

What to do about cannabis legalisation: How research should or should not affect our principles

There has been a lot of debate around the idea of legalizing cannabis and the consequences that might have in the society. However, before discussing about what to do with the legalization of this drug and how research supports or discourages this idea, it is important to define what cannabis is. Cannabis has been defined as “a drug produced from the *Cannabis sativa* (commonly known as hemp) or *Cannabis indica* plant” (BBC, 2012). Cannabis can be rolled into a cigarette known as a joint, but can also be smoked in a pipe, brewed as a tea, or mixed with food. The effects of this drug are diverse. It...

- ✦ Works as a sedative (depresses brain activity)
- ✦ Has mild hallucinogenic effects, causing a distortion of reality
- ✦ Makes some people become more animated
- ✦ Releases inhibitions, making people talkative or giggly
- ✦ Can cause nausea in some people
- ✦ Can make people feel hungry
- ✦ Affects coordination
- ✦ Impairs short-term memory and attention (BBC Health)

The idea of legalising cannabis is controversial. This debate has been extensively covered in media sources. A cursory browse through online media uncovers interviews in which major politicians are being pushed for an opinion on this issue. Legalisation is a major contemporary issue. Opinions vary, from those supporting legalisation for medical use, those supporting complete legalisation, and some holding steadfast to the status quo and warning of the possible

dangers of ending prohibition.

In Ireland, *The Irish Times* published the arguments of Irish politicians on this subject (O'Reagan, 2011). Róisín Shortall, Minister of State in the Department of Health, came out against cannabis legalization because, in her opinion, “legalisation of cannabis use would be likely to lead to increased levels of experimentation with drugs, particularly by young people”. An opposition T.D., Luke Flanagan, argued for legalisation, making the point that the usage of cannabis hasn't increased in countries like The Netherlands, where purchasing of the drug is legal and subject to government regulations.

In 2009, Professor David Nutt, a leading expert in the field of psychopharmacology, was dismissed from his position as advisor on drug policy to the government of the United Kingdom. Professor Nutt (2009) had written a pamphlet based on a lecture he gave, presenting scientific risk assessments of various drugs and outlining a role that this evidence could play in drug policy research. In this pamphlet, he criticised the UK government's decision to move cannabis from a class C to a class B drug. The Home Secretary of the United Kingdom, Alan Johnson defended the decision to dismiss him, stating that “[Professor Nutt] was asked to go because he cannot be both a government adviser and a campaigner against government policy” (2009). Nutt's dismissal precipitated the resignation of several other members of the Advisory Council on the Misuse of Drugs (ACMD). Cannabis legalisation recently received public support by another prominent drug researcher, Professor Roger Pertwee, co-discoverer of tetrahydrocannabinol, the foremost psychoactive ingredient in cannabis (Sample, 2010). It is clear that the issue is not going to go away any time soon and that this is a debate in which science, and scientists, are going to have a large role to play.

The media coverage of these stories is a window into how politicised the debate on drug policy is. It is also a valuable example of a common problem for scientific researchers: Where a scientist believes the evidence is strong enough, is it best to take a position of advocacy, and risk backlash and accusations of bias, or should scientists remain neutral and risk having the research ignored in a politically charged landscape?

Principled arguments in favour of the proposition

It is frequently argued that individuals have a right to do whatsoever they choose with their own bodies and that it is an impingement on personal freedoms for a government to punish the consumption of the substance. The punishments themselves involve further suspension of liberty by a powerful authority structure. In the political arena, libertarian perspectives are particularly supportive of these arguments. The superordinate value in libertarian philosophy is individual freedom, from which all other freedoms are proposed to follow. Modern libertarians, like Ron Paul, also tend to be fiscally conservative, opposing high government spending and taxation, believing that a free market is the best form of economic governance. Therefore, libertarians are not very concerned about societal economic costs since they are opponents of government- or collectively-funded social programs. The greater emphasis in this context, however, is given to the prosecution of individuals for possession and usage of cannabis. There is a large cost to this economically, where enforcement of the laws are funded by tax revenue. It is also considered a threat to individual liberties, where governments confiscate goods, jail drug-offenders, and even the take the life of transgressors.

In the United States, Congressman Paul is a vocal opponent of the US's 'War On Drugs',

which is not only a national, but an international anti-drug campaign where military aid is given to countries like Mexico, in order to combat drug gangs. This war, between drug cartels and the Mexican government, has caused the deaths of many civilians. These gangs are infamous for the brutal way in which they silence dissent in the civilian population, through torture and public executions and violence (Satherley, 2011). It is often argued that legalising marijuana would destroy the revenue bases of these gangs, thus weakening their power over time.

These pragmatic reasons for legalising cannabis have been supported by politically liberal groups and individuals. Extinguishing the use of drugs may be impossible; a more realistic aim might be to regulate production, distribution and consumption of narcotics (Smith, 1995). Furthermore, prohibitionist policies have little effect on addressing harm reduction which takes into account the impact of wider social and economic factors as well as criminalisation of cannabis-related problems (Abel, 1997).

The argument has also been made that, in the case of cannabis, its consumption is a victimless crime. Violent behaviour as a consequence of cannabis ingestion is virtually non-existent.

Principle arguments against the proposition

A basic, 'common-sense' argument that is made against the legalisation of cannabis is that greater availability of the drug will lead to increases in its usage. If cannabis can be openly purchased in a shop, then individuals will try it out. This easy availability may also make it easier for young people to access, in the same way that cigarettes are smoked by many young people who are - officially- too young to buy them.

It is argued that cannabis legalisation may bring about a significant societal cost. Any society that has a public health system, for example, will have to bear the cost of increases in cancer or psychosis that arise from increased usage of the drug. It has been proposed that cannabis may also act as a 'gateway drug', where individuals who smoke cannabis may eventually move onto harder drugs like cocaine and heroin. This, in turn, will lead to further societal costs with a rise in illegal drug-related crime. This argument is often advanced by political conservatives whose values are based in tradition and the maintenance of stability and order in society. Cannabis is viewed as a potentially destabilising substance.

It might also be argued that cannabis may exacerbate problems associated with currently legal drugs. Driving while under the influence of cannabis may cause driving accidents, for example.

Research findings in support of the proposition

There is a significant amount of research supporting the legalisation of cannabis on the basis of its therapeutic effects in alleviating the symptoms of certain illnesses. Cannabis can be used to help those suffering with illnesses such as multiple sclerosis (MS), HIV infections, and cancer. Iskedijan, Bereza, Gordon, Piwko, and Einarson (2007) carried out a systematic review of the literature on the efficacy of cannabis in relieving MS-related or neuropathic pain. Though their review comprised of relatively few studies, they did find cannabis-based treatments to have a significant effect in reducing pain. Lackhan and Rowland (2009), in their review, found cannabis to be efficacious in ameliorating some of the spasticity in multiple sclerosis.

In a study conducted by Woolridge et al. (2004), cannabis was found to help individuals

suffering with HIV infections. Patients in this study reported improvements in their appetite (97%), muscle pain (94%), nausea (93%), anxiety (93%), nerve pain (90%), depression (86%), and paraesthesia (85%). Cannabis also has a long-established effect in reducing nausea and vomiting in patients receiving chemotherapy for cancer (Sallan, Zinberg, & Frei, 1975).

There is no evidence that liberalizing the legal regime through either decriminalisation or depenalisation has a significant effect on the uptake of cannabis (Bretteville-Jensen & Williams, 2010). Contrary to the 'gateway hypothesis', it has been suggested that depenalisation has led to a 'separation of markets' between hard and soft drug use (MacCoun, 2011). On the other hand, prohibition has been unsuccessful in keeping cannabis away from those that want to use it. A report by the International Centre for Science in Drug Policy reviewed the US government's own data on cannabis use and concluded that drug enforcement policies were not strongly correlated with rates of cannabis use (2010).

There are economic arguments in favour of the legalisation of cannabis. It is estimated that legalisation would save an estimated \$44.1 billion a year in enforcement expenditures alone and create new sources of tax revenue. California estimate potential tax revenue of between \$99 million and \$1.4 billion annually. (Kmietowicz, 2010).

Research findings not in support of the proposition

One of the research findings against the legalisation of cannabis is that the drug, or rather one of its active components, Δ^9 -tetrahydrocannabinol (Δ^9 -THC) is a risk factor for psychosis. There are a variety of research findings providing support for this hypothesis, including longitudinal studies, meta-reviews, and pure research that attempts to quantify the type and magnitude of

effects. As well as the long-term effects of possible psychiatric illness, there is also the danger that individuals will behave in dangerous ways during an acute psychotic episode, as may be experienced after high doses of marijuana (Kalant, 2004). Definitions of this phenomenon vary, however, and the literature indicates that it is rare. Psychotic symptoms have been induced using THC in an experimental setting. D'Souza et al. (2004) carried out the first placebo-controlled, double-blind, randomised controlled trial of Δ^9 -THC on healthy subjects. They found that intravenous Δ^9 -THC transiently produced the positive and negative symptoms associated with schizophrenia. That these symptoms could be induced by cannabis consumption could pose a safety risk. Some research has been conducted investigating the effects of cannabis consumption on driving, where a number of dose-related impairments have been observed (for a review, see Ramaekers, Berghaus, van Laar, & Drummer, 2004).

Many longitudinal studies have been conducted investigating the role of cannabis in the development of psychosis. Compared to cross-sectional research, longitudinal studies give greater scope for inferring causality regarding a relationship between two variables of interest. Moore et al. (2007) conducted a systematic review of these studies. They found that there was an increased risk of approximately 40% for psychosis, for individuals that had ever used cannabis. They also found that this risk increased proportionally with frequency of use, thus showing a 'dose-response' relationship between the drug and psychosis.

Hall and MacPhee (2002) reviewed the evidence linking cannabis use with cancer. They pointed out that cannabis smoke contains many of the same carcinogens as does tobacco, and in comparative, or even greater doses. Epidemiological evidence is somewhat mixed. A prospective longitudinal study by Sidney et al. (1997) failed to find an increased risk of mortality for

cannabis users, whereas a retrospective study by Zhang et al. (1999) found marijuana use to be associated with a greater risk of head and neck cancers in a dose-response relationship.

There is also a question in the literature regarding whether or not cannabis users can develop a dependence on the drug. Clinical reports suggest that there are physical withdrawal symptoms, whereas animal studies and pharmacologic manipulations have been inconclusive. By DSM-IV and ICD-10 criteria, there is a large body of evidence, including longitudinal studies indicating that cannabis dependence is a real phenomenon (Kalant, 2004). This finding has been supplemented by evidence implicating a genetic component of dependence development, and an association with other dependence on other substances.

Strengths of the research

The research presented against the legalisation of cannabis on health grounds is quite strong. A large body of literature has been generated positing a link between cannabis use and psychosis. Many of these studies are longitudinal, which allows for a stronger inference of causality than would be possible from cross-sectional research. The findings of this research have been consistently replicated in different samples and so, there can be little doubt of the existence of this link. Though there was a discrepancy between the two major longitudinal studies investigating cancer outcomes for cannabis, one of those studies had substantial weaknesses, which are highlighted in the next section.

Many of the studies positing beneficial effects of cannabis use are randomised controlled trials. RCTs are considered the gold standard for investigations in medical research, where they are carried out correctly. D'Souza et al. (2004) also employed this method to ascertain whether

THC induces psychotic symptoms in healthy patients.

For the most part, the studies presented here employed sound methodologies and were transparent with their limitations. A scientifically literate reader should have few doubts about the state of the field, after engaging with this research.

Weaknesses of the research

It might be useful to point out the method for compiling the research for this presentation, when considering the weaknesses of that research. In order to give as broad an overview as possible of the literature, systematic reviews and meta-analyses were favoured as evidence bases for the presentation. Though this is an effective way to obtain an overview of a field, it may obscure weaknesses in the individual studies. For example, Iskedijan et al.'s (2007) review showed a significant effect for cannabis-based treatments on neuropathic pain and MS-related pain, but as pointed out in their discussion, there were limitations and difficulties in comparing studies owing to differences in measures and definitions. Further, both Iskedijan et al., and Lackhan and Rowland's (2009) MS and cannabis reviews comprised of relatively few studies. The outcome measures were quite subjective, and the effect sizes were modest. Though the early results show promise, it may be too early to conclude that cannabis is efficacious in this medical setting.

As mentioned, two longitudinal studies into cancer outcomes from cannabis use produced discrepant findings. A possible reason for this discrepancy is the definitions and time course used by Sidney et al (1997). They defined current marijuana users as those who active users at the time of survey and who had smoked more than 6 times ever. This is a very low threshold when considering a disease that may develop over a long period of time, like cancer. Further, as

pointed out by Hall and MacPhee, the average age of participants at follow-up in Sidney et al.'s cohort was 43 years of age, which may be too young for an assessment of cancer outcomes.

It should be considered that longitudinal studies are observational. No variables are manipulated and, participants are not allocated to groups, and so unobserved confounds may be responsible for some portion of the findings observed. This same principle applies to studies (e.g., MacCoun, 2011) comparing drug policies in different countries and relating them to outcomes such as incidence of drug, except in this case there is the difficult-to-quantify effect of culture. Policies that are effective in the Netherlands may not be completely generalisable to the USA. One may not be comparing like with like, in comparing the two cultures.

Conclusions

The current human cost of cannabis prohibition is arguably greater than any that will be incurred by its legalisation. The research presented here supports the principle arguments for legalisation and is unresponsive of most of the arguments against. Of the arguments that are presented arguing against cannabis legalisation, the ones that are most supported by research are those relating to cannabis' effects on health. Cannabis is a health risk, in that it increases risk of cancer and of psychosis. The transient effects of the drug may also make users more susceptible to poor driving and other dangers arising from behaviour that occurs while an individual is under the influence of the drug.

There are signs that public opinion is shifting towards support for legalisation of cannabis. A Gallup poll in the United States found that 50% of Americans support the legalisation of cannabis, with younger demographics being much more in support (Newport, 2011). In time,

popular support may be too great for governing bodies to resist legalisation. When that time comes, there will still be a necessity for debate and for carefully considered policy so that drugs are kept out of the hands of children and other vulnerable populations, such as those with genetic predispositions towards psychosis. Professor Roger Pertwee suggested a method by which this could be done. Individuals who wanted to obtain cannabis could request a cannabis license, the receipt of which would be contingent on being cleared by a doctor who would take a history to account for familial incidence of schizophrenia (Sample, 2010). It is likely that originality of this sort will be required to design policies that encourage responsible use of cannabis. As pointed out already, it may not be appropriate to simply 'copy and paste' policies that have worked in other countries, owing to the unique cultural context in which these policies work.

Though there are compelling arguments for both sides of this debate, the research presented here falls strongly on one side of the debate and should warrant a reconsideration of principles in relation to cannabis legalisation. In this position, where research points so strongly in one direction, it may be appropriate for scientists may to consider an advocacy role such as that assumed by Professor Nutt. The costs of not acting may be to miss an opportunity to direct public policy in a democratic, but scientifically informed, way.

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