Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

Has the Damage Been Done?

Examining the effects of Legal Synthetic Cannabis and
Subsequent Effects of Prohibition on Synthetic Cannabis and
Other Illicit Drug Use

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Arts

in

Psychology

at Massey University,

New Zealand.

Kristy Robertson

2015

Abstract

Synthetic cannabinoids are chemically produced psychoactive substances, which are the most recent trend in designer drugs in New Zealand, and until the 8th of May 2014, were purchased freely in retail stores throughout New Zealand. Synthetic cannabis was marketed as a "safe" alternative to natural cannabis; however, its harm profile has been considered greater than other illicit substances. The objectives of the current study were to examine the prevalence of synthetic cannabis use and how previous users have responded to prohibition, and to assess the physiological and psychological harms associated with consumption. Participants (N = 94) self-selected to participate in the study and were recruited from the community. They completed a computerised structured questionnaire that was designed for the study and incorporated two measures, the Severity of Dependence Scale and Brief Symptom Inventory. Results indicated that there was a significant decrease in the frequency of synthetic cannabis use following prohibition, although 40% of participants reported that they would continue to source synthetic cannabis illegally. While most participants reported fairly minor issues from use, some respondents noted more serious physiological and psychological problems, including coma, chest pain, breathlessness, seizures, and psychosis. Nearly one-quarter of participants (25%) reported that they required emergency care following synthetic cannabis use. High rates of dependency (72%) were detected in the sample and participants' average psychological symptom profile was of a magnitude to be considered in the clinical range for psychological distress, although there were no significant differences in psychological well-being between current synthetic cannabis users and current non-drug users. Following synthetic cannabis prohibition, there was a significant decrease in illicit substance use across all drug categories and only a small number of participants (3%) had started using legal synthetic cannabis and progressed to using other illicit drugs. Of concern is that 32% of participants reported using methamphetamine and not using this substance in the past, with 14% of the sample going on to use methamphetamine regularly as an alternative to synthetic cannabis. Findings are interpreted in relation to previous research and limitations of the study are highlighted. Recommendations are made for future research, including examining the long-term effects and chronic exposure to the adverse toxicities of synthetic cannabis.

Acknowledgements

To the individuals who participated in the study, your willingness to be involved in the research is greatly appreciated and without you the project would not have been possible, so thank you.

I must express my sincere gratitude to my supervisor, Dr. Ian de Terte. Your continued support and encouragement have been so helpful, and I am extremely thankful for the valuable guidance that you have extended to me.

Finally, a special thank you must go to my parents, Ingrid and Graham Edmondson, and husband, William Robertson. I would not have been able to complete this project without your patience and support throughout this venture- you all mean the world to me.

This project has been reviewed and approved by the Massey University Northern Region Human Ethics Committee.

Table of Contents

Abstract	ii
Acknowledgements	iii
List of Tables and Figures	iv
Introduction	1
Chapter 1: Literature Review	
Inception of Synthetic Cannabinoids	8
Synthetic Cannabinoid Pharmacology and Toxicology	9
Factors Contributing to Synthetic Cannabis Use	10
Trends in Legal Highs in New Zealand: The BZP Phenomen-	on12
The Legislation and Control of Synthetic Cannabinoids	15
Future Sale of Synthetic Cannabis	17
Prevalence and Patterns of Use of Synthetic Cannabis	18
Adverse Health Risks Associated with Synthetic Cannabinoi	d Use19
Impact of Synthetic Cannabis on New Zealand's Healthcare	System24
Extent of Dependency Among Legal Psychoactive Drug Use	rs25
Synthetic Cannabis as a Gateway Drug	27
Does Prohibition Work?	29
Chapter 2: Method	
Introduction	32
Study Design and Rationale	32
Participants	33
Instrumentation	34
Recruitment	44
Procedure	46
Data Analysis Procedure	47
Ethical Considerations	50
Chapter 3: Results	
Introduction	54
Description of the Sample	54
Prevalence of Synthetic Cannabis use Pre- and Post-Prohibit	ion57
Physiological and Psychological Effects of Synthetic Cannab	ois Use60
Extent of Dependency Among Synthetic Cannabis Users	62

	Psychological Well-being of Synthetic Cannabis Users	66
	Association Between Synthetic Cannabis and other Drug Use	71
	Demographics by Type of User	74
	Clinical Significance	80
Chapt	ter 4: Discussion	
	Introduction	81
	Summary of the Findings:	
	Description of the Sample	81
	Prevalence of Synthetic Cannabis use Pre- and Post-Prohibition	83
	Physiological and Psychological Effects of Synthetic Cannabis Use	89
	Extent of Dependency Among Synthetic Cannabis Users	93
	Psychological Well-being of Synthetic Cannabis Users	96
	Association Between Synthetic Cannabis and other Drug Use	100
	Further Findings	105
	Research Implications	107
	Limitations of the Study	107
	Recommendations for Future Research	113
	Conclusions	115
	Postscript	118
Refere	ences	119
Apper	ndices	133
	Appendix 1 Research Recruitment Advertisement	134
	Appendix 2 Screening Questionnaire to Determine Approval Procedure	136
	Appendix 3 Synthetic Cannabis Product List	137
	Appendix 4 Participant Information Sheet	140
	Appendix 5 Survey Questionnaire	142
	Appendix 6 Power Analysis	149

List of Tables and Figures

Tables
Table 2.1 Dimensions of the Brief Symptom Inventory
Table 2.2 Results from Cronbach alpha analysis for each of the BSI subscales
Table 3.1 Demographic Characteristics of the Sample55
Table 3.2 Paired Samples t-test for comparison between frequency of use pre- and post-synthetic cannabis prohibition
Table 3.3 Self-reported physiological effects of synthetic cannabis use
Table 3.4 Self-reported psychological effects of synthetic cannabis use
Table 3.5 Results of the Severity of Dependence Scale
Table 3.6 Brief Symptom Inventory results displaying average T-scores for each psychological dimension
Table 3.7 ANOVA for differences in BSI scores between the drug user groups69
Table 3.8 Comparison of Brief Symptom Inventory T-scores between drug user groups70
Table 3.9 Other drugs used by participant users before and after synthetic cannabis prohibition
Table 3.10 Paired Samples Test for frequency of other illicit drug use pre- and post-synthetic cannabis prohibition
Table 3.11 Category that best describes participant's current drug use73
Table 3.12 ANOVA for demographic characteristics between drug user groups for age74
Table 3.13 What ethnic group do you most identify with? Cross tabulation by type of user
Table 3.14 Chi-Square Test for differences in ethnicity between drug user groups76
Table 3.15 What is the highest qualification you have achieved? Cross-tabulation by type of user
Table 3.16 Chi-Square Test for differences in employment status between drug user groups
Table 3.17 What source of income do you receive? Cross tabulation by type of user 79

Table 3.18 Chi-Square Test for differences in source of income between drug user groups	80
Figures	
Figure 3.1 Frequency of use before synthetic cannabis was made illegal and use following prohibition	58
Figure 3.2 Current availability of synthetic cannabis, 2015	59
Figure 3.3 Methods for obtaining synthetic cannabis pre- and post- synthetic cannabis prohibition	
Figure 3.4 Short Dependency Scale scores of synthetic cannabis users and severity indicator	63
Figure 3.5 Extent that synthetic cannabis use was out of control	64
Figure 3.6 Prospect of missing a dose made you feel anxious or worried	64
Figure 3.7 Worry about your synthetic cannabis use	65
Figure 3.8 Wish you could stop using synthetic cannabis	65
Figure 3.9 How difficult did you find it to stop using synthetic cannabis	66
Figure 3.10 Brief Symptom Inventory clinical profile of respondents	68