana is the most widely available and widely used illicit substance in the country,[27] and therefore, it is often the first illicit drug that a person tries.[28,29,30] More than 100 million Americans have used marijuana during their lifetime,[31,32] including successful, high-profile individuals, such as: Presidents Barack Obama, George W. Bush, and Bill Clinton; former-Governors George Pataki and David Paterson, and current Governor Andrew Cuomo; New York City Mayor Michael Bloomberg and former Mayor Ed Koch; and many others.

Additionally, it has been known in the scientific community for nearly two decades that *most drug users begin with alcohol and nicotine before marijuana* – usually before they are of legal age.[33] In the sense that marijuana use typically precedes rather than follows initiation of other illicit drug use, it is indeed a "gateway" drug. But because underage cigarette smoking and alcohol use typically precede marijuana use, marijuana is not the most common, and is rarely the first, "gateway" to illicit substance use.[34]

Faulty Data

In Anthony et al (which many people cite for the statistic that 1 in 6 young people who try marijuana will become addicted) the "1 out of 6" statistic does not appear anywhere in the original source, figures or tables (2002[35], 1994[36]); the only way to come to this number is by manipulating the data. The study's authors attempt to measure the "Cumulative Probability for Meeting Criteria for [Marijuana] Dependence" by a certain age does not follow users over time, and thus represents a survey-based snapshot of their lives in which they recollect their past use (which is a known weakness in this particular type of study design). These data, collected from 3,940 total users sampled of whom 354 were classified as dependent, allows for the inference that, by age 18, 5.61% or "1 in 17" marijuana users are at risk for dependence. It does not, however, allow for an analyst to add together dependence risk percentages from ages 10, 15, 16, 17 and 18, to get 14.5% or "1 in 6." If the same math were applied to all ages reported, you would end up with 162.24%.

Another possible source is a NIDA reference to "1 in 6," which is based on self-reported data from the annual National Survey on Drug Use and Health to analyze data for "age of first marijuana use" and "Illicit Drug Dependence or Abuse in the Past Year." In a similar maneuver, the authors added the percentages for drug-dependent youths who had used marijuana age 14 or younger (12.7%) and ages 15-18 (4.9%), which equaled 17.6%, or "1 in 6." They effectively played with numbers to invoke the widely debunked marijuana gateway theory.[37] A better measure of addiction or dependence is looking at those who use marijuana who enter treatment. If we look at it this way, we see that 2.8% of 12-17 year olds who used marijuana in 2010 entered treatment for it. When looking at the broader landscape of marijuana use, we see that 1.1% of marijuana users 12 and older in 2010 went to treatment for the substance. Fewer than 10 percent of those who try marijuana ever end up meeting the clinical criteria for dependence on it, whereas 32 percent of tobacco users and 15 percent of alcohol users do.

Considerations & Alternatives to Prohibition

For both adolescents and adults, it's important to understand the difference between use and misuse, which is also conflated by the gateway myth. "Drug use" includes all problematic and non-problematic drug use. "Misuse" can include both addictive use, and non-addictive problematic use (ie., driving while impaired). We need honest, reality-based drug prevention and treatment programs to reduce the problematic use of marijuana (and other drugs) by children and adults alike.

In 1995, after observing that the generation of American youth that had been "subjected to an unparalleled assault of anti-drug messages" for over a decade had actually begun *increasing* its marijuana use,[38] researchers John P. Morgan, M.D., and Lynn Zimmer, Ph.D, suggested American policymakers look beyond their borders for solutions.[39] They cited the experience of Holland, where policies had been crafted since the 1970s to mitigate progression to other drug use. The Dutch government

established a legal retail market where anyone 18 years and older could purchase marijuana in government-controlled cafes that prohibited the sale of other drugs on site. At the time, marijuana use among 12 to 18 year olds in Holland was only 13.6 percent – well below the 38 percent use-rate for American high school seniors. The government's decision has not led to an increase in use of other drugs.[40] By 2005, the rate of marijuana use among Dutch youth between the ages of 15 and 24 years old was 11.4 percent[41] – still well below the 33.6 percent use rate among American high school seniors in the same year.[42]

In the more than twenty years since this recommendation was published, not only has New York failed to prevent problematic use of marijuana and decrease youth use,[43] the state has also arrested more than 800,000 people – the vast majority of them people of color under 30 years old – for simple marijuana possession, saddling many of them with life-altering collateral consequences.[44,45]

During the same period, 8 states and the District of Columbia have recognized the harms of prohibition and have legalized recreational marijuana. Three of the earliest states to do so – Oregon, Washington, and Colorado – now have data available that shows no increase in marijuana use among their respective youth populations.[46,47,48,49,50] Additionally, ending prohibition has created space for these states to implement honest public education programs as well as drug prevention and treatment measures that could not exist previously within the framework of prohibition.

Similarly, research from states with medical marijuana programs have found that youth rates drop or remain stable after a state passes a medical marijuana law. For example, a recent *American Journal of Public Health* article from 2013,[51] using data from 4 states over 9 years, concluded: "Our results suggest that, in the states assessed here, MMLs [medical marijuana laws] have not measurably affected adolescent marijuana use in the first few years after their enactment." A prior 2012 study looking at a 17 year period also reached a similar conclusion: "We are confident that marijuana use by teenagers does not increase when a state legalizes medical marijuana."[52] A study conducted 15 years after the passage of the first medical marijuana law concluded that teens' marijuana use has generally gone down following the passage of medical marijuana laws.[53] Of the 13 states studied, only the two with the most recently enacted laws (Michigan and New Mexico) showed possible increases, and the increases were modest and within the margin of error.

When examined through the lens of more than two decades of research, the gateway myth simply does not stand the test of time. New York State cannot afford to continue to waste resources and ruin hundreds of thousands of lives with policies that are not based in reality.

The *NY State Legislature* should end prohibition and create a system to tax and regulate marijuana. For more information, to get involved, or to share an arrest story, contact Chris Alexander at calexander@drugpolicy.org or 212-613-8076.

[1] John P. Morgan, M.D. and Lynn Zimmer, Ph.D. (1995), "Myth of Marijuana's Gateway Effect." Available at http://druglibrary.org/schaffer/library/mjgate.htm

[2] Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health (HHS Publication No. SMA 15-4927, NSDUH Series H-50). Retrieved from http://www.samhsa.gov/data

[3] Janet E. Joy, Stanley J. Watson, Jr., and John A Benson, Jr., "Marijuana and Medicine: Assessing the Science Base," Division of Neuroscience and Behavioral Research, Institute of Medicine (Washington, DC: National Academy Press, 1999).

[4] RAND Drug Policy Research Center (2002), "Using Marijuana May Not Raise the Risk of Using Harder Drugs." Available at http://www.rand.org/pubs/research_briefs/RB6010.html

[5] Tarter, Ralph E., PhD, Vanyukov, Michael, PhD, Kirisci, Levent, PhD, Reynolds, Maureen, PhD, Clark, Duncan B., MD, PhD, "Predictors of Marijuana Use in Adolescents Before and After Licit Drug Use: Examination of the Gateway Hypothesis," American Journal of Psychiatry, Vol. 63, No. 12, December 2006, p. 2139.

[6] John P. Morgan, M.D. and Lynn Zimmer, Ph.D. (1995), "Myth of Marijuana's Gateway Effect." Available at http://druglibrary.org/schaffer/library/mjgate.htm

[7] John Kleinig, "Ready for Retirement: The Gateway Drug Hypothesis," Substance Use & Misuse, Vol. 50, Issue 8-9, March 16, 2015. Available at http://www.tandfonline.com/doi/full/10.3109/10826084.2015.1007679

[8] Ibid.

[9] Janet E. Joy, Stanley J. Watson, Jr., and John A Benson, Jr., "Marijuana and Medicine: Assessing the Science Base," Division of Neuroscience and Behavioral Research, Institute of Medicine (Washington, DC: National Academy Press, 1999). Available at https://www.nap.edu/

[10] John Kleinig, "Ready for Retirement: The Gateway Drug Hypothesis," Substance Use & Misuse, Vol. 50, Issue 8-9, March 16, 2015. Available at http://www.tandfonline.com/doi/full/10.3109/10826084.2015.1007679

[11] John Kleinig, "Ready for Retirement: The Gateway Drug Hypothesis," Substance Use & Misuse, Vol. 50, Issue 8-9, March 16, 2015. Available at http://www.tandfonline.com/doi/full/10.3109/10826084.2015.1007679

[12] Ibid.

[13] United Nations Office on Drugs and Crime, "World Drug Report 2016." Available at https://www.unodc.org/wdr2016/

[14] Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health (HHS Publication No. SMA 15-4927, NSDUH Series H-50). Retrieved from http://www.samhsa.gov/data

[15] Tarter, Ralph E., PhD, Vanyukov, Michael, PhD, Kirisci, Levent, PhD, Reynolds, Maureen, PhD, Clark, Duncan B., MD, PhD, "Predictors of Marijuana Use in Adolescents Before and After Licit Drug Use: Examination of the Gateway Hypothesis," American Journal of Psychiatry, Vol. 63, No. 12, December 2006, p. 2139.

[16] Lynskey, Michael T., PhD, et al., "Escalation of Drug Use in Early-Onset Cannabis Users vs Co-twin Controls," Journal of the American Medical Association, Vol. 289 No. 4, January 22/29, 2003. Available at http://jama.ama-assn.org/issues/v289n4/rfull/joc21156.html

[17] Tarter, Ralph E., PhD, Vanyukov, Michael, PhD, Kirisci, Levent, PhD, Reynolds, Maureen, PhD, Clark, Duncan B., MD, PhD, "Predictors of Marijuana Use in Adolescents Before and After Licit Drug Use: Examination of the Gateway Hypothesis," American Journal of Psychiatry, Vol. 63, No. 12, December 2006, p. 2139.

[18] RAND Drug Policy Research Center (2002), "Using Marijuana May Not Raise the Risk of Using Harder Drugs." Available at http://www.rand.org/pubs/research_briefs/RB6010.html

[19] John Kleinig, "Ready for Retirement: The Gateway Drug Hypothesis," Substance Use & Misuse, Vol. 50, Issue 8-9, March 16, 2015. Available at http://www.tandfonline.com/doi/full/10.3109/10826084.2015.1007679

[20] United Nations Office on Drugs and Crime, "World Drug Report 2016." Available at https://www.unodc.org/wdr2016/

[21] RAND Drug Policy Research Center (2002), "Using Marijuana May Not Raise the Risk of Using Harder Drugs." Available at http://www.rand.org/pubs/research_briefs/RB6010.html

[22] Lynskey, Michael T., PhD, et al., "Escalation of Drug Use in Early-Onset Cannabis Users vs Co-twin Controls," Journal of the American Medical Association, Vol. 289 No. 4, January 22/29, 2003. Available at http://jama.ama-assn.org/issues/v289n4/rfull/joc21156.html, last accessed Jan. 31, 2003.

[23] Tarter, Ralph E., PhD, Vanyukov, Michael, PhD, Kirisci, Levent, PhD, Reynolds, Maureen, PhD, Clark, Duncan B., MD, PhD, "Predictors of Marijuana Use in Adolescents Before and After Licit Drug Use: Examination of the Gateway Hypothesis," American Journal of Psychiatry, Vol. 63, No. 12, December 2006, p. 2138-2139.

[24] Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health (HHS Publication No. SMA 15-4927, NSDUH Series H-50). Available at http://www.samhsa.gov/data

[25] Lynskey, Michael T., PhD, et al., "Escalation of Drug Use in Early-Onset Cannabis Users vs Co-twin Controls," Journal of the American Medical Association, Vol. 289 No. 4, January 22/29, 2003. Available at http://jama.ama-assn.org/issues/v289n4/rfull/joc21156.html

[26] Tarter, Ralph E., PhD, Vanyukov, Michael, PhD, Kirisci, Levent, PhD, Reynolds, Maureen, PhD, Clark, Duncan B., MD, PhD, "Predictors of Marijuana Use in Adolescents Before and After Licit Drug Use: Examination of the Gateway Hypothesis," American Journal of Psychiatry, Vol. 63, No. 12, December 2006, p. 2138-2139.

[27] Drug Policy Alliance (2016), "Marijuana Facts." Retrieved from http://www.drugpolicy.org/sites/default/files/DPA_Marijuana_Facts_Booklet.pdf

[28] Lynskey, Michael T., PhD, et al., "Escalation of Drug Use in Early-Onset Cannabis Users vs Co-twin Controls," Journal of the American Medical Association, Vol. 289 No. 4, January 22/29, 2003. Available at http://jama.ama-assn.org/issues/v289n4/rfull/joc21156.html

[29] Tarter, Ralph E., PhD, Vanyukov, Michael, PhD, Kirisci, Levent, PhD, Reynolds, Maureen, PhD, Clark, Duncan B., MD, PhD, "Predictors of Marijuana Use in Adolescents Before and After Licit Drug Use: Examination of the Gateway Hypothesis," American Journal of Psychiatry, Vol. 63, No. 12, December 2006, p. 2138-2139.

[30] Janet E. Joy, Stanley J. Watson, Jr., and John A Benson, Jr., "Marijuana and Medicine: Assessing the Science Base," Division of Neuroscience and Behavioral Research, Institute of Medicine (Washington, DC: National Academy Press, 1999). Available at https://www.nap.edu/

[31] Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health (HHS Publication No. SMA 15-4927, NSDUH Series H-50). Retrieved from http://www.samhsa.gov/data

[32] In 2010, marijuana was used by 76.8 percent of current illicit

drug users and was the *only* drug used by 60.1 percent of them. See: Substance Abuse and Mental Health Services Administration. (2011). *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings*, NSDUH Series H-41, HHS Publication No. (SMA) 11-4658. Rockville, MD: Substance Abuse and Mental Health Services Administration.

[33] Janet E. Joy, Stanley J. Watson, Jr., and John A Benson, Jr., "Marijuana and Medicine: Assessing the Science Base," Division of Neuroscience and Behavioral Research, Institute of Medicine (Washington, DC: National Academy Press, 1999). Available at https://www.nap.edu/

[34] Lynskey, Michael T., PhD, et al., "Escalation of Drug Use in Early-Onset Cannabis Users vs Co-twin Controls," Journal of the American Medical Association, Vol. 289 No. 4, January 22/29, 2003. Available at http://jama.ama-assn.org/issues/v289n4/rfull/joc21156.html.

[35] Anthony, J.C. and Wagner, F.A., (2002). From first drug use to drug dependence: Developmental periods of risk for dependence upon marijuana cocaine and alcohol. *Neuropsychopharmacology, 26,* 479-488. Retrieved from: http://www.nature.com/npp/journal/v26/n4/full/1395810a.html.

[36] Anthony, J.C., Kesller, R.C. and Warner, L.A. (1994). Comparative epidemiology of dependence on tobacco, alcohol, controlled substances and inhalants: Basic findings from the national comorbidity survey. *Experimental and Clinical Pharmacology, 23*(3), 244-268. Retrieved from: http://psycnet.apa.org/index.cfm?fa=buy.optionToBuy&id=1994-45545-001#c7.

[37] Szalavitz, M. (2010). Marijuana as a gateway drug: The myth that will not die. *Time: Health & Family.* Retrieved from: http://healthland.time.com/2010/10/29/marijuna-as-a-gateway-drug-the-myth-that-will-not-die/.

[38] John P. Morgan, M.D. and Lynn Zimmer, Ph.D. (1995), "Myth of Marijuana's Gateway Effect." Available at http://druglibrary.org/schaffer/library/mjgate.htm

[39] Ibid.

[40] Ibid.

[41] MacCoun, R. J. (2011), "What can we learn from the Dutch cannabis coffeeshop system?" Addiction, 106: 1899–1910. doi:10.1111/j.1360-0443.2011.03572.x. Available at http://onlinelibrary.wiley.com/doi/10.1111/j.1360-0443.2011.03572.x/abstract

[42] Johnston, L. D., O'Malley, P. M., Miech, R. A., Bachman, J. G., & Schulenberg, J. E. (2016). Monitoring the Future national survey results on drug use, 1975-2015: Overview, key findings on adolescent drug use. Ann Arbor: Institute for Social Research, The University of Michigan. Available at: http://www.monitoringthefuture.org/pubs/monographs/mtf-overview2015.pdf

[43] Ibid.

[44] New York State Division of Criminal Justice Services (2016, October). *New York State Arrests for Marijuana Charges by year*, Computerized Criminal History System.

[45] Drug Policy Alliance, "Marijuana Arrests in NY: Fiscally Irresponsible, Racially Biased and Unconstitutional," Available at: http://www.drugpolicy.org/sites/default/files/NY_State_MJ_fact_sheet_GENERAL_2013_0.pdf

[46] Oregon Health Authority. (2016). *2016 Oregon Student Wellness Survey*. Retrieved from: https://oregon.pridesurveys.com/dl.php?pdf=Oregon_SWS_Statewide_Report_2016.pdf&type=region

[47] Oregon Health Authority. (2015). *2015 Oregon Healthy Teen Survey*. Retrieved from: https://public.health.oregon.gov/BirthDeathCertificates/Surveys/OregonHealthyTeens/Documents/2015/2015_OHT_State_Report.pdf

[48] Washington State Department of Health. (2012). *Healthy Youth Survey, 2012 Analytic Report*. Retrieved from: http://www.doh.wa.gov/Portals/1/Documents/Pubs/160-193-HYS-AnalyticReport2012.pdf

[49] Monitoring the Future. (2015). *Key Findings on Adolescent Drug Use*. Retrieved from: http://www.monitoringthefuture.org/pubs/monographs/mtf-overview2015.pdf

[50] Colorado Department of Public Health and Environment. (2015). *Healthy Kids Colorado Survey.* Retrieved from: https://www.colorado.gov/pacific/cdphe/hkcs

[51] Livingston, M.D., Lynne-Landsman, S.D. and Wagenaar, A.C. (2013). Effects of state medical marijuana laws on adolescent marijuana use. *American Journal of Public Health, 10* (8), 1500-1506. Retrieved from: http://www.ncbi.nlm.nih.gov/pubmed/23763418.

[52] Anderson, D.M., Hansen, B. and Rees, D. I. (2012). Medical marijuana laws and teen marijuana use. *Institute for the Study of Labor.* Retrieved from: http://www.iza.org/en/webcontent/publications/papers/viewAbstract?dp_id=6592.

[53] Earleywine, M. and O'Keefe, K. (2011). The impact of state medical marijuana laws. *Marijuana Policy Project.* Retrieved from: http://www.mpp.org/reports/teen-use.html.