

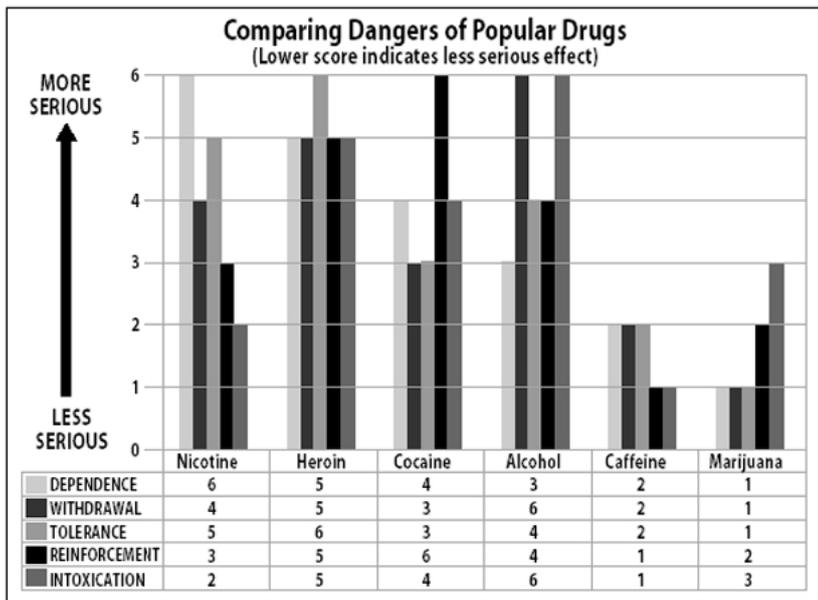
Addictive Properties of Popular Drugs

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(Note: For those interested in more information about drug users and drug addiction, DWF editor Doug McVay recently interviewed the noted journalist Maia Szalavitz about her new book, *Unbroken Brain: A Revolutionary New Way of Understanding Addiction*. That interview, with a complete transcript, is [on the KBOO radio website](#) .

1.

(Addictive Qualities of Popular Drugs)



Withdrawal: Presence and severity of characteristic withdrawal symptoms.

Reinforcement: A measure of the substance's ability, in human and animal tests, to get users to take it again and again, and in preference to other substances.

Tolerance: How much of the substance is needed to satisfy increasing cravings for it, and the level of stable need that is eventually reached.

Dependence: How difficult it is for the user to quit, the relapse rate, the percentage of people who eventually become dependent, the rating users give their own need for the substance and the degree to which the substance will be used in the face of evidence that it causes harm.

Intoxication: Though not usually counted as a measure of addiction in itself, the level of intoxication is associated with addiction and increases the personal and social damage a substance may do.

Source:

Jack E. Henningfield, PhD for NIDA, Reported by Philip J. Hilts, New York Times, Aug. 2, 1994 "Is Nicotine Addictive? It Depends on Whose Criteria You Use."

<http://www.nytimes.com/1994/08/02/science/is-nicotine-addictive-it-depen...>

http://www.erowid.org/psychoactives/addiction/addiction_medial.shtml

(Criteria for Defining Substance Dependence) "The 1988 Surgeon General's report lists the following general 'criteria for drug dependence,' including nicotine dependence (USDHHS 1988, p. 7):

"Primary Criteria

- "• Highly controlled or compulsive use
- "• Psychoactive effects
- "• Drug-reinforced behavior

"Additional Criteria

- "• Addictive behavior, often involves:

"– stereotypic patterns of use

"– use despite harmful effects

"– relapse following abstinence

"– recurrent drug cravings

- "• Dependence-producing drugs often produce:

"– tolerance

"– physical dependence

"– pleasant (euphoriant) effects

"These criteria are consistent with those for a diagnosis of dependence provided in the Diagnostic and Statistical Manual of Mental Disorders, 4th ed. (DSM-IV) (American Psychiatric Association [APA] 2000) and the International Classification of Diseases, Tenth Revision (ICD-10) (Table 4.1) (World Health Organization [WHO] 1992). The diagnosis of dependence using these diagnostic systems depends on the person experiencing a specific number of these symptoms. The relevance of some of these symptoms to nicotine addiction may be questionable because the DSM criteria are used across different drugs of abuse. For example, one symptom of addiction is that a great deal of time is spent in activities necessary to obtain the substance or recover from its effect. This criterion may not be as relevant to the diagnosis of nicotine addiction compared with other abused substances."

Source:

US Department of Health and Human Services. "How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General." Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2010, pp. 105-106.

<http://www.ncbi.nlm.nih.gov/books/NBK53017/>

3.

(Addictive Potential) "Of the people who sample a particular substance, what portion will become physiologically or psychologically dependent on the drug for some period of time? Heroin and methamphetamine are the most addictive by this measure. Cocaine, pentobarbital (a fast-acting sedative), nicotine and alcohol are next, followed by marijuana and possibly caffeine. Some hallucinogens—notably LSD, mescaline and psilocybin—have little or no potential for creating dependence."

Source:

Gable, Robert S., "The Toxicity of Recreational Drugs," American Scientist (Research Triangle Park, NC: Sigma Xi, The Scientific Research Society, May-June 2006) Vol. 94, No. 3, p. 208.

http://www.americanscientist.org/libraries/documents/200645104835_307.pd...

4.

(Probability of Transition From First Use to Dependence For Various Substances) "In a large, nationally representative sample of US adults, the cumulative probability of transition to dependence was highest for nicotine users, followed by cocaine users, alcohol users and, lastly, cannabis users. The transition to cannabis or cocaine dependence occurred faster than the transition to nicotine or alcohol dependence. Furthermore, there were important variations in the probability of becoming dependent across the different racial-ethnic groups. Most predictors of transition were common across substances.

"Consistent with previous estimates from the National Comorbidity Survey (Wagner and Anthony, 2002a), the cumulative probability of transition from use to dependence a decade after use onset was 14.8% among cocaine users, 11.0% among alcohol users, and 5.9% among cannabis users. This probability was 15.6% among nicotine users. Furthermore, lifetime cumulative probability estimates indicated that 67.5% of nicotine users, 22.7% of alcohol users, 20.9% of cocaine users, and 8.9% of cannabis users would become dependent at some time in their life."

Source:

Catalina Lopez-Quintero, et al., "Probability and Predictors of Transition From First Use to Dependence on Nicotine, Alcohol, Cannabis, and Cocaine: Results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC)," Drug and Alcohol Dependence, 2011 May 1; 115(1-2): 120-130. doi:10.1016/j.drugalcdep.2010.11.004

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3069146/pdf/nihms-258354.pdf>

5.

(Estimated Prevalence of Substance Use Dependence or Addiction in the US by Race/Ethnicity, 2014, According to

NSDUH) "Approximately 21.5 million people aged 12 or older in 2014 had SUDs [Substance Use Disorders] in the past year, including 17.0 million people with an alcohol use disorder and 7.1 million people with an illicit drug use disorder (Figure 30). An estimated 2.6 million people aged 12 or older had both an alcohol use disorder and an illicit drug use disorder in the past year.

"Thus, among people aged 12 or older in 2014 who had SUDs in the past year, nearly 4 out of 5 had an alcohol use disorder, and about 1 out of 3 had an illicit drug use disorder. About 1 in 8 people aged 12 or older who had SUDs in the past year had both an alcohol use disorder and an illicit drug use disorder. However, most people in 2014 who had an alcohol use disorder did not have an illicit drug use disorder, and most people with an illicit drug use disorder did not have an alcohol use disorder.

"In addition, 4.2 million people had past year disorders related to their use of marijuana, and 1.9 million people had disorders related to their nonmedical use of prescription pain relievers in the past year (Figure 31). Smaller numbers of people in 2014 had disorders in the past year related to their use of cocaine or heroin.

"The 21.5 million people who had SUDs in 2014 (Figure 30) represent 8.1 percent of the people aged 12 or older (Figure 31). This 2014 percentage of those who had SUDs corresponds to about 1 in 12 people aged 12 or older. The percentage of people aged 12 or older who had past year SUDs in 2014 was similar to the percentages in 2011 to 2013, but it was lower than the percentages in 2002 to 2010 (Figure 32)."

Source:

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), p. 22.

<http://www.samhsa.gov/data/sites/default/files/NSDUH-FRR1-2014/NSDUH-FRR...>

<http://www.samhsa.gov/data/sites/default/files/NSDUH-FRR1-2014/NSDUH-FRR...>

6.

(Alternative Analysis of the Relative Risk from MDMA Use) "Nutt et al. (2007) attempted to compare the relative dangers of the main types of psychosocial drug, using a series of subjective rating scales. Heroin and cocaine were graded as the two most harmful drugs, whereas Ecstasy/MDMA emerged as one of the least harmful (18th out of 20). Unfortunately, it was unclear how this low harm rating score for Ecstasy/MDMA was given, as they cited no empirical research studies or reviews. Instead, Nutt et al. (2007) suggested that: 'for drugs which have only recently become popular e.g. Ecstasy or MDMA, the longer term health and social consequences can only be estimated from animal toxicology at present'. Nutt et al. (2007) noted that the most pleasurable drugs tended to be the most problematic, and on the 'intensity of pleasure' scale, heroin and cocaine were given maximum scores of 3.0. In contrast, Ecstasy/MDMA was given an 'intensity of pleasure' score of 1.5, which was lower than cigarette smoking at 2.2. It is unclear why Ecstasy was rated as less pleasurable than smoking a cigarette, although the low pleasure score contributed to its low harm score.

"Another question concerned drug injections, with Nutt et al. (2007) noting that 'The potential for intravenous use is taken into account in the Misuse of Drugs classification and was treated as a separate parameter in our exercise'. Cocaine and heroin were given maximum scores of 3.0, whereas Ecstasy/MDMA was given a score of 0. Again, this did not accord with the

empirical literature. In their survey of 329 recreational Ecstasy/MDMA users, Topp et al. (1999) reported that 54 (16%) had injected Ecstasy. MDMA injecting may be atypical and only occurs amongst the more experienced Ecstasy users, although this pattern would also describe cocaine. Most cocaine users never inject, and it is only found with experienced users. Hence, the injection score for MDMA should be similar to that for cocaine. Many of the other Ecstasy harm values in Nutt et al. (2007) were surprisingly low. With revised values based on the empirical literature, MDMA rises to the fifth most harmful drug (Parrott, 2009b)."

Source:

Parrott, Andrew C., "Human Psychobiology of MDMA or 'Ecstasy': An Overview of 25 Years of Empirical Research," *Human Psychopharmacology: Clinical and Experimental*, 2013; 28:289-307. DOI: 10.1002/hup.2318

<http://onlinelibrary.wiley.com/doi/10.1002/hup.2318/pdf>

7.

(Ranking of Substances by Potential for Harm) "Method: Members of the Independent Scientific Committee on Drugs, including two invited specialists, met in a 1-day interactive workshop to score 20 drugs on 16 criteria: nine related to the harms that a drug produces in the individual and seven to the harms to others. Drugs were scored out of 100 points, and the criteria were weighted to indicate their relative importance."

"Findings: MCDA [multicriteria decision analysis] modelling showed that heroin, crack cocaine, and methamphetamine were the most harmful drugs to individuals (part scores 34, 37, and 32, respectively), whereas alcohol, heroin, and crack cocaine were the most harmful to others (46, 21, and 17, respectively). Overall, alcohol was the most harmful drug (overall harm score 72), with heroin (55) and crack cocaine (54) in second and third places."

Source:

Nutt, David J Nutt; King, Leslie A; Phillips, Lawrence D, "Drug harms in the UK: a multicriteria decision analysis," *The Lancet* (London, United Kingdom: November 1, 2010) Vol. 376, p. 1558.

<http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673610614626...>

(Note: To access this PDF users need to log in and a fee/subscription may be required.)

8.

Cannabis and Treatment

(Estimated Prevalence of Cannabis Dependence) "Some 4.3 percent of Americans have been dependent on marijuana, as defined in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000), at some time in their lives. Marijuana produces dependence less readily than most other illicit drugs. Some 9 percent of those who try marijuana develop dependence compared to, for example, 15 percent of people who try cocaine and 24 percent of those who try heroin. However, because so many people use marijuana, cannabis dependence is twice as prevalent as dependence on any other illicit psychoactive substance (cocaine, 1.8 percent; heroin, 0.7 percent; Anthony and Helzer, 1991; Anthony, Warner, and Kessler, 1994)."

Source:

Budney A, Roffman R, Stephens R, Walker D. Marijuana dependence and its treatment. *Addiction Science and Clinical Practice*. 2007;4(1):4–16.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2797098/pdf/ascp-04-1-4.pdf>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2797098/>

9.

(Admissions to Treatment for Marijuana in the US) According to the federal Treatment Episode Data Set, in 2013 there were 281,991 admissions to treatment with marijuana reported as the primary substance of abuse out of the total 1,683,451 admissions for all substances that year. This is the lowest number of marijuana admissions and total treatment admissions in at least a decade: marijuana admissions peaked in 2009 at 372,245, and total admissions peaked in 2008 at 2,062,705.

According to the TEDS report:

"□ Marijuana was reported as the primary substance of abuse by 17 percent of TEDS admissions aged 12 and older in 2013 [Table 1.1b].

"□ The average age at admission for primary marijuana admissions was 25 years [Table 2.1a], although the peak age at admission for both genders in all race/ethnicities was about 16 to 17 years [Figure 12]. Thirty-six percent of marijuana admissions were under age 20 (vs. 9 percent of all admissions combined), and primary marijuana abuse accounted for 77 percent of admissions aged 12 to 14 and 76 percent of admissions aged 15 to 17 years [Table 2.1b].

"□ Non-Hispanic Whites accounted for 43 percent of primary marijuana admissions (30 percent were males and 13 percent were females), and non-Hispanic Black males accounted for 24 percent [Table 2.3a].

"□ Twenty-four percent of primary marijuana admissions had first used marijuana by age 12 and another 31 percent had first used it by age 14 [Table 2.5].

"□ Primary marijuana admissions were less likely than all admissions combined to be self- or individually referred to treatment (18 vs. 37 percent). Primary marijuana admissions were most likely to be referred by a criminal justice source (52 percent) [Table 2.6].

"□ More than 4 in 5 marijuana admissions (86 percent) received ambulatory treatment compared with about 3 in 5 of all admissions combined (61 percent) [Table 2.7].

"□ Fifty-four percent of primary marijuana admissions reported abuse of additional substances. Alcohol was reported by 38 percent [Table 3.8]."

Source:

Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. Treatment Episode Data Set (TEDS): 2003-2013. National Admissions to Substance Abuse Treatment Services. BHSIS Series S-75, HHS Publication No. (SMA) 15-4934. Rockville, MD: Substance Abuse and Mental Health Services Administration, December 2015, pp. 21-22, and Table 1.1a, p. 45.

http://www.samhsa.gov/data/sites/default/files/2013_Treatment_Episode_Da...

http://www.samhsa.gov/data/sites/default/files/2003_2013_TEDS_National/2...

10.

(Various Drugs Ranked by Associated Risk of Harms) "Participants were asked to score each substance for each of these nine parameters, using a four-point scale, with 0 being no risk, 1 some, 2 moderate, and 3 extreme risk. For some analyses, the scores for the three parameters for each category were averaged to give a mean score for that category. For the sake of discussion, an overall harm rating was obtained by taking the mean of all nine scores. The scoring procedure was piloted by members of the panel of the Independent Inquiry into the Misuse of Drugs Act. ¹³

"Once refined through this piloting, an assessment questionnaire based on table 1, with additional guidance notes, was used. Two independent groups of experts were asked to do the ratings. The first was the national group of consultant psychiatrists who were on the Royal College of Psychiatrists' register as specialists in addiction. Replies were received and analysed from 29 of the 77 registered doctors who were asked to assess 14 compounds—heroin, cocaine, alcohol, barbiturates, amphetamine, methadone, benzodiazepines, solvents, buprenorphine, tobacco, ecstasy, cannabis, LSD, and steroids. Tobacco and alcohol were included because their extensive use has provided reliable data on their risks and harms, providing familiar benchmarks against which the absolute harms of other drugs can be judged. However, direct comparison of the scores for tobacco and alcohol with those of the other drugs is not possible since the fact that they are legal could affect their harms in various ways, especially through easier availability.

"Having established that this nine-parameter matrix worked well, we convened a second group of experts with a wider spread of expertise. These experts had experience in one of the many areas of addiction, ranging from chemistry, pharmacology, and forensic science, through psychiatry and other medical specialties, including epidemiology, as well as the legal and police services. The second set of assessments was done in a series of meetings run along delphic principles, a new approach that is being used widely to optimise knowledge in areas where issues and effects are very broad and not amenable to precise

measurements or experimental testing, ¹⁴ and which is becoming the standard method by which to develop consensus in medical matters."

Drug Rankings by Harm

Substance
Physical Harm
Dependence
Social Harm

UK Class
US Schedule

Heroin

2.78
3.00
2.54

A
I

Cocaine

2.33
2.39
2.17

A
II

Barbiturates

2.23
2.01
2.00

B
III

Street Methadone

1.86

2.08
1.87

A
II

Alcohol

1.40
1.93
2.21

n/s
n/s

Ketamine

2.00
1.54
1.69

C
III

Benzodiazepines

1.63
1.83
1.65

C
IV

Amphetamine

1.81
1.67
1.50

A
II

Tobacco

1.24
2.21
1.42

n/s
n/s

Buprenorphine

1.60
1.64
1.49

C
III

Cannabis

0.99
1.51
1.50

B
I

Solvents

1.28
1.01
1.52

n/s
n/s

4-MTA

1.44
1.30
1.06

A
n/s

LSD

1.13
1.23
1.32

A
I

Methylphenidate

1.32
1.25
0.97

B
II

Anabolic steroids

1.45
0.88
1.13

C
III

GHB

0.86
1.19
1.30

C
I

Ecstasy

1.05
1.13
1.09

A
I

Alkyl nitrites

0.93
0.87
0.97

n/s
n/s

Khat

0.50
1.04
0.85

C
I

Notes:

- United Kingdom drug classes were initially assigned based on Table 2 in *The Lancet* report. However, since then, two drugs have been reclassified:
- Methamphetamine was moved from class B to class A in 2006.
- Although Cannabis was downgraded from class B to class C in 2004, it was subsequently upgraded to class B in 2009.
- "n/s" = no scheduling

A one-page flyer depicting the data in the "Drug Rankings by Harm" table can be found in PDF format at <http://drugwarfacts.org/cms/files/Drug-Rankings-by-Harm.pdf> .

Source:

Nutt, David Nutt; King, Leslie A; Saulsbury, William; and Blakemore, Colin "Development of a rational scale to assess the harm of drugs of potential misuse," The Lancet (London, United Kingdom: March 24, 2007), Vol 369, p. 1051.

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(07\)60464-4/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(07)60464-4/abstract)

<http://www.ncbi.nlm.nih.gov/pubmed/17382831>

U.S. Code. Title 21, Chapter 13 -- Drug Abuse Prevention and Control -- Section 844, Penalties for Simple Possession, pp. 385-387.

[http://frwebgate.access.gpo.gov/cgi-bin/usc.cgi?ACTION=RETRIEVE&FILE=\\$\\$xa\\$\\$busc21.wais&start=2717826&SIZE=24600&TYPE=PDF](http://frwebgate.access.gpo.gov/cgi-bin/usc.cgi?ACTION=RETRIEVE&FILE=$$xa$$busc21.wais&start=2717826&SIZE=24600&TYPE=PDF)

<http://mapinc.org/url/1NCZaa7Q>

http://www.deadiversion.usdoj.gov/schedules/orangebook/e_cs_sched.pdf

List of controlled drugs in the United Kingdom,

http://en.wikipedia.org/wiki/List_of_controlled_drugs_in_the_United_King...

For facts and information about specific drugs, [here's a list of Controlled Substance sections](#) .

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