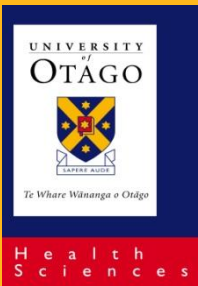


# **Cannabis and young people: Evidence and recommendations from the Christchurch Health and Development Study**

**Joseph M. Boden, PhD**

**Christchurch Health & Development Study  
University of Otago, Christchurch**

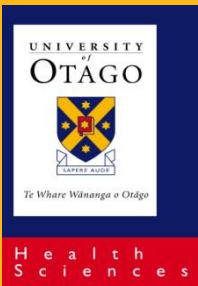


# Introduction

There have been ongoing debates and concerns about the use of cannabis by young people in New Zealand

These concerns have focussed on:

- The prevalence of use of cannabis
- The rate of cannabis dependence
- The health effects of cannabis use
- The impacts of cannabis legislation on users

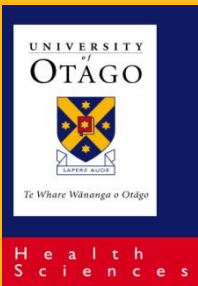


# Aims

In this talk, I will provide an overview of the evidence on these issues drawing from the Christchurch Health and Development Study (CHDS)

We will examine:

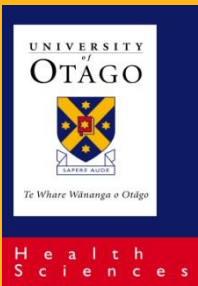
- The demographics of cannabis use
- Cannabis and psychosis
- Cannabis as a “gateway” drug
- Cannabis and driving
- The legal implications of this line of research



# Overview of the CHDS

The CHDS has followed the progress of a birth cohort of over 1,000 young people from birth to age 30

The study has published extensively on the issue of cannabis use and its consequences for young people

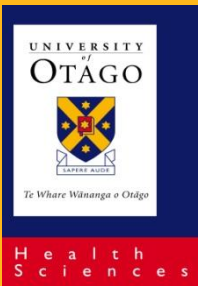


# Cannabis Use is Common

Findings from the CHDS make it clear that the use of cannabis is common

Findings show that by 25:

- Nearly 80% of young people will have used cannabis on at least one occasion
- Over 10% will have meet criteria for cannabis dependence at some time in their life



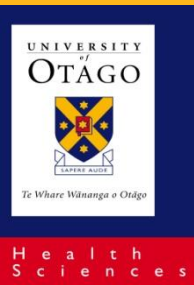
# The Demographics of Cannabis Use

Cannabis use and dependence is more common amongst:

- males
- Māori
- the socially disadvantaged

In this respect the demographics of cannabis overlap with those of other adverse psycho-social outcomes including:

- crime
- suicide
- other forms of illicit drug use

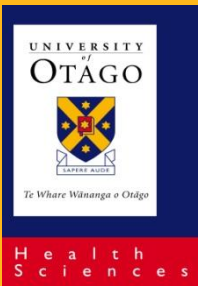


# Cannabis and Psychosis

A focus of the CHDS has been upon the extent to which cannabis use increases risks of psychosis and psychotic symptoms

The CHDS has found that the increasing use of cannabis is associated with the increasing rates of psychotic symptoms, even after adjustment for other factors

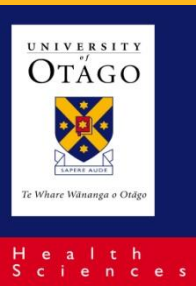
- Those using cannabis daily (over the period 18-25 years) had rates of psychotic symptoms that were approx. 1.8 times higher than those not using cannabis
- These findings clearly suggest a causal link between the use of cannabis and the development of psychosis



# Cannabis and Psychosis

The findings of the CHDS have been supported by a growing number of studies which have found elevated rates of psychosis/psychotic symptoms amongst regular users of cannabis

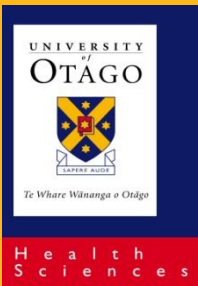
Estimates suggest that the use of cannabis could account for up to 10% of cases of psychosis



# Cannabis and the Brain

The likely reasons for cannabis being involved in psychosis relate to the action of cannabis on the brain

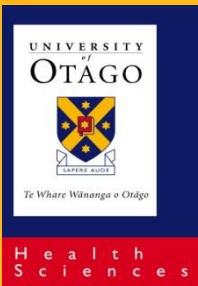
- The active ingredient in cannabis (THC9) influences three receptor sites (CBI, CBL, BB) in the brain
- In turn, these sites regulate key neuro-transmitters, including: dopamine; serotonin; glutamate; GABA
- Dysfunction in these transmitters and particularly dopamine has been implicated in the development of schizophrenia



# Does Cannabis Use Cause Psychosis?

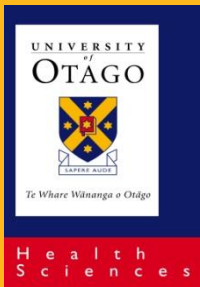
In 2006, the CHDS, along with the Dunedin Multidisciplinary Health and Development Study prepared a review of this topic which was published in the British Medical Journal (BMJ)

This article drew two major conclusions:



# Does Cannabis Use Cause Psychosis? (Cont)

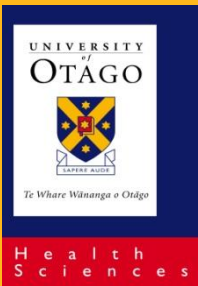
- The weight of evidence from epidemiological research and neuroscience is consistent with the view that the heavy use of cannabis may encourage the development of psychosis and psychotic symptoms
- Nonetheless, some uncertainty remains and it would be misleading to conclude dogmatically that cannabis is a cause of psychosis (equally it would be misleading to dogmatically reject this possibility)



# Cannabis and Other Forms of Mental Illness

Research into cannabis and psychosis has been supplemented by further studies of the linkages between cannabis and:

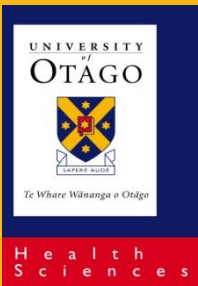
- Crime and aggression
- Depression
- Anxiety
- Suicidal behaviour



# Cannabis and Mental Illness

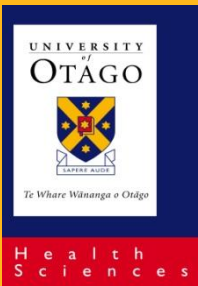
Three general conclusions have emerged from this research

- i. Increasing use of cannabis is associated with increasing risks of: antisocial behaviours; depression; anxiety and suicidal behaviours
- ii. These associations cannot be explained by factors known to be related to cannabis use
- iii. The harmful effects of cannabis use appear to be most marked for young (<16 years) users and decline progressively with increasing age



# Cannabis and the Brain (Again)

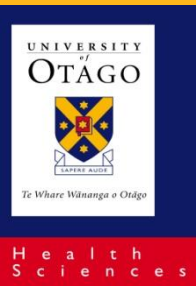
The findings that cannabis use has greater harmful effects on younger users is consistent with recent research into neurobiology which has suggested that adolescent brains may be particularly vulnerable to biochemical insults



# Is Cannabis a Gateway Drug?

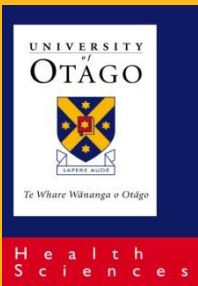
There have been ongoing debates about the extent to which cannabis may be a gateway drug whose use encourages other forms of illicit drug use.

This issue has recently been examined in a 10 year study conducted by the CHDS. This study led to three major conclusions:



## Is Cannabis a Gateway Drug? (Cont)

- i. The increasing use of cannabis was associated with clear increases in the risk of subsequent illicit drug use.
  - Those using cannabis at least weekly had odds of other illicit drug use that ranged from 67 times (at age 18) to 4 times (at age 25) of those who did not use cannabis)
- ii. These increases could not be explained by factors known to be related to cannabis
- iii. Gateway effects were most marked for young (<16 years) users and declined with increasing age



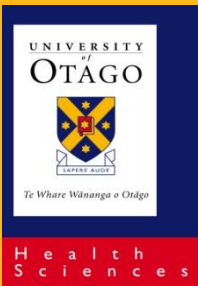
# Explanations of Gateway Effects

There are three possible explanations for the gateway effects of cannabis

- i. These could arise from biochemical changes in the brain that lead cannabis users to be more susceptible to the use of other drugs
- ii. They could arise from individual learning in which cannabis users learn that cannabis has pleasurable effects and this encourages them to experiment with other drugs
- iii. These affects could arise from the association of cannabis users with drug dealers

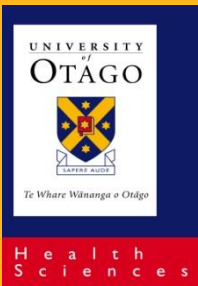
# Cannabis and driving

- The CHDS recently published a study comparing the links between cannabis consumption and motor vehicle collisions with alcohol consumption and motor vehicle collisions.
  - By age 25 cohort members reported rates of driving under the influence of cannabis that were more than double the rates of drink driving
  - After accounting for potential confounding, those reporting driving under the influence of cannabis more than 21 times had rates of accidents that were 1.4 times greater than those who did not drive under the influence of cannabis
    - For alcohol, the adjusted rate of accidents amongst the highest drink-driving group was 1.09



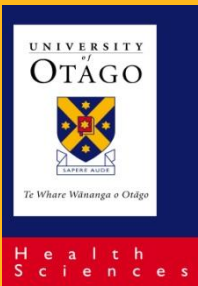
## Cannabis and driving (cont)

- These findings suggest that driving under the influence of cannabis was more common than drink driving
- Analysis of collision data suggested that driving under the influence of cannabis was a greater threat to driver safety than drink driving
- Conclusions appear paradoxical with respect to the generally-accepted position that drink driving is far more dangerous than driving under the influence of cannabis



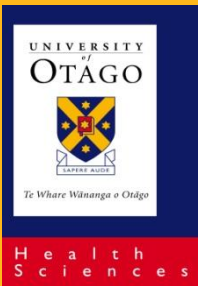
## Cannabis and driving (cont)

- There may be several reasons for these findings:
  - Stringent road rules and enforcement have probably reduced overall levels of drink driving
  - Increased public awareness and disapproval of drink driving have also contributed to this reduction
  - Increasing rates of cannabis use, and increasing potency of cannabis may have caused an increase in driving under the influence of cannabis and general impairment when doing so
  - Relatively little awareness of problem and low levels of enforcement (no roadside testing) of drug driving laws



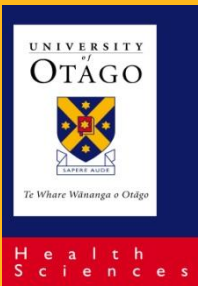
# Implication of CHDS cannabis findings for legislation

- In recent years there has been considerable debate concerning cannabis prohibition
- Those opposed to prohibition have used the purported “harmlessness” of cannabis as an argument
- This research (and related research) would suggest that these arguments are to some extent invalid
  - A better argument would involve: a) the comparison of the dangers of cannabis to the dangers of other intoxicants; b) demonstrating that the majority of cannabis users are not harmed; and c) showing that the arrest/conviction of cannabis users is more harmful to their outcomes than cannabis use



## Legal implications (cont)

- The issue with the “harmlessness” argument has been clearly demonstrated recently
  - Cannabis – psychosis link was cited in recent UK reclassification of cannabis as a class B drug

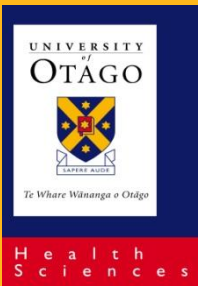


# Implications of Gateway Effects for Legislation

Findings on gateway effects have been used differently in different contexts to justify different approaches to the legalisation of cannabis.

- In the Netherlands this evidence was used to justify liberalisation of the cannabis laws
- In the US the same evidence was used to support arguments for prohibition

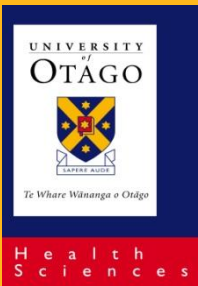
Which of these arguments applies depends critically on the mechanisms underlying gateway effects



# Implications of Gateway Effects

If gateway effects arise from individual learning or biochemical change, the evidence would tend to support the prohibitionists' argument

If gateway effects arise from association with drug dealers the evidence supports a liberalisation of cannabis laws

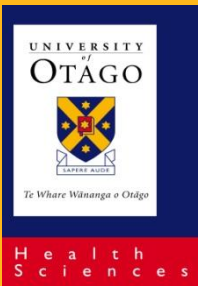


# Cannabis and the law in New Zealand

There have been ongoing debates about the extent to which the current cannabis laws in New Zealand may have adverse effects on those who use cannabis in a non problematic way

- These represent the majority of recreational users

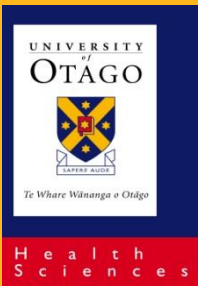
As part of the CHDS we have examined the application of the cannabis laws to our cohort. This research led to three conclusions:



# The Current Cannabis Laws are Inefficient

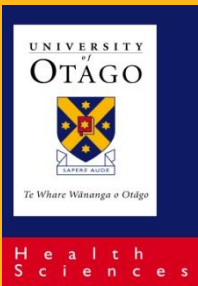
The analysis made it clear that the current cannabis laws were highly inefficient since there are large numbers of young people who use cannabis but only a small minority are arrested.

Even amongst regular users the majority avoid arrest.



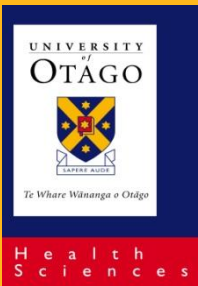
# The Current Cannabis Laws are Discriminatory

The evidence also suggested clear bias in the application of the law. Males, Māori and those with a criminal record are more likely to be arrested than others who use the same amount of cannabis.



# The Current Cannabis Laws are Ineffective in Reducing Cannabis Use

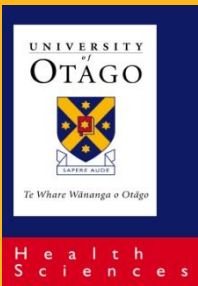
Analysis of the life history of those arrested and convicted for cannabis offences showed that arrest and conviction had no effect on the subsequent use of cannabis: 95% of those convicted/ arrested, either continued with or increased their use of cannabis.



# Overview of the Health Effects

It will be evident from this review that, contrary to previous beliefs, the use of cannabis is not without harms.

There is evidence from New Zealand and overseas studies to link cannabis use to a series of adverse outcomes including: cannabis dependence; psychosis; mental health problems; gateway effects; motor vehicle collisions



# Placing the Evidence in Perspective

While it is possible to show harmful effects for cannabis use, it is important to note that the majority of cannabis users use the drug in a non problematic way.

There is thus a need to weigh the harms of cannabis against (for example) the harms of the licit drugs of tobacco and alcohol.