Double defaults: Behavioral regulation of cocaine

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Abstract
Public policy towards some potentially addictive drugs such as cocaine and opium is highly coercive and punitive, even though the direct harms associated with these drugs generally fall upon the users themselves. Behavioral research has identified non-coercive methods to guide decision making, including the judicious selection of default settings. This paper suggests replacing drug prohibition with a regulated system that involves two levels of defaults for adult drug consumers. The defaults are designed to guide people towards abstinence, or, for the non-abstinent, into moderate drug consumption.

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Introduction

Cocaine and opium are among those highly reinforcing drugs that are prohibited for recreational use. Much of the rationale for drug prohibition draws from the potential for irrational or diseased decision making on the part of adult drug consumers. Indeed, in discussing the dangers of drugs, it is harms to self, as opposed to harms to others, that usually receive the lion's share of attention.[1] Such harms include various ill health effects, including the potential (with some drugs) for a fatal overdose, as well as the possibility of developing an addiction, thereby crowding out other life activities and undermining educational, occupational, and social progress.

Harms suffered by adult drug users would not present much of a case for strict regulation if those harms were fully understood and accounted for in drug consumption decisions. Many activities, including downhill skiing and football playing, are risky, but those risks do not lead to broad prohibitions. The effects of drugs on the brain, however, call into question the rationality of drug-related decisions. Addiction and impaired control have a strong claim to represent patterns of choice that are less than rational or perhaps even diseased.[2] According to the National Institute on Drug Abuse in the United States, "Addiction is defined as a chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences."[3]

Approaches to addiction that do not equate addiction with disease nonetheless frequently implicate rationality shortfalls or other conditions that could justify public efforts to control drugs. The standard hedonic time-profile connected to the use of addictive drugs, whereby they bring current pleasure at the price of future pain, constitutes a problem for "present-biased" consumers, whose discounting of future consequences is excessive from their own long-term perspective.[4] Addicts can become "cue-conditioned," so that when exposed to environmental signals that they associate with consumption of their drug of choice, they suffer profound cravings for the drug; in the model of Bernheim and Rangel (2004), such addicts enter an arational state in the presence of the cue: their subsequent use of the drug occurs without any conscious choice.[5] Cues or withdrawal pains can put addicts in a "hot" state, one where their desire to use the drug goes beyond what they expect when making assessments in a "cold" state.[6] Addicts might understand that their drug consumption is leading to profoundly negative consequences – and continue to use drugs despite this knowledge.[7]

Perceived social norms within peer groups influence drug-related decision making. Widespread perceptions of the extent of drug use, however, can easily be erroneous, and in particular, can exaggerate the extent to which drug use takes place. If more popular people tend to engage in more drug use, for

[1] The 'double default' approach to drug regulation originated in Leitzel (2013, 2015). On drug harms, see, for example, the pages devoted to cocaine at the National Institute on Drug Abuse website, available at drugabuse.gov/publications/research-reports/cocaine/letter-director. The phrase "harm to others" is at the crux of John Stuart Mill's discussion of appropriate social regulation in *On Liberty* (1859), and the vast literature that has followed in its wake; see, for example, Feinberg (1984).

[2] Though see Becker and Murphy (1988), and the discussion in Leitzel (2008, pp. 35-71).

[3] From page 5 (footnote omitted) of *Drugs, Brains, and Behavior: The Science of Addiction*, National Institute on Drug Abuse (NIH Pub No. 14-5605), revised, July 2014; available at d14rmgtrwzf5a.cloudfront.net/sites/default/files/soa_2014.pdf.

[4] On present bias, see, for example, O'Donoghue and Rabin (2015).

[5] On cue-conditioning, see also Laibson (2001).

[6] Sayette, Loewenstein, Griffin, and Black (2008). In the hot state, the desire to use the drug ("wanting") can even become divorced from the actual pleasure received from drug consumption ("liking"); see Robinson and Berridge (2001).

[7] Loewenstein (1996).

instance, it will appear within friend groups – more popular people are friends to more people than is the average person, and are in more friend groups – that drugs are more popular than they are. This perception can then lead those less inclined to use drugs to increase their own drug consumption.[8] Beliefs about the harms of drugs (in general, or with respect to one's personal susceptibility), like beliefs about drug prevalence, also can be erroneous, and in some circumstances, overstate drug safety.[9] The hedonic time profile of drugs can make a drug that is new to a friend group appear to be a more attractive product than it is: the front-loaded pleasures from use of the drug are visible, but the longer-term costs, having yet to be paid, remain hidden or, at least, less salient.

Biased beliefs, self-control problems, and full-on addictions are issues that are common to cocaine and alcohol and other recreational drugs, though the specific dimensions of these problems (including the relevant neurochemical channels and social safeguards) differ considerably among drugs and, for a given drug, among potencies, ingestion methods, and policy settings.[10] Granting the need for some regulation of drugs still leaves the question of why a prohibition (of possession, sale, purchase, transport, and so on) backed by criminal penalties should be the chosen policy regime for cocaine or opium, for instance. Note that the myriad regulations surrounding alcohol are quite far from a prohibition, despite the fact that alcohol tends to be more problematic than the currently illegal recreational drugs.[11] Drug prohibition might achieve its goal of raising the effective price of a drug and thereby decreasing the quantity consumed – but it does so accompanied by a host of unintended consequences, including large-scale arrests and prison sentences; violent back markets; drug adulteration and uncertain potency (leading to poisonings and overdoses); and the undermining of the integrity of policing.[12] It was the collection of these sorts of unintended consequences that helped motivate repeal of the Prohibition of alcohol that existed throughout the United States throughout the 1920s.[13]

Can we achieve the intended effect of drug prohibition – lower drug consumption – without bearing the costs accompanying the extensive unintended consequences of prohibition? Behavioral researchers have identified a panoply of techniques for guiding human decision making, without invoking rigid controls and harsh punishments.[14] One behavioral insight underlying these techniques is the surprising hardiness of default rules, even in high-stakes situations and when it is easy to override the default. Thus opt-out programs result in many more employees entering retirement savings plans, and in many more people on the deceased organ donor registry, than with the opt-in alternatives.[15]

Defaults similarly can be used to nudge people away from drugs, and nudge drug consumers away from compulsive use, without criminalizing drugs and drug-related activities. That is, the goal of deterring ill-considered or excessive drug use can be accomplished without the highly punitive policies – and their associated crushing social costs – that have characterized the global war on drugs.

The double default approach

Legal markets for many psychoactive drugs operate with strict regulations on the sellers of those drugs. Manufacturers and sellers of alcohol and tobacco, for instance, generally have to acquire a license, and they typically are subject to marketing and pricing controls, hours limitations, and a host of other rules. A legal regime established for recreational use of cocaine similarly would license and otherwise regulate the supply side, from manufacture through retail sale, perhaps along the manner in which prescription drugs typically are supplied.[16]

But it is the demand side, in the regulations that apply to drug consumers, to which the proposed double default system would be applied. The first level of default consists of the need for would-be adult consumers to acquire a buyer's license. That is, adults (of age 21, say), cannot just appear at a licensed seller and purchase cocaine for recreational use; rather, they need to procure a license. The second default applies to the extent and terms of drug access to which a license holder is entitled. Unlike the case with alcohol, the second default does not permit eligible buyers to purchase all of the cocaine that they can afford.

The first default: You are not eligible to purchase cocaine

The regulatory regime would adopt as a default the position that a potential consumer cannot legally purchase cocaine.

[8] Jackson (2019); on pages 778-789, Jackson describes some of the evidence on student overestimation of the extent of peer consumption of alcohol, tobacco, and other drugs.

[9] On optimism in general, see Sharot (2012); for evidence of excessive optimism regarding smoking and lung cancer, see Krosnick, Malhotra, Mo, et al. (2017).

[10] The concept of cocaine addiction is somewhat controversial due to the absence of the sorts of physical withdrawal and tolerance patterns associated with other drugs such as opiates (Gootenberg, 2016, p. 92); nevertheless, there is widespread recognition of cocaine's highly reinforcing qualities for some users.

[11] van Amsterdam, Nutt, Phillips, and van den Brink (2015).

[12] For a discussion of the effects, costs, and benefits of drug prohibition, see Chapter 4, pages 93-139, of Leitzel (2008).

[13] National alcohol Prohibition in the United States was in effect between 1920 and 1933. The ban on alcohol manufacture, sales, and transport did not extend to purchase or most types of possession, making Prohibition much softer than current drug prohibition. Indeed, Prohibition was more akin to what is referred to as a "decriminalization" policy with respect to current drug control, in that purchase and possession were not banned.

[14] See, for example, Thaler and Sunstein (2008).

[15] Thaler and Sunstein (2008, pp. 108-109; 176-177). For the long-lasting effects of a nudge in a high-stakes (pension) situation, see Cronqvist, Thaler, and Yu (2019).

[16] Cocaine itself is legal for certain medical uses in much of the world, including the United States and the United Kingdom, so a highly regulated supply mechanism already exists. State-level regulations in those US states which have relegalized cannabis for medical or recreational use – cannabis remains prohibited at the federal level in the US – impose many controls along the supply chain, from growers to dispensaries.

The default can be overridden, however: any person who meets the legislated minimum age of purchase can apply for a license to purchase cocaine from the regulated sellers. The license will last for some period of time, perhaps three years, and there will be a fee attached. An applicant for a cocaine license must take a brief exam indicating an understanding of the risks of cocaine use (including different administrations of cocaine and cocaine use as part of polydrug consumption), the laws concerning time, place, and manner restrictions and selling or otherwise transferring cocaine, indications of medical emergencies and how to respond to them, as well as signs of compulsive use; passing the exam, which is akin to the written portion of a driver's license test, is required for an applicant to be approved. The license application might also necessitate a meeting with a drug counselor who can explore the applicant's goals for acquiring the license and suggest strategies to minimize harms. People who previously have committed crimes under the influence of cocaine would not be eligible for a license (for some period of time, at least), and loss of a buyer's license might also be a court-mandated consequence of other types of anti-social behavior.

The second default: You can only purchase cocaine in modest doses

The successful applicant now possesses a license to purchase one or more forms of cocaine from the licensed shops. But what types of cocaine: powder or crack or other coke preparations? How much cocaine can be purchased? How expensive is it? The initial answers to these and related questions are provided by the second default (or set of defaults). These default terms are designed in such a way as to nudge license holders towards less risky forms of drug consumption. But as with the first "I cannot legally purchase" default, consumers are able to override the second set of terms for more liberal or potent drug access at some additional cost. License holders who choose stricter access controls than those provided by the second default, alternatively, would be rewarded (via lowered fees or prices) for doing so.

The second default might restrict consumption to relatively dilute forms of cocaine, as in some teas or other beverages. In the late 19th century, when cocaine was legal for recreational use, drinks including modest doses of cocaine were popular. Such beverages included the original formula for Coca Cola, and an aggressively marketed, celebrity endorsed wine/cocaine mix called Vin Mariani.[17] In the Andes today, millions of people consume the coca leaf – and hence, in limited dosages, cocaine – often via chewing.[18] It is hard to gauge how popular relatively dilute products would be in a modern legal cocaine market, and popularity plays a role in choosing a desirable default.

Let's assume that the default preparation is cocaine powder. A typical dose of street powder cocaine, according to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), is 100 to 200 milligrams, though purity varies widely, and often is less than 50%.[19] In a legal system, the purity of powder cocaine would presumably be standardized and high relative to most current street cocaine, suggesting that something like 50 milligrams might constitute a standard dose. Perhaps the default maximum purchase limit would be 7 standard doses per week. Customers could opt for a higher quota, but the license fee would increase along with the dose limit. An absolute maximum (as opposed to the default maximum) also would be established, as one measure to combat potential diversion to secondary markets.

The price per dose would be set (via price floors or explicit taxes) to be well above the costs of production, though probably less than current street prices. (Purchases conducted in a legal market, of cocaine with a verifiably high quality, would be attractive to buyers even if the nominal price matched current street prices. Nonetheless, somewhat lower prices in the licensed market would help to undermine the established illegal market.[20]) Pricing could be escalated, so that the first few doses each week cost less than later doses.

A major difficulty with highly reinforcing drugs such as cocaine is that occasional or impulsive use can build momentum, developing into compulsive use. One control that helps to fight that process is the default purchase maximum. A second potential control is a mandatory waiting period, a few days, perhaps, between the ordering of the drug and taking possession. This regulation is a version of another behavioral policy staple, the cooling-off period: it limits the extent of commitment that attaches to decisions taken in a "hot" state, as when a consumer has a few days to overturn a purchase made from a door-to-door salesperson.[21] The waiting period gives consumers breathing space to rescind a hasty order. A waiting period meets the usual criteria for a nudge, posing little hindrance to considered decisions to use cocaine, while providing meaningful protections against impulsive use.

A mandatory waiting period might be applied not only to purchases of cocaine, but also to the option of overriding the second set of defaults in a more liberal direction. That is, someone who just acquired a purchaser's license might

[17] Naish and Scott (2013, pp. 9-11 and 27-29). Enforcement pressure under prohibition tends to drive drug production and consumption into more potent products. US alcohol Prohibition saw movement away from beer and into spirits – a substitution that reversed itself following repeal; see Leitzel (2008, p. 96).

[18] Gootenberg (2016, p. 94).

[19] See the "Cocaine and crack drug profile" webpage of the EMCDDA at emcdda.europa.eu/publications/drug-profiles/cocaine.

[20] Legalizing a portion of an illegal market while the enforcement resources aimed at the remaining illicit segment are unchanged should make that enforcement more effective and raise the price on the illicit market; see Mark Kleiman's June 1, 2005 post, "The Supreme Court meets illicit-market economics," on the blog "The Reality-Based Community," available at samefacts.com/2005/06/drug-policy/the-supreme-court-meets-illicit-market-economics/. Following the repeal of national alcohol Prohibition, within a few years the black market in alcohol was effectively undermined in those states and counties that did not maintain their own alcohol bans.

[21] On cooling-off periods, see Camerer, Issacharoff, Loewenstein, O'Donoghue, and Rabin (2003, pp. 1238-1247), and Thaler and Sunstein (2008, pp. 250-251).

be restricted for the first few months to the default terms or something stricter. Only consumers with more experience (or at least more time to think about it) would be eligible for opting in to greater access to cocaine. Even long-time license holders might have to wait a short period before being able to implement a change in their terms in the direction of more liberality, whereas choices to impose stricter terms could be implemented instantaneously.[22]

The default waiting period (either applied to individual purchases or to the time requisite for overriding default terms in a more liberal direction) could be voluntarily extended by consumers, and such extensions would be subsidized by lower prices or fees. Likewise, if the default pricing is of a fixed amount per dose, it might be possible to reward consumers (via lower prices for initial doses) who voluntarily choose an escalating price structure instead, and to mandate escalating prices for users who increase their quantity limits.

Committing to full or partial abstinence

People who enjoy drugs still do not want to become drug addicts, and many former addicts in recovery do not want to return to an active addiction (and often do not want to consume their former drug of choice at all, as they recognize that any consumption might cascade into full addiction). In the case of a drug regulated like alcohol, these individuals are placed at considerable peril, as their problem drug is widely available, a strand of the fabric of daily life – conditions that apply to currently illegal drugs in many places, too. The willpower that is required to stay away from such a ubiquitous drug is substantial, and many people, not surprisingly, find that willpower wanting.[23]

The double default system offers aid to people concerned about their self-control with cocaine. A person can choose not to acquire a license, or, if licensed, can choose highly restricted access. Waiting periods both for purchases and for liberalizing access also bolster effective willpower. Nonetheless, further measures can help people commit to non-consumption. A potential consumer could not only choose to eschew a license, but could also enter into a sort of self-exclusion agreement that would preclude acquiring a license for the next few years, say.[24] Similarly, a current license holder could pre-commit to not increase her terms of access for some time period. Further, someone who would like to implement a temporary period of abstinence – a common practice of alcohol consumers – could sign up for a cocaine-free January, for instance, and their commitment could be enforced by the regulatory regime. Voluntary limits to make purchases available only on weekends also might be an attractive, enforceable option for some cocaine consumers.

Heavy users of cocaine within a double default system will, over the years, make significant payments (in excess of the costs of providing their drugs) through the taxes imposed on their cocaine purchases and also through license fees. Some of these payments could be earmarked as a reward, a refund, for people who give up their cocaine license and commit to a lengthy suspension of their cocaine-purchasing privileges. Despite the highly reinforcing quality that cocaine use has for many consumers, small monetary prizes seem to be promising mechanisms for encouraging abstinence.[25] This sort of treatment intervention, perhaps combined with drug testing as a basis for ongoing payments, could be available in a low-threshold fashion for individuals within the double default system.

More generally, a legal, regulated system for cocaine can improve the allocation of treatment resources relative to the situation under prohibition. Potentially addictive drugs like cocaine present an array of risks, including the development of compulsive consumption habits that impose enormous personal and social costs. Even in a double default system that nudges first abstinence and then, for the non-abstinent, moderate consumption, some people will develop bad relationships with cocaine. The double default system, however, makes it likely that problematic users will be relatively easy to detect, because they are already in touch with the regulatory system, and have more-or-less self-identified via the quantity of cocaine that they purchase. Drug counseling and treatment resources can be well targeted, then, at those users who are most in need of such services.[26]

Concluding remarks

Drug regulation currently is massively coercive, despite the fact that most of the direct costs of drug misuse are imposed upon the consumer him or herself. Behavioral notions such as the stickiness of defaults and the value of cooling-off periods to reduce impulsive purchases allow for a less coercive policy – but one that still presents substantial barriers to harmful drug use.

The costs associated with drug prohibition are so extensive that many potential approaches to drug relegalization might present improvements over the status quo. Instead of employing nudges, for instance, policy makers could replace prohibition (which is a sort of implicit, non-revenue-raising tax) with a significant, explicit per-dose tax.[27] This approach

[22] Imposing a long waiting period on a decision to have greater access to cocaine might result in many users making sure that they choose more generous terms initially.

[23] On self-control and the unreliability of personal willpower, see Duckworth, Milkman, and Laibson (2019).

[24] Mandatory provision of self-exclusion programs is a typical element of gambling regulation in many jurisdictions. Self-control tends to be easier to implement for decisions that involve the future than for the here-and-now; see, for example, the discussion in Duckworth, Milkman, and Laibson (2019, p. 107).

[25] The small-prize treatment, which often makes use of a raffle or lottery system to award prizes to abstinent former users, is called "contingency management;" see Pirnia, Tabatabaei, Tavallaii, et al. (2016), and "This Addiction Treatment Works. Why Is It So Underused?," by Abby Goodnough, *New York Times*, October 27, 2020, available at nyti.ms/2HuYzcR.

[26] Angela Hawken (2010) refers to such a system as "behavioral triage," where drug problems per se – as opposed to noisy signals like arrests – serve as the basis for rationing treatment resources.

[27] See, for example, Becker, Murphy, and Grossman (2006) and Kenkel

in itself, however, does nothing to try to differentially dissuade the arguably irrational subset of drug consumption, nor does it bring heavy drug users into a regulatory system that can promote their access to drug counseling and treatment. The double default system includes significant implicit or explicit taxes – but also tries to discourage less-than-rational drug use via waiting periods and escalating price schedules and buyer licenses and so on. Drug consumption, with its connection to compromised rationality, presents the sort of setting in which nudges tend to be particularly cost-effective, where small changes to the choice architecture can have large effects.[28]

In some sense, the double default system presented here is a variation on an old theme, where the first default yields a preliminary answer to the question "who is eligible?" and the second default answers the question "Precisely what are they eligible for?" Virtually any drug regulatory regime can be characterized by their answers to these two questions, along with the information of how and to what extent those answers can be altered (or how the defaults can be overridden).[29] In another sense, however, the double default system is novel, and in its specifics, there is not currently a practicing model. But a similar story applied to legal recreational marijuana in the United States less than seven years ago, and now there are many working models for controlling marijuana within a legal framework; as more states relegalize cannabis, they are drawing on the well-documented experiences of their predecessors. In the case of cannabis, the states provide those laboratories of democracy envisioned by Justice Brandeis, and a similar evolution can take place for cocaine and other currently prohibited drugs. The real-world experience will undoubtedly lead to refinements of the double default system, and possibly even its abandonment and wholesale replacement with something better. But behavioral elements of drug policy are likely to play a role in the control schemes that prove their worth, and the behavioral approach itself highlights the value of policy experiments that can provide evidence about the relative merits of different regulatory strategies.

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[28] Benartzi, Beshears, Milkman, et al. (2017).

[29] For instance, in a prescription drug system, the first default is that a person is not an eligible buyer, but the prescription serves as the override of that default – the consumer becomes an eligible purchaser – and the prescription also sets some of the terms (dosages and the availability of renewals) for the second set of defaults. A prescription system is designed to prevent "recreational" use of drugs like cocaine, whereas the double default system proposed here intends to facilitate relatively safe adult recreational use of cocaine. All of the problems associated with cocaine and other illegal drugs currently arise within a system that attempts to eliminate recreational use.

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