A profile of medical cannabis users residing in Canada and the United Kingdom: Accounting for policy and experience

by

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Abstract

Cannabis remains among the most widely used, researched, and discussed drugs in the world. The science buttressing its use as a treatment for a variety of symptoms and medical conditions has evolved considerably since the 1960s; yet, the most common uses reported by patients are not recognized by the medical community. Despite this lack of accord, several countries have liberalized domestic policy in recent years to give eligible patients access to regulated suppliers and protection from legal repercussion. Alternatively, patients residing in countries without a medical exception continue to risk facing social stigmatization and other legal barriers created by prohibition. This study considers whether the profile of self-described medical users from two countries with very different policies is shaped by external forces, such as domestic policy, or unique features of the "cannabis career." Data obtained from an online survey of self-described medical users residing primarily in Canada and the United Kingdom (*n = 359*) is used to better understand this drug-using population. The study describes the sample "profile" using information about respondents' demographics, patterns of use, medical conditions and symptoms, healthcare involvement, reasons for use, and experience using cannabis. Cannabis career typologies are constructed with k-means cluster analysis and distinctions are drawn between Canadian and British respondents using descriptive and comparative statistical analyses. Respondents' sociability and resourcefulness are investigated with a "sociability scale" and a descriptive account of their "cannabis network." Finally, logistic regression is used to identify which factors are associated with elevated odds of encountering social, legal and supply-side barriers. Four models ("cannabis career," "needs-based," "resource-based," and "risk-based") are used to determine whether unique features of the user-profile can explain who encounters barriers beyond nationality/residency alone. Additionally, the study considers separately the subpopulation of users that grow their own as a means of overcoming the access barrier. With few exceptions, the profile of users is the same for Canadians and Britons; however, when it comes to the barriers, the notable distinctions are country-specific and largely stem from policy. The study describes the major similarities and differences between the two populations and considers their policy and research implications.

Keywords: Medical cannabis; Cannabis careers; Cannabis policy; Canada; United Kingdom

Dedication

For my mother, Teresa Berault Lewis (1963-2017), forever missed but never forgotten.

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Chapter 1.

Introduction

More than 60 years ago, at a time when cannabis was regarded punitively in the United States, Howard Becker (1963) famously described a social process that recreational users undergo as they learn to use the drug and navigate their social world as "outsiders." The fact that cannabis was illegal and condemned socially in the United States at the time meant that its consumption was confined to a few deviant social groups, such as the jazz musicians with whom Becker shared a close acquaintanceship, where access to suppliers and mentors facilitated the development of routine patterns of use. Now regarded as a classic contribution to the sociology of deviance literature, Becker's theory of "becoming a marihuana user" offers a suitable paradigm to track the social and political changes in cannabis use that transpired in North American and elsewhere during the past half-century.

That Becker's work is situated in a deviance framework speaks volumes to the overtone of prohibition that existed at the time. Being a "user" meant being labeled a "deviant" by people that disapproved of the lifestyle. Because of its illegality, it also meant risking possible legal repercussion and social demarcation if one's deviant identity were to be revealed. This prompted Becker to consider the "social controls" that worked to impeded future consumption and the development of regular patterns of use. Specifically, these *barriers* included learning how to acquire a supply, conceal one's use from normative society, and make peace with what was regarded as an abhorrent behavior, indicative of weakness and immorality. Despite being framed as an act of deviance, however, cannabis was just beginning to penetrate mainstream culture in many Western nations.

Even at the time of writing (originally in the mid-1950s), Becker's theory did not receive much recognition because cannabis use was so uncommon, largely associated with immigrant, ethnic minority, and other disenfranchised social groups. Indeed, it was not until the 1960s, when the number of college-aged students experimenting with cannabis began to rise, that his work gained recognition by students, who "could defend themselves with Outsiders in their hands against conservative policymakers who

criminalized smoking marijuana" (Müller, 2014, p. 591). For many young people, cannabis was symbolic of the counter-culture and revolutionist ideology that permeated their social circles; popular music, such as jazz, reggae and rock 'n' roll, which brazenly advertised and promoted the use of intoxicants—including, among others, cannabis—and a desire for independence fueled their social opposition, of which "marijuana was the battle flag" (Booth, 2003, p. 257).

The rising popularity of cannabis was not particular to the United States, either. In Canada and the United Kingdom, for example, cannabis use was largely unheard of prior to the 1960s, being used by immigrant and deviant social groups in Western Europe and by virtually no one in Canada (Booth, 2003; Mills, 2013). Much like in the United States, the population of recreational users proliferated in these (and other) Western nations during the 1960s for many of the same reasons previously mentioned. By the mid-1970s, cannabis was the most widely used narcotic in the world, no longer confined to the disenfranchised, deviant, and enlightenment-seekers (Booth, 2003). Moreover, in addition to user-populations becoming demographically heterogeneous, the nature of cannabis use became increasingly multifarious between the 1960s and 70s. While still a social drug used to amplify solidarity and sociability among users, cannabis was also being used as a relaxant and as a sort of "folk" medicine to alleviate aches, pains, and the monotony of daily life.

Paralleling the popularity of cannabis in many social circles, however, was a push for enhanced penal measures at the national and international level. The Single Convention on Narcotic Drugs (1961) established the modern prohibitionist regime by calling for the complete criminalization of cannabis—with few exceptions (e.g., medicine and research)—across the globe. Seventy-three countries, including the United States, Canada, and Great Britain, became Signatories to the Convention and, therefore, pledged to eradicate and prevent, domestically, the cultivation, trafficking, distribution, and use of cannabis and other plant-based narcotics for non-medical and non-research purposes; indeed, the 1961 Convention informed the design of the United States' 1970 Controlled Substance Act and the United Kingdom's 1971 Misuse of Drugs Act. Yet, because of its abstract wording, many countries interpreted the meaning of "medical" and "research" subjectively and used this as the platform to implement exceptions under domestic law (Bewley-Taylor & Jelsma, 2011).

Deviations from the international Convention began shortly after its implementation. Until recently, the most liberal shift away from the international regime was Holland's decision to pursue *de facto* legalization (i.e., prohibition with an expediency principle) in 1976, where cannabis remained illegal on the books but gave agents of control incredible discretion when it came to enforcing these laws. Embedded in principles of harm reduction and normalization, the Dutch policy shift tolerates the use, possession, and distribution of small amounts of cannabis—the latter occurring in so-called "coffee shops" (Chatwin, 2003; Room, Fischer, Hall, Lenton, & Reuter, 2010). Since the 1990s, North America has similarly pushed for a liberalization of policy, albeit couched in a "medicinal" framework. The *de jure* legalization of cannabis in North America, where prohibition remains the overarching (federal) regulatory approach, uses a medical justification to grant patients the legal right to access, possess and use cannabis so long as its intended purpose is to treat a recognized medical condition or symptom (Room et al., 2010).

Little was known about the medical benefits of cannabis prior to the 1960s because research efforts had been impeded by prohibition. However, this scenario began to change after Harry Anslinger—the US drug czar—retired in 1962 and the number of people using cannabis as a folk medicine began to rise (Booth, 2003). Cannabis research came to prominence in 1964 when the renowned chemist, Raphael Mechoulam, and his colleague, first discovered the major active component in cannabis, tetrahydrocannabinol (THC)—the cannabinoid responsible for inducing psychoactive effects (Iversen, 2000). The discovery of THC spawned a growing interest in cannabinoids, which garnered the attention of chemists from around the world. Unsurprisingly, this led to several biochemical and, by extension, medical discoveries that were subsequently used to buttress the therapeutic efficacy of cannabis. Among the more salient discoveries include its analgesic effects for treating an array of ailments (e.g., glaucoma, wasting syndrome associated with AIDS and cancer, and various kinds of pain), its ability to be synthetically replicated as a pharmaceutical (e.g., nabilone in 1975 and dronabinol in 1985), and the cannabinoid systems that exist both in plant form (phytocannabinoid) and in mammals (endocannabinoid). The latter finding, which was uncovered during the early-1990s, lead to the discovery of cannabinoid receptors (namely, the CB1 and CB2 receptors [discussed in detail in Chapter 3]) and the naturally

occurring (endogenous) chemical, anandamide, which advanced our understanding of cannabis pharmacodynamics appreciably.

It is perhaps unsurprising, then, that North America began pushing for tolerance of medical cannabis use at a time when the science was evolving faster than the policy. At the same time governing bodies expressed opposition to a medical exception in North America and Europe, several experts were beginning to look at the medical benefits of cannabis and the harms created by prohibition (e.g., the Le Dain Commission of 1972 in Canada, House of Lords inquiry of 1999 in the United Kingdom, and the Institute of Medicine's 199 investigation in the United States). Collectively, the results offered convincing evidence that cannabis was, in fact, an effective therapeutic for many maladies and that many of its greatest harms stemmed from the law, rather than effects produced by the drug itself.

Undoubtedly, these discoveries, coupled with the increasing normalization of cannabis use in many countries during the latter half of the 20th-century, fueled a major sociological shift in the way cannabis was used and regulated. Supported by the recent biochemical discoveries and outcries from suffering patients, the United States began exempting medical users from persecution at the state level when California passed legislation in 1996. Shortly thereafter, Canada, as a nation, endorsed sweeping legislation empowering of patients' rights to self-medicate with cannabis at the highest court, which ultimately took effect when the Crown failed to repeal the decision in R v. Parker (1999). There are now 29 US states and the District of Columbia that legally permit the use of cannabis for medical purposes, albeit under a system of federal prohibition, and eight of these states (and D.C.) also permit recreational use. Canada has endorsed the medical use of cannabis across the nation since 2001 and is seemingly going to pursue full legalization of recreational use in July 2018 (Blatchford, 2017). Similar policy changes are gaining steam elsewhere, as, for example, in Uruguay, where the federal government legalized cannabis sales, possession, and use in June 2012. Yet, while there has been a trend toward less punitive penalties in several countries, policing practices have continued to undermine this objective, therefore raising interest in comparative, cross-national, research that looks at country-specific policies and their implementation (Room et al., 2010).

1.1. Current state of affairs

The disconnect between medicine and policy has helped fuel a lengthy social transformation of cannabis. Efforts to eradicate the plant and curtail its use do not appear to have a deterrent effect, as prevalence rates and user-practices are seemingly unresponsive to local policy and law enforcement practices (Reinarman, Cohen, & Kaal, 2004). Moreover, we have now reached a point in history where the first wave of modern cannabis users—those that began experimenting recreationally as teenagers and young adults in the 1960s and 70s—are well into adulthood and the social norms surrounding use are well-established, therefore lowering the social stigmatization that once deterred people from using the drug later in life (Parker, Aldridge, & Measham, 1998; Parker, Williams, & Aldridge, 2002; Pedersen, 2015). Indeed, it is apparent that cannabis is used for recreational and medical purposes by people young and old. However, untangling the complexity created by the "medical" adjective is not as simple as one would expect. Differentiating between a recreational user that frames his/her cannabis use as "medicinal" to benefit from a socially accepted narrative and a therapeutic user that derives legitimate health-effects from its use is no easy task. Certainly, the current culture and popular discourse gives (recreational) users a vocabulary to frame their use as health-promoting rather than recreational or leisurely, therefore assuaging concerns about being labeled a deviant, while also forcing many medical users to disassociate themselves from the recreational (euphoric) effects in order to legitimize their own use (Bottorff, Bissell, Balneaves, Oliffe, Capler, & Buxton, 2013; O'Brien, 2011). At present, the adjective appears to be relevant to the North American context, where attempts are being made to distinguish between recreational and medical use for the purpose of creating a caveat in law; the same level of specificity would not be necessary for jurisdictions permitting recreational use unless, of course, there were additional benefits implemented specifically for medical users (e.g., price discounts when making purchases).

Since Becker first proposed his theory of becoming a marihuana user, the body of drug career research has evolved considerably and so too has our understanding of the disconnect between user-practices and policies. Indeed, much of the research that spawned from Becker's early work suggests that the nature of cannabis use is reflective of the user's age and drug-use experience, rather than external factors shaped by

agents of control (Room et al., 2010). Consequently, an imperative question at the forefront of policy research is, "What do we gain by continuing to prohibit one of the most widely used drugs with a growing list of recognized medical benefits?" Is a prohibitionist framework practical in the current climate, or is it likely to do more harm than good, while also failing to have a deterrent effect? This study contributes to the evolving conversation by providing a snapshot of cannabis careers under two dissimilar regulatory frameworks, that is, between self-identified medical users residing in Canada and the United Kingdom. If the research is an accurate reflection of the current state of affairs, we should expect to find that the profile of users is reflective of their age and experience (i.e., location in the "cannabis career") and, therefore, consistent across jurisdictions, while the marked differences between users should be the result of external, country-specific, forces that construct an image of users as "deviants" as opposed to "patients."

The remainder of this chapter is dedicated to establishing the country-specific context in Canada and the United Kingdom and to provide an overview of the dissertation's structure. Therefore, after discussing the current state of cannabis use and regulation in these two countries, the chapter will introduce the study's research questions and conclude by summarizing the subsequent chapters.

1.2. Country-specific context

The World Drug Report (2016) reports that an estimated quarter of a billion people (~5%) between the ages of 15 and 64 used at least one drug in 2014. With an estimated 183 million people using cannabis in 2014, it remains the most commonly used illicit drug globally. Although the global prevalence rates remained stable for the past three years, some regions of the world, including Western and Central Europe and North America, are experiencing rising rates of use in recent years. This is buttressed by findings regarding drug supply and markets, which show that cannabis remains the most commonly cultivated drug crop globally, being reported by 129 countries from 2009-2014; indeed, the Americas are the biggest producers and consumers of cannabis herb (not resin).

Table 1. Country-specific context

	Canada	United Kingdom
Population (2015, 2016)	35.6 million	65.7 million
Number of past-year illicit drug users	3.7 million (~13%)	2.7 million (~8.4%)
Number of past-year cannabis users	3.6 million (~12%)	2.1 million (~6.5%)
Number that used prescription painkillers	3.8 million (~13%)[a]	2.4 million (~7.5%)
Number of medical cannabis users	831,000 (~24% of past-year users)	Unknown
Legal status of cannabis	Schedule II (medical exception)	Class B (prohibited)
Penalties for possession	5 years imprisonment or summary conviction (1st 6 months imprisonment, $1,000 fine & subsequent is 1 year imprisonment, $2,000 fine)	5 years imprisonment, unlimited fine or both; police may issue 'warning' or £90 fine
Penalties for supply and production	14 years imprisonment	14 years imprisonment, unlimited fine or both
Legal status of medical cannabis	Legalized (2001)	No exception
Drug offences (2015-16)	96,000 (51% cannabis possession)	139,278 (114,640 for cannabis possession)
Cannabis seizures (amount seized) (2015-16)	8,906 (~1.77 kg)[b]	109,527 (~30.5 kg)

Note: Estimated drug use in the United Kingdom obtained from 2015-16 Crime Survey in England and Wales (aged 16-59); estimated drug use in Canada obtained from 2015 Canadian Tobacco, Alcohol and Drugs Survey (CTADS; aged 15 and older).

[a] In reference to opioid pain relievers; [b] Figure reported by the Royal Canadian Mounted Police (RCMP): Mawani et al. (2017).

Table 1 compares the Canadian and United Kingdom context specifically. Although Canada's population is just over half the size of the United Kingdom's, estimates suggest that there are about one million more past-year illicit drug users and one and a half million more prescription painkiller and past-year cannabis users. Interestingly, moreover, while nearly all the past-year illicit drug users in Canada used cannabis (3.6 of 3.7 million), the number is much lower in the United Kingdom (2.1 of 2.7 million), suggesting that when we talk about illicit drug users in Canada, we are primarily talking about cannabis users, while in the United Kingdom there is a greater medley. The number of people using cannabis specifically for medical purposes is difficult to extrapolate for the British because cannabis use in any form remains illegal in the United Kingdom. Alternatively, because Canada permits medical use, the government can collect data on prevalence rates by recording the number of people with a recognized medical cannabis license, which amounted to about 830,000 Canadians, or one-fourth (~24%) of past-year users.

Cannabis legislation and penalties are both different and the same in the two countries. In Canada, cannabis is as a Schedule II prohibited substance with a medical exception (since 2001), yielding penalties of 5 years imprisonment or a summary conviction for possession and 14 years imprisonment for production and supply. The United Kingdom classifies cannabis as a Class B prohibited drug without a medical exception, which can result in 5 years of imprisonment, an unlimited fine or both for possession and 14 years imprisonment, unlimited fines, or both for production and supply.

Drug offense rates are seemingly reflective of the policies currently in place. For example, despite reporting much higher rates of drug use generally and cannabis use specifically, Canada only reported 96,000 drug offenses between 2015-2016, of which about half (51%) were for cannabis possession. The United Kingdom, on the other hand, reported more cannabis possession offences (114,640) than the total number of drug offences in Canada during the same timeframe, and about two-thirds as many total drug offences (139,278), suggesting that policing efforts are considerably higher in the United Kingdom even though the population of users is much lower. The number and amount of cannabis seizures in the two countries is another indication of how heavily cannabis markets are policed in the United Kingdom, and not policed in Canada. Indeed, the number of cannabis seizures in Canada between 2015-2016 was less than

9,000, amounting to about 1.77 kilograms, while in the United Kingdom there were more than 100,000 incidences leading to the seizure of about 30.5 kilograms of cannabis.

1.3. Research questions and objectives

It is now more difficult than ever to turn a blind eye to the liberalization of cannabis and cannabis policy transpiring in many parts of the world. Instead, the most pragmatic next step is to accept the social transformation and develop a comprehensive understanding of the population using cannabis for medical purposes. The purpose of this study, therefore, is two-fold: explore (1) the *profile* of medical cannabis users residing in two countries—that is, develop a better understanding of who the users are, including their motivations for use, consumption habits, and experiences with cannabis—and (2) the interplay between users and social structures that govern their daily lives (e.g., the healthcare and criminal justice systems). Fortunately, the data used for this study was obtained from self-identified medical users residing in two countries (Canada and the United Kingdom) with very different approaches to (medical) cannabis regulation. This makes it possible to draw conclusions about drug policy and user profiles, including, particularly, the similarities and differences between users that stem from policy and individual-level characteristics. The remainder of this chapter proceeds by introducing readers to the study objectives and research questions that are used to guide the dissertation and then concludes by summarizing each of the remaining chapters.

To understand the profile of medical cannabis users and speak to the external forces that shape their lives, the dissertation has four research objectives and three research questions.

Research objectives:

1. Describe the profile of medical cannabis users residing, primarily, in Canada and the United Kingdom;
2. explore external, country-specific, similarities and differences to determine which factors are significantly related to social, legal, and supply-oriented barriers;

3. explore individual-level similarities and differences, including reasons for use (i.e., medical conditions/symptoms being treated), patterns of use, cannabis use experience, and sociability (in the context of cannabis use);
4. identify which factors are associated with legal, social, and accessibility barriers; and
5. identify which factors are associated with the decision to grow a personal supply (i.e., supply-side autonomy).

Research questions:

1. In what ways are medical cannabis users the same and different?
    a. 1a. Are there individual-level differences stemming from “age” and “experience using cannabis”?
    b. Are there external, country-specific, differences stemming from policy and law enforcement practices?
2. Which factors are associated with encountering social, legal, and supply-oriented barriers?
3. In what ways are medical users that grow and do not grow their own different and the same?

1.4. Chapter summaries

Chapter 2 introduces readers to the historical development of cannabis and its regulation in Canada and the United Kingdom. It describes four bodies of research, embedded in the sociology of deviance, life-course of drug use, drug prohibition, and social capital literature, that serve as the dissertation’s conceptual foundation. The chapter concludes by bridging the prohibition and drug use research by offering one possible explanation for the way users overcome barriers created by policy (a “resource-based” explanation). Readers should leave this chapter with an understanding of cannabis careers (that is, knowledge of how cannabis use changes over time, depending, particularly, on the user’s position in the life-course), the (negative) social and policy effects of prohibition (i.e., “barriers”), and social capital as it relates to “resourcefulness”.

The third chapter discusses cannabis pharmacology, reviews the most common medical uses of cannabis, and offers a descriptive profile of the users according to recent research. In this regard, it considers the users' demographics, patterns of use, and experience using cannabis for medical and non-medical purposes. The goals of this chapter are two-fold: 1) provide a comprehensive overview of the user-population and 2) substantiate the efficacy of medical cannabis as a treatment option for many of the most commonly reported uses.

Chapter 4 introduces the study methodology. Specifically, it describes the survey questionnaire, data collection procedure, comparative (cross-national) and internet-mediated research design, social network analysis and relevant terminology, model and variable construction, data limitations, and analytic framework.

Chapter 5 begins with a comprehensive description of the participants, including their demographics, patterns of use, experience using cannabis for medical and non-medical purposes, medical conditions and/or symptoms being treated with cannabis, and reasons for using cannabis therapeutically. The chapter continues by introducing two separate models. The first pulls from the cannabis career and life-course of drug use literature to construct user-typologies using the respondents' age, experience using cannabis for non-medical purposes, age of onset for medical use, and experience as a medical user. The second model considers the participants' consumption habits. Using information about their patterns of use (i.e., the frequency of use, amount consumed, changes in amounts used, and spending habits), I propose a "needs-based" model that illuminates the heaviest users.

Chapter 6 explores whether respondents are sociable (in the context of medical cannabis use) and embedded in "cannabis networks". Whereas chapter 5 serves as an extension of the third chapter by situating participants in the larger body of research on medical cannabis, this chapter is best thought of as an extension of the second chapter, because it uses information about cannabis careers, the life-course of drug use, and sociability/resourcefulness to construct a "resource-based" model. Ultimately, the goals of this chapter are to construct a (1) "sociability" scale and (2) "cannabis network" that can be used to distinguish between participants who are (and are not) embedded in the (medical) cannabis lifestyle. Although the discussion in this chapter is limited to a

descriptive account of participants' network composition and sociability, the findings are used in chapter 7 as part of a predictive, "resource-based," model.

Chapter 7 concludes the results section with a discussion of the barriers created by prohibition. These include restricted access (to medical cannabis) and stigmatization from the criminal justice system, family/friends, and the healthcare system. The goals of this chapter are more ambitious. First, the chapter describes these barriers and the extent to which they are encountered by respondents. Second, treating "barriers" as outcomes, I identify who the most vulnerable populations are by using four different predictive models. These include a "cannabis career", "needs-based", "risk-based," and "resource-based" model. The chapter concludes with a discussion of the way respondents obtain cannabis, including the subpopulation that reports growing its own supply in lieu of relying on others.

Chapter 8 concludes the dissertation with a detailed summary of the results and their relevance to the ongoing debate about medical cannabis use and regulation. The chapter aims to provide a comprehensive assessment of the process of becoming and remaining a "medical" cannabis user under two, relatively dissimilar, regulatory systems. I highlight the external (country-specific) and individual-level similarities and differences that exist between participants. I then conclude with an acknowledgment of the study's methodological limitations and by proposing a set of "best practices" to guide future research and policy decisions regarding medical cannabis.

Chapter 2.

Conceptual framework

Cannabis is a genus of flowering plant with a deep-rooted history in ancient societies. Since as early as 8000 B.C., it has been used as an industrial hemp to create fiber, fabric, paper, and food (Abel, 1980; Earleywine, 2002). It was not until several centuries later, during the 2700s B.C., that its use as an analgesic was first documented in China when emperor Shen Neng used it to treat menstrual fatigue, gout, rheumatism, malaria, beriberi, constipation, and memory loss (Abel, 1980). Its use as an intoxicant has a similar, albeit separate, history that probably started in China around the same time, but this remains speculative because of poor documentation (Earleywine, 2002). Because of its durability and versatility, it is believed to have spread across the globe through many trade routes, eventually being cultivated in nearly every part of the world (Decorte, Potter, & Bouchard, 2011; EMCDDA, 2012). Cannabis was likely introduced to Western culture during the 1850s, where it was quickly portrayed as an evil and a menace with ties to criminality (Julien, Advokat, & Comaty, 2008).

During the past half-century, the image of cannabis has shifted from a deviant and often sensationally stigmatized drug—largely the result of ongoing moral panics—with very low public approval to a socially tolerated intoxicant and medication. In the United States, support for cannabis legalization is at the zenith of a 47-year trend and has essentially reversed over the past decade, with nearly three-fifths (57%) of Americans favoring legalization and only two-fifths (37%) supporting continued prohibition. The spiked approval for legalization in recent years is witnessed across all age categories, but only millennials (18-35 years old) prefer legalization overwhelmingly (Geiger, 2016; Swift, 2016).

In Canada, a recent poll by the Globe and Mail found that support for legalization may be as high as 68 percent among Canadians, although the proportion that opposes its legalization is comparable to the American polls (LeBlanc, 2016). While older reports documenting (dis)approval are lacking, Canada's court system has supported the progressive move toward legalization several times since the turn of the century, thus documenting, and ostensibly shaping, a recent trend in support for the medical use of

cannabis. The United Kingdom, on the other hand, may be witnessing a similar shift in public support for medical cannabis use by the populace, but the government and courts do not seem to be as willing to endorse its use at this time. To fully understand how the modern political and cultural climate came to be in these two countries, we must first consider the historical developments that informed the current context.

2.1. History of cannabis and its regulation in the United Kingdom and Canada

2.1.1. Uncertainty in the United Kingdom

Cannabis received very little attention in the United Kingdom until recently. Prohibition began during the 1920s in response to external pressures from colonial leaders, but it was regarded with little concern internally. This is probably because the only people using the drug between the World Wars were migrants in port towns traveling along the Empire's trade routes. However, the fact that its use was initially framed as a criminal justice, rather than public health, issue laid the groundwork for a punitive stance to be taken against users even before they existed; it was a draconian response to a problem that had yet to emerge. By the end of the Second World War, a wave of migrants from the Empire's colonies arrived in the United Kingdom and brought with them a host of cultural practices that included the use of cannabis. The proceeding decades witnessed the spread of cannabis use in migrant communities to residents, including younger working- and middle-class whites who were drawn to the allure of a "counter-culture" movement (Mills, 2013).

Cannabis consumption and control during the 1950s and 1960s was largely associated with migrant/minority populations rather than the drug itself. The fact that its use was framed as a criminal justice issue meant that the opposition to reform had control and that many minority and migrant users would, therefore, be vulnerable to legal repercussion. This was certainly the case at the time, as arrest rates for cannabis possession hit a historic high and, excluding synthetic cannabinoids, there was very little interest in its therapeutic applications (Mills, 2013). As Abrams (2008) recounts, cannabis use was minimal but increasing in the United Kingdom during the 1950s. Cannabis-related convictions did not spike until the early-1960s and although the rates then stagnated at the elevated level for a few years, the second spike in law

enforcement activity transpired between 1966 and 1967. Following the rise in law enforcement activity and concerns about the seemingly overstated harms of cannabis, the Home Office Advisory Committee on Drug Dependence conducted a review, paying attention to the supposed harms caused by the drug and the effects of its prohibition. In 1969, in what has been coined the "Wootton Report", Baroness Wootton advocated for a clean bill of health, arguing that the drug's stated harms are not as damaging as previously thought when used in moderation and that its prohibition creates significant social harms. The report concluded by recommending that people found in possession of cannabis no longer be subject to a custodial sentence (Mills, 2013).

The Wootton Report carried weight in the proceeding decade as the government advocated for reduced sentences of possession-related offenses both in spirit and in practice. Indeed, the beginning of the 1970s was an important time for cannabis policy reform in the United Kingdom. The newly created Misuse of Drugs Act of 1971 (MDA) shifted the policy focus away from a punitive law enforcement approach to one that sought harm reduction for minor cannabis offenses. In practice, the MDA created a formal scale of regulation for illicit substances that, among other things, established a distinction between cannabis possession for personal use and possession with the intent to supply, therefore making it possible for law enforcement officials to treat the former with much more leniency than the latter (Mills, 2013). Wootton's recommendations and their inclusion in the MDA collectively influenced what has been coined the "British Compromise"—a shift in policy that continued treating cannabis as an illicit drug on the books, but reduced the sentences for simple possession and liberalized the way local police enforced the laws in practice (i.e., from sanctioning to cautions). This form of *de facto* decriminalization "was to continue to shape approaches to cannabis in the UK for more than a quarter of a century…" (p. 156).

The policy shift that began during the early 1970s managed to have a lasting effect, as more drug offenses resulted in a caution rather than a custodial sentence. By the end of the 1970s, the number of people arrested for cannabis possession dropped significantly and law enforcement began prioritizing trafficking offenses. Despite having a positive effect on *punishment severity* for simple possession, the change in legislation also enhanced the level of drug law enforcement and, by extension, the number of users receiving a criminal record. Consequently, while there was a meaningful decline in the number of users receiving a custodial sentence, the intention in reforming cannabis

policies at the turn of the decade seems to have been hampered by zealous law enforcement efforts aimed at using the law to stop-and-frisk an increasing number of people (Mills, 2013).

It can be said that the 1970s were a time for cannabis policy reform within the court system and that this directly impacted the way users were sentenced; yet, the same cannot be said for the way users were treated by local law enforcement authorities. This would change in the following decade as recreational cannabis use spread among populations of indigenous working-class British and other, more harmful, drugs like heroin attracted the attention of legislators and law enforcement officials. Certainly, this was a time in British history that cannabis faded from political consciousness and became a secondary concern for law enforcement; the only meaningful discourse at the time was a recognition that policing simple possession was an inefficient use of law enforcement resources (Mills, 2013). Despite the immense amount of resources needed to police cannabis possession, however, it remained the primary drug offense resulting in an arrest (70-85% of drug offenses) for the remainder of the century (Police Foundation, 2000).

The 1990s laid the groundwork for the current climate of cannabis consumption and control. Indeed, there was renewed interest in the medical properties of cannabis following the isolation of THC during the 1960s and the discovery of the endocannabinoid system in 1988 (Grinspoon, 2001; Matsuda, Lolait, Brownstein, Young, & Bronner, 1990; Mechoulam & Gaoni, 1965). The House of Lords Select Committee on Science and Technology, prompted by these new discoveries, conducted a comprehensive review of medical cannabis and concluded that physicians should be permitted to prescribe it to their suffering patients (House of Lords, 1998). At the same time, the British Medical Journal released an editorial claiming that cannabinoids can be used as a treatment option for several medical conditions and that the side effects are not as harmful as other medications used for similar symptoms (Robson, 1998). Furthermore, because of rising prevalence rates among indigenous British populations who incorporated the drug into their daily leisure activities, cannabis became something of a folk medicine during the late-1980s and early-1990s for people coping with daily stresses and pains as well as cancer and multiple sclerosis patients seeking relief from their ailments. Coincidentally, during the late-1990s, when the government was trying to determine the best way to utilize cannabis-based products for medical purposes without

promoting recreational use, GW Pharmaceuticals received permission from the Home Office to cultivate cannabis for research purposes and eventually introduced the first synthetic cannabinoid product (Sativex) to be used by multiple sclerosis patients suffering from neuropathic pain, spasticity, and other related symptoms (Mills, 2013).

It was also during the late-1990s that a group of researchers from Manchester proposed a theory of normalization to describe contemporary shifts in adolescent drug use. According to Parker et al. (1998), recreational cannabis use (and other dance drugs) by British youths had increased to such a degree that it amounted to a *normal* part of adolescence, rather than a deviant act engaged in by a select few. The fact that it was becoming ubiquitous in many social circles and tolerated by an increasing number of abstainers meant that many younger users did not need to feel ostracized for choosing an unorthodox recreational habit.

The three hallmarks of cannabis consumption and control during the 1990s—that is, (1) rising prevalence rates among British populations (especially among adolescents), (2) the realization that policing simple possession was too burdensome on law enforcement resources, and (3) renewed interest in the drug's medical properties—gave way to an entirely new political climate at the turn of the century. In 2002, after the New Labour Party had its second victory in the polls, the British government proposed to reclassify cannabis for the first time since the MDA was passed in 1971 (Acevedo, 2007). Around the same time (in 2003), the Association of Police Officers (ACPO) issued guidelines for policing cannabis possession, which suggested that street warnings be the principal tactic used by officers when other aggravating factors were absent (Pearson, 2007). Public support for reform influenced a shift in policy that resulted in cannabis being downgraded from a Class B to a Class C drug in 2009.

Although reclassification did little more than alter the penalties for production and distribution, and merely stipulated that possession-related offenses continue to be treated as illegal on the books but not lead to an arrest in practice (a form of *de facto* legalization), in 2009 the Conservative government reversed the policy shift for seemingly political reasons, thus ending the four-year-long stretch with cannabis as a Class C drug (Acevedo, 2007; Bewley-Taylor, 2012). Since being reverted to Class B, cannabis users, regardless of their reason for use, risk facing prison sentences of up to 5 years for possession and 14 years for supply and production and/or unlimited fines

(Gov.UK, 2017). A few key issues that overshadowed the decision to reclassify cannabis, and eventually served as the basis for reversing it, include: 1) concerns about sending the wrong message to young people that certain kinds of use are acceptable, 2) the lowering age at which people began using cannabis, 3) the presence of highly potent herbal strains (i.e., "skunk") and 4) their affiliation with schizophrenia and other mental illnesses (Pearson, 2007; Waldstein, 2010). As Waldstein (2010) concluded, "...fear of skunk-induced mental health problems in a small minority of cannabis users drives prohibitionist policies that hinder the development and understanding of medicinal applications of cannabis" (p. 41).

Revitalized interest in cannabis' therapeutic potential during the 1990s and the uncertain political climate that followed during the early-2000s facilitated a heated debate about one's (human) *right* to self-medicate and society's obligation to protect itself from public harms (Bone & Seddon, 2016). In their review of a cluster of cases brought before the Court of Appeals regarding the right to self-medicate with cannabis (R v. Quayle; R v. Wales; R v. Taylor; R v. Kenny), Bone and Seddon (2016) argued that the British courts took a narrow and uncritical approach consistent with previous legal precedence when they refused to grant patients a legal right to use cannabis therapeutically. In a subsequent juxtaposition with contemporary international cases, the authors concluded that the United Kingdom's resistance to medical cannabis places it behind other European (e.g., Israel, Holland, and the Czech Republic) and North American countries in progressing toward a system empowering of human rights and harm reduction.

2.1.2. A medical exception in Canada

Much like in the United Kingdom, cannabis and its control were not "hot topics" in Canada during the early part of the twentieth century. The initial push toward criminalization was mixed with a desire to prohibit the use of opium by Chinese populations in Canada and the United States during the early 1900s and the publication of a highly politicized 1922 book by the first female magistrate, Emily Murphy, titled *The Black Candle* (Boyd, 1984; Fischer, Ala-Leppilampi, Single, & Robins, 2003). Cannabis was first criminalized nationally in the *Narcotics Drug Act* a year later, amidst a widespread moral panic over the drug's overstated harms, but Canadian officials failed to even mention this at the 1925 Geneva Convention, where it was first formally

prohibited internationally, showing just how inconsequential a concern it was at the time (Fischer et al., 2003).

Canada remained indifferent to cannabis and its regulation until the 1960s when the international drug enforcement community introduced the Single Convention on Narcotic Drugs (1961), effectively condemning the production, distribution, and use of cannabis and other harder drugs for non-scientific and non-medical purposes (Bewley-Taylor, 2012). Canada, being a Signatory to the Convention, implemented provisions of the international doctrine in their newly revamped domestic drug control agenda known as the *Narcotic Control Act of 1961*. The newly enacted legislation placed cannabis in Schedule 1, thus subjecting people arrested for simple possession to a maximum sentence of seven years imprisonment.

It was also at this point in history that politicians pushed the onus of drug enforcement on the courts. In practice, an increasing number of people were being arrested for possessing cannabis during the latter half of the 1960s, but the courts chose to stray from the use of custodial sentences; in 1969 Parliament amended the Narcotic Control Act so that simple possession could be tried on indictment or summary conviction, thus rendering a maximum fine of $1,000, imprisonment of six months, or both for a first offense. The change in legislation immediately resulted in a consequential decline in the number of people receiving a custodial sentence: convictions for cannabis possession resulting in imprisonment dropped from 44 percent in 1968 to 10 percent in 1970 (Bryan, 1979).

As was the case elsewhere in North America and Europe, the 1960s were a time of social revolution, anti-authoritativeness, and the “counter-culture” movement, which paralleled the proliferation of recreational cannabis use across Canada. The complimentary rise in prevalence rates and control resulted in more people from privileged social positions being positioned on the wrong side of the law. Interestingly, this did not match the imagine of drug-induced criminals that fueled much of the earlier hysteria and quickly lead to social tension between the government and its constituents, as the effects of prohibition were now being felt by people with social and political influence (Fischer et al., 2003; Giffen, Endicott, & Lambert, 1991). This conflict between the citizenry and its leaders lead to political activism in the early-1970s that sought to change the climate of prohibition as it regarded cannabis possession.

In 1968, the Liberal government established the Commission of Inquiry into the Non-Medical Use of Drugs (Le Dain Commission) to investigate cannabis use, treatment, and control. A few years later, the Commission released a "Cannabis Report" insisting that prohibition was too punitive an option for cannabis control and, instead, advocated for its repeal in the *Criminal Code* (Fischer et al., 2003; Le Dain Commission, 1972). Around the same time, Trudeau's Government proposed Bill S-19, which would have removed cannabis from the Narcotic Control Act and placed it under the Food and Drug Act, essentially decriminalizing simple possession. The bill would have reduced the maximum sentence for trafficking, importing and simple possession of cannabis—making simple possession punishable on summary conviction only—but failed, even after being passed by the Senate, to garner enough support from the House of Commons (Bryan, 1979).

Cannabis users remained primary targets for law enforcement and legislative interdiction despite these efforts for effective policy reform. Convictions for possession climbed during the 1970s, rising from 29,739 in 1974 to 34,121 in 1976; in 1977 more than 45,000 people were charged with simple possession by police. Excluding federal highway traffic offenses, cannabis offenses amounted to 25 percent of the total increase in adults charged with a crime between 1969 and 1976 (Bryan, 1979). It is perhaps unsurprising, then, that Canada arrested "...more of its citizens per capita for cannabis possession than any other country in the world" (p. 186). Still, even with such high rates of arrest, the courts obviously preferred to treat possession sentences with a fine—at least until 1985 when information about sentencing practices became less transparent (Moreau, 1995 as cited in Erickson & Hyshka, 2010).

Increasing dissatisfaction with failed prohibitionist efforts, rising drug scares surrounding crack/cocaine use, shifting societal views of drug use (as a public health, rather than social deviance, issue), attempts to disassociate from the United States' Reagan-era "War on Drugs", and a need for public support by the federal government lead Canada to experience a "policy window" during the 1980s that could have fostered meaningful change in drug policy (Fischer, 1999). Although the changing political environment contributed to a progressive policy initiative (Canada's Drug Strategy) that would have moved the country in line with principles of public health, the substance of the initiative was "rather symbolic and ineffective" and "did not change the fundamental characteristics of existing Canadian prohibition policy" (p. 197). Instead, the window of

opportunity closed during the early-1990s with the same political and bureaucratic process embedded in criminal law.

Drug policy reform became the subject of continued contention during the early-1990s as the two major political parties proposed disparate agendas for tackling the problem. First, the Conservative government introduced Bill C-85 in 1992 which would have doubled the maximum fine and custodial sentence for first-time (summary offense) offenders of simple possession. The incoming Liberal government then followed with Bill C-7 in 1993, which generated social and political upheaval from several Canadian institutions (excluding government and law enforcement officials) and eventually lead to the creation of a separate schedule for cannabis possession offenses that reduced maximum sentencing for cases involving less than 30 grams of marijuana or 1 gram of hashish (Fischer et al., 2003). Government support for harm reduction that accompanied the latter bill, and rising support for cannabis policy reform by most Canadians, helped inform the current drug control legislation, known as the *Controlled Drugs and Substance Act* (CDSA). Cannabis was placed under Schedule II of the new legislation, which meant that users would risk facing five years of imprisonment if found guilty of an indictable offense or six months' imprisonment and/or a $1,000 fine for a summary conviction. The change in regulation was deemed a step in the right direction by many, although concerns still loomed over rising arrests rates for drug offenses during the mid-to-late-1990s and the continued use of custodial sentences for simple possession (Fischer et al., 2003).

In addition to the federal government's diversion efforts as part of the CDSA, the late-1990s were a crucial time for the medical use of cannabis. A series of four key court cases established a strong precedence in support of one's human right to use cannabis for therapeutic purposes. In two cases from Ontario (R v. Clay, 1997; R v. Parker, 1997), the judges accepted expert testimony downplaying the harms of cannabis and explicitly recognizing its medical benefits. In R v. Parker, the judge concluded that preventing the defendant from using cannabis to treat his epileptic seizures was a direct violation of the Charter right to health and protection of life. In Alberta, where cannabis cases have not been treated as leniently as in Ontario, a multiple sclerosis patient openly advertised, and then acted upon, their intention to provide another multiple sclerosis patient with (medical) cannabis. Despite being charged with possessing cannabis for the purpose of trafficking, the judge showed incredible leniency by granting

the defendant additional time before trial to collect evidence in support of the medicinal use of cannabis. This was then used as the basis to establish an "exceptional circumstance" that warranted a $500 fine, rather than a custodial sentence, as a fitting punishment (Erickson & Oscapella, 1999). Support for medical cannabis continued to grow in the forthcoming years as the R v. Parker case was appealed (see below) and the Federal Courts began requiring that the government make a regulated medicinal supply available to patients; however, it can certainly be said that the millennium ended with a "puzzling" scenario wherein policy reform was being touted as a viable, and in many cases necessary, human rights issue that failed to garner enough government support to reach fruition (Erickson & Oscapella, 1999).

The twenty-first century began where the preceding century left off—progressing toward a patient-centered approach to medical cannabis control. In July 2000, the Crown appealed R v. Parker, arguing that the trial judge made a factual error in affirming that Parker required medical cannabis, but failed to reach its objective. Instead, the case became a turning point in cannabis legislation. In the ruling, judge Rosenberg argued that it was a violation of Parker's right to liberty and security to have to choose between his healthcare and the possibility of being incarcerated for self-medicating with cannabis. Rather than overturning the trial court's decision and subjecting the defendant to legal repercussion, the Appeals Court choose to establish a new precedence, mandating that the federal government make a sanctioned supply of cannabis available to needy patients (R v. Parker, 2000).

Health Canada responded to the Ontario court decisions by creating the Marihuana Medical Access Division (MMAD) in 2000 and the Marihuana Medical Access Regulations (MMAR) in 2001. The MMAR was intended to clearly define the circumstances and way cannabis possession and distribution would be permitted. This entailed three essential elements: (1) the right to possess dried cannabis for personal use, (2) the right to grow or designate someone to grow for one's use, and (3) the right to access seeds and dried cannabis from a government supply. Shortly after being enacted, however, the program came under legal scrutiny for failing to adequately establish a medical exemption allowing patients to possess cannabis, and for failing to meet its obligation of supplying needy patients with a government-regulated supply (R v. J.P., 2003; R v. Long, 2007; Sfetkopoulos v. Canada, 2008).

In response to the legal decisions, criticisms that the production and supply of medical cannabis under the MMAR program was too open to abuse, and concerns about the role government played in granting a medical right to possess and access cannabis, Health Canada introduced a new set of regulations in July 2013, collectively known as the Marihuana for Medical Purposes Regulation (MMPR). The MMPR initiated "a process of establishing a 'de facto' state of cannabis use legalization under the 'veil' of medicalization in Canada" (Fischer, Kuganesan, & Room, 2015). Specifically, it intended to shift the production and distribution of medical cannabis away from the individual and toward a regulated commercial market. Under the new regulations, the government no longer played a role in determining who was prescribed medical cannabis; the decision became one between a medical professional and the patient, therefore acknowledging the user's inherent "patient" status (Belle-Isle, Walsh, Callaway, Lucas, Capler, Kay, & Holtzman, 2014). Because of the change in legislation, an increasing number of Canadians began applying for a medical exemption to access and possess cannabis. In December 2012, shortly before the MMPR went into effect, there were roughly 28,000 Canadians authorized to obtain medical cannabis (Health Canada, 2013 as cited in Belle-Isle et al., 2014)—representing roughly five percent of the estimated medical users at the time, while in October 2013, shortly after its enactment, the number of authorized users climbed to 37,000 (The Globe and Mail, 2013).

The MMPR was, however, deemed unconstitutional because it did not allow patients to continue growing their own supply. A British Columbia Federal Court judge determined that patients with a federal license to possess and/or grow medical cannabis before March 21, 2014 should be permitted to continue doing so until the Constitutional Challenge Trial proceedings established new provisions for personal production (Mertl, 2015). These revisions were introduced in August 2016 as part of the Access to Cannabis for Medical Purposes Regulation (ACMPR), which adopted the guidelines stipulated in the MMPR and added a personal cultivation regimen akin to what was included in the MMAR.

It is apparent from this brief review that medical cannabis (and the users) has yet to find a permanent position in Canadian society. Indeed, Canada has shown a desire to liberalize cannabis control in recent years (e.g., see also House of Commons, 2002; Senate Special Committee on Illegal Drugs, 2002)—especially as it concerns medical cannabis, and is set to pursue full legalization next year (Gilchrist, 2017). However,

amidst the current of constantly changing legislation is a growing population of users that subject themselves to possible legal repercussion and social disapproval. Nevertheless, when juxtaposed to the United Kingdom context, the fact that Canadian medical cannabis users have had their rights defended by the courts several times and are witnessing the social acceptance of a medical cannabis system/community that gives them access to social support and a superior distribution system is a reassuring fact that change is imminent (Hathaway & Rossiter, 2007). This simple fact also makes for a meaningful opportunity to draw conclusions about the social effects of being a medical user under two relatively dissimilar regulatory systems.

In the following sections, I review four aspects of cannabis policy and use that will serve as the foundation for this dissertation. Specifically, I begin with a theoretical discussion of cannabis use (the cannabis career framework), where I consider the process of becoming a (medical) cannabis user and the social/legal barriers that serve to deter continued use. Capitalizing on this framework, I then move on to a detailed discussion of the life-course perspective as it relates to cannabis use—paying attention to age-specific features of cannabis use and socialization. I then review several important manifestations of drug prohibition (i.e., the "barriers" created by prohibition) before concluding with a discussion of social capital and the requisite "resourcefulness" needed to overcome these barriers.

2.2. Conceptual framework

2.2.1. Howard Becker's cannabis career framework

In his seminal work on deviant careers, Howard Becker (1953, 1955, 1963) described two complementary learning processes that cannabis users must master in order to become regular users. He argued that people must learn to consume cannabis and derive pleasure from its effects or they will have little interest in moving beyond experimental use (1953). Moreover, because cannabis was prohibited by law and condemned in most social circles at the time, inexperienced users had to learn to overcome formal legal (i.e., restricted *supply* access and possible legal consequences) and informal social (i.e., disapproval from friends and family members and internal guilt for violating a moral imperative) controls that worked collectively to prevent them from developing routine patterns of use. Becker described how users learn to overcome

these barriers using a (cannabis) career analogy comprised of three developmental stages: *beginner*, *occasional*, and *regular user*.

Becker keenly noted the salient role social interaction plays in facilitating the learning processes during the beginner stage. He found that inexperienced users had little knowledge about the drug and its supply before joining unconventional social groups. But after being invited in, these social settings offered access to a supply and the opportunity to experiment with and learn about the drug. For example, he found that users were only able to experiment with the drug during chance encounters at this stage:

> But the thing was, we didn't know where to get any. None of us knew where to get it or how to find out where to get it. Well, there was this one chick there…she had some spade girl friends and she had turned on [consumed cannabis] before with them. […] But she knew a little more about it than any of the rest of us. So she got hold of some, through these spade friends, and one night she brought down a couple of sticks. (p. 37)

The issue of accessibility was an immediate barrier that restricted one's use to those rare instances where the drug was made available by other users. Accordingly, for Becker, this introductory phase was crucial because it is where the user learned to overcome barriers that would otherwise prevent them from gravitating toward the lifestyle. New users may find it difficult to develop routine consumption habits if they are constantly trying to conceal their (deviant) lifestyle from nonusers while also trying to acquire a supply. By interacting with other users, however, the novice undergoes a socialization process where s/he learns to overcome impediments to accessibility and feelings of stigmatization projected by nonusers. Indeed, new users may find it difficult to maintain regular consumption patterns if they are constantly in the company of nonusers, because identifying as a cannabis user would likely result in ostracism. Thus, it is only by spending more time with friends and acquaintances that use cannabis, and/or learning how to conceal their use from nonusers, that one can transcend the novice stage and becomes an occasional or regular user. Lastly, to overcome the issue of morality, users must learn to perceive their use as controlled and, therefore, unproblematic; only after demonstrating to themselves that they can use cannabis in moderation can they develop routine patterns of use.

Becker's theory has been replicated several times in recent years and the results suggest a few important changes in the way cannabis is used and experienced.

Certainly, much has changed both socially and politically since the 1950s when cannabis use was widely regarded as a deviant behavior. In one such study, Hirsch, Conforti, and Graney (1990) argued that Becker's theory inappropriately excluded an important initial stage where the user develops a willingness to experiment with the drug. They also question the value in differentiating between occasional and regular use, as regular use seems too vague a concept in its original form. Instead of referring to someone as a "regular user," the authors argued that stages of regular use should be distinguished by frequency (e.g., daily, weekly, or monthly). Moreover, the authors appropriately concluded that cannabis careers should not be thought of as progressing linearly from experimental to regular use because people often fluctuate between periods of escalation, de-escalation, and dependency over the life-course (Hirsch et al., 1990). In their discussion, Hirsch et al. (1990) advocate for a conceptualization of cannabis careers more akin to Van Dijk's (1972), who proposed three possible stages: experimentalism, integrated use, and excessive use (which could account for a stage focusing on addiction; as cited in Hirsch et al., 1990, pp. 505-506).

Hathaway (1997) tested the merits of the three social controls several years later with a sample of 30 regular Canadian users (i.e., consuming cannabis at least once a month for one year) and found little support for Becker's conceptualization. Hathaway concluded that restricted access to a reliable supply was no longer a major barrier to regular use because most participants were affiliated with *social suppliers* through friends and acquaintances that also used cannabis. Decisions about when, where and with whom to use cannabis were no longer tied to concerns about secrecy and stigmatization but instead stemmed from a desire to be respectful of those who choose not to use the drug. Comparatively, Hathaway's participants showed disregard toward others who felt that their use was immoral, arguing instead that they should not be judged harshly for their lifestyle choice.

Hallstone (2002) applied Becker's theory to a sample of 31 current and former cannabis smokers from Hawai'i and found that his principles still offered valuable insights about the learning process, but concluded that some aspects needed updating to account for changes in the way cannabis is used. Contrary to Becker's supposition that learning necessarily occurs in a social setting with more experienced users, Hallstone found that some people self-educate by imitating seasoned users and reading literature on their own. His participants also refuted the notion that many first-time users

need help getting high and recognizing the effects as pleasurable, possibly stemming from the availability of more potent strains and concentrated delivery methods (e.g., bongs, pipes, and vaporizers).

In a recent replication of Becker's theory, Järvinen and Ravn (2014) supported Hallstone's argument that users need not learn the inhalation techniques and the appropriate mindset to enjoy being high, nor do they go through a lengthy beginner stage as Becker suggested. Instead, Järvinen and Ravn emphasized different developmental stages that extend the scope of use beyond Becker's *regular* user to include problematic or *individualized, disintegrated* use. This is perhaps an artifact of the sample, which included young people enrolled in a drug treatment program; yet, it also depicted subcultural socialization as an unnecessary prerequisite to establishing routine patterns of use. Accordingly, socialization (or lack thereof) among cannabis users may serve as a qualitative distinction between types, or stages, of use rather than an inherent feature of cannabis use generally (e.g., see also Korf, Benschop, & Wouters, 2007). Consequently, the authors concluded that cannabis careers are best thought of as ranging from occasional, socially integrated, and individualized, disintegrated (i.e., more problematic) use.

Summary:

Becker's theory of learning to become a cannabis user has been tested and reconstructed multiple times to account for cultural changes and innovations in cannabis consumption. While cannabis careers remain understudied (Hathaway, 2004), the general conclusion derived from replication studies is that the career approach still provides a useful framework for investigating and describing the process of becoming and remaining a cannabis user. Contrary to Becker's recreational users however, long-term users describe motivations and patterns of use that fluctuate over the life-course, often becoming more therapeutic and solitary as they age and mature through the career stages (Fischer, Dawe, McGuire, Shuper, Jones, Rudzinski, & Rehm, 2012; Hathaway, 2004; Järvinen & Ravn, 2014; Reilly, Didcott, Swift, & Hall, 1998). For example, Lisa, a participant from Järvinen and Ravn (2014) study, explained that her "therapeutic" motivations for using cannabis emerged organically while she was a recreational user. Similarly, a subpopulation of long-term users from Fischer et al.'s (2012) sample of Canadian university students reported using cannabis therapeutically at least half the

time to cope with feelings of depression, anxiety, and stress, further demonstrating the multiplicity of uses and apparent segue from leisure to medicinal use. These and other studies raise an important question about cannabis careers only hinted at in the burgeoning medical cannabis literature; namely, that the therapeutic use of cannabis is merely an advanced career stage predicated on anecdotal experiences and alternative socialization processes that emphasize the drug's therapeutic properties above euphoric feelings of "getting high" (O'Brien, 2013).

2.2.2. Cannabis use across the life-course: how users change over time

A separate, albeit overlapping, body of research looks at cannabis use at different periods of the life-course to understand the changing nature of use with age. From this perspective, features of cannabis use are still reflective of one's experiences but also include specific lifestyle characteristics associated with the "social clock" (Neugarten, Moore, & Lowe, 1965; Peterson, 1996). Some examples of this may include adult responsibilities (e.g., school, work, and family commitments), (fewer) social/leisure opportunities, and differences in the way people see theirs or others' use (i.e., internal self-identification and external labeling), especially when one's identification as a cannabis user is seemingly disconnected from their pro-social role as, for example, a parent, colleague, or professional. The following section provides a brief overview of the life-course perspective and highlights many unique features of cannabis use during adolescence and adulthood.

Quintessential developmental trajectory?

Most people that use cannabis will begin doing so during adolescence and will have stopped by their mid-30s. Their use will remain largely experimental, infrequent, and social—something they do with their friends and close acquaintances who also smoke. However, when users are surveyed retrospectively or by longitudinal design, the evidence shows that the developmental process is more heterogeneous.

Attempts to identify a quintessential maturation process are often confounded by studies that find heterogeneity in developmental trajectories. Becker's initial conceptualization may well be criticized for offering too rudimentary an understanding of cannabis careers as progressing in a linear fashion from inexperienced to regular use.

In this retrospective study of “experienced” adult users from Toronto, Ontario, Hathaway (2004) asked participants to describe how their patterns of use changed over time using one of six different trajectories: initial heavy use followed by declines, slowly increasing use over time, stable use, increase to a peak followed by declines, intermittent use, or variable use. While about one-fifth reported increased use (22%) or stable use (19%), the largest portion (32%) felt that their use was variable and often reflective of current life circumstances (see also Chatwin & Porteous, 2013, p. 244). The most popular circumstances leading to increased use included more opportunities, fewer controls, and a desire to cope with feelings of stress and other problems. Contrarily, respondents felt that their use declined because of new relationships or responsibilities and preventive controls like having a disruption in supply.

Ellickson, Martino, and Collins (2004) and Kandel and Chen (2000) identified typologies of cannabis careers using information about respondents’ consumption habits during adolescence and young adulthood. Both studies identified four groups (or “types”) of users based on their age of onset and subsequent use. Kandel and Chen (2000) used cluster analysis to group a sample of 708 respondents by “age of onset”, “chronicity of heavy use”, and “persistence of use”. Their results suggest that cannabis careers do not always progress in linear fashion, nor are they the same for all users. Instead, they found two small groups of heavy users—one with an early onset and “heavy” patterns of use (8.6%) and another with an older age of onset followed by heavy use (18.9%)—and two large groups of “light” users who either started using early (35.3%) or later in adolescence (37.2%).

Ellickson et al. (2004) distinguished between “abstainers” (45%) and different types of users with longitudinal data from 5,833 participants. Respondents with some history of cannabis use differed by their age of onset and continued use. That is, initially heavy users with an early age of onset (< 13 years old) followed by decreasing use during high school and adulthood (“early high users”; 5%), continuously light patterns of use and an early age of onset (“stable light users”; 17%), a later age of onset (13-15 years old) and continuously infrequent patterns of use (“occasional light users”; 53%), and a later age of onset but increased use every year of the study (“steady increasers”; 25%). While providing evidence of developmental heterogeneity, collectively, these results suggest that most users maintain light or experimental patterns of use while smaller groups will reach—and in some cases maintain—high levels for prolonged

periods of time. There are, however, indications that certain patterns of use are simply reflective of one's age and experience using cannabis.

Korf et al. (2007) surveyed 388 past-month users from Holland about their demographics, user characteristics, consumption habits, and environmental characteristics. Like Kandel and Chen (2000), the authors used k-means cluster analysis to construct a typology of user preferences. They found that respondents were best characterized by a three-cluster model that grouped users by their current age, age of onset, current consumption habits, and preference for more or less potent cannabis. Cluster II ("consistent high") displayed the most moderation and had the greatest likelihood of downward adjustment; Cluster I ("strongest high") had the most excessive patterns of use and a lower likelihood of adjusting their intake with more potent strains; and Cluster III ("steady quantity") fell in between the two extremes.

The demographics of each group suggest that patterns of use are reflective of respondents' current age and experience using cannabis. For example, the first cluster was the youngest (22.7 years), had the earliest age of onset (14.4 years), shortest career duration (8.2 years), most frequent and highest magnitude of use (35.3 grams/month), and preference for more potent strains and higher levels of intoxication. Respondents in the second cluster displayed more moderation, as evinced by their average monthly intake (8.1 grams/month) and preference for "milder" strains and moderate levels of intoxication. Notably, this group had the highest proportion of female respondents (35.5%), an older age (27.7 years), a later age of first use (16.8 years), and slightly longer cannabis career (10.8 years). The third cluster differed significantly from the first two in several important ways. They were much older (37.5 years) and more experienced on average (20.3 years), tended to use cannabis by themselves, and typically used moderate monthly amounts (19.5 grams/month). These differences in age and career duration are important to consider here, as they may represent different stages of the cannabis career: people in the early stages of development may have problematic consumption habits and seek maximum highs, while older users begin to establish moderate patterns of use and a comfort with mild(er) levels of intoxication.

(Changes in) Socialization and lifestyle

Cannabis use during adolescence is best characterized as a social activity among groups of friends and close acquaintances who share an interest in the lifestyle

(e.g., see Agrawal, Lynskey, Bucholz, Madden, & Heath, 2007; Chen & Kandel, 1998; Ellickson et al., 2004; Griffin, Botvin, Scheier, & Nichols, 2002; Guxens, Nebot, & Ariza, 2007; Järvinen & Ravn, 2014; Ragan & Beaver, 2009). Regardless of user typology or experience, nearly all users are introduced to the drug by a friend, close acquaintance, or family member (Chatwin & Porteous, 2013; Gruber, Pope, & Oliva, 1997; Hathaway, 2004; Hirsch et al., 1990; Osborne & Fogel, 2008). It is within these (social) setting that inexperienced users gain access to mentorship, solidarity, and supply sources, which, as Becker (1963) noted, are prerequisites to developing routine patterns of use. As they grow older, users still prefer to be social, but the number of friends and acquaintances that smoke begins to decline, leaving many to reduce their own use and/or develop solitary consumption habits (Chatwin & Porteous, 2013; Frank, Christensen, & Dahl, 2013; Gruber et al., 1997; Hathaway, 2003; Shukla, 2006). This likely explains why many users see the social aspect as part of a transition phase while they learn to be autonomous and begin using alone (Hathaway, 1997a, 1997b, 2004; Järvinen & Ravn, 2014); indeed, solitary use is one strategy used by adults so that they can maintain regular patterns of use (Frank et al., 2013). With age and experience, however, cannabis use begins to take on a new, more personal, meaning than when it is part of a group activity (Hathaway, 1997b).

Instead of being used to enhance social activities, cannabis use becomes context-specific, often being experienced differently from situation-to-situation depending on the user's mood, motivations, and environment (Hammersley, Jenkins, & Reid, 2001; Hathaway, 1997b). Social activities are, then, just one of many settings in which adults use cannabis (Liebregts, van der Pol, van Laar, de Graaf, van den Brink, & Korf, 2015; Osborne & Fogel, 2008; Pearson, 2001). More often, adults report using cannabis while at home and toward the end of the day when they have completed all their daily tasks.

Their motivations are recreational and leisurely, but also become subjectively therapeutic and geared toward health promotion. For example, Liebregts et al. (2015) sample of frequent (3+ days/week) users in young adulthood reported using cannabis both to enhance inspiration and relaxation; "it allowed them to let go, take a break from daily stress and take a moment to themselves" (p. 146). Similarly, Frank et al. (2013) and Osborne and Fogel (2008) found that their sample of adults from Denmark and Canada used cannabis for the same general reasons; that is, to enhance concentration and relaxation. By increasing their concentration, respondents could block out negative

thoughts, criticisms, and self-doubts, while also being able to change the way they think and do things. Relaxation was a way for them to take their mind off daily stresses and enjoy leisure activities like watching television or movies, listening to music, and having sex. In Australia, Reilly et al. (1998) sampled long-term adult users and found that they used cannabis primarily to relieve tension and relax, feel good, improve well-being, feel euphoric or elated, enhance creativity/thinking, and improve sleep. Both Fischer et al.'s (2012) sample of high-frequency users from a Canadian university and Gruber et al.'s (1997) sample of very long-term adult users from the United States felt that their use was partly therapeutic—a way to cope with feelings of depression, anxiety, and stress. A small subset of Gruber et al.'s participants also felt that cannabis could counteract irritability, decrease pain, and decrease the frequency and severity of migraines. Adult long-term users (aged 35-60) primarily from England classified their reasons for use in three ways: recreational/pleasurable, health-promoting, and, "familiar". As the authors noted, the second category had some overlap with the recreational/pleasurable motives and generally emphasized the drug's "calming qualities", which helped them relieve stress, relax at the end of the day, and sleep better. About a third of their participants noted the drug's ability to relieve pain and symptoms associated with Asperger's syndrome, ADHD, restless leg syndrome, and joint inflammation. For some, it was clear that cannabis was "invaluable in treating particular physical and mental health problems… [which] are not motivations for use that are commonly cited among younger or less experienced users" (Chatwin & Porteous, 2013, p. 251).

Summary

The nature of cannabis use is age-specific in many ways. Most people begin using cannabis after being introduced to it by friends, peers, or siblings during adolescence. Cannabis use is highly social at this stage and often involves a learning process where users acquire knowledge about the drug, its (euphoric) effects, and the rituals surrounding its use in social settings. Many people continue using cannabis recreationally during young adulthood and most often in social settings with other users, but they also report changing patterns of use that are solitary and therapeutic. This tends to be the case because of changes in the user's life that include more responsibilities and fewer leisure opportunities.

2.2.3. Drug policy and manifestations of prohibition: stigmatization and restricted access to suppliers

Becker (1963) noted several “barriers” that deterred infrequent and experimental users from developing routine patterns of use. Many experts have since documented similar hurdles that medical cannabis patients must overcome to access and use their cannabis without being socially marginalized. These barriers are both implicitly projected by society (e.g., social stigmatization and condemnation) and explicitly by agents of control (e.g., legal and medical stigmatization). When the population includes medical patients simply trying to treat their maladies, these barriers can serve to effectively marginalize a population already suffering from “layered vulnerabilities” (Hathaway, 2015). In the following section, I detail four prominent barriers created by legal prohibition that result in drug users (and medical patients) being demarcated. Briefly, these include stigmatization from friends, family, and acquaintances (i.e., social stigmatization); legal/criminal justice stigmatization; stigmatization from the medical community; and restricted access to supply sources.

Social, legal, and medical stigmatization

Stigmatization and the most vulnerable populations

The concept of stigmatization came to the forefronts of social research during the 1960s with Goffman's (1963) groundbreaking essay, *Stigma: Notes on the Management of Spoiled Identity.* In his conceptualization, Goffman described the stigmatization process vulnerable populations undergo and the techniques that they use to conceal the undesirable aspects of their identity. Accordingly, Goffman defined stigma as “an attribute that is significantly discrediting” and “an undesirable difference” (p. 3) subject to belittlement by the normative society through social- and state-sanctioned rules and punishment. An important theme underpinning much of his work was a focus on “identity”, that is, the way it is constructed, presented, and received by others. Identity and, by extension, stigmatization are social processes that exist on a continuum of degrees and may be felt differently between populations and settings. Indeed, stigma tends to exist where there are elements of labeling, stereotyping, separation, and status loss in the presence of power imbalances (Link & Phelan, 2001). Moreover, both identity and stigmatization are context-specific and need not be reflective of one’s self-identification in all circumstances. For example, someone may identify (and be

identified) as a student or employee during the week and a member of a sports team, counterculture social group, or political movement over the weekend. Accordingly, one's identity during the week may be completely disconnected from who they self-identify as during leisure time, suggesting the two are fluid terms not well-encapsulated by general labels or identities. Consistent with this fluidity, the likelihood of being stigmatized is far greater for some populations in certain situations.

Since the time of his writing, Goffman has spawned a growing interest in the populations most vulnerable to stigmatization and the effects of such condemnation on social relationships, health/well-being, and self-identity. Among the most assailable are those with conspicuous physical abnormalities (e.g., leprosy, obesity, or muscular dystrophy), flawed or weak character traits (e.g., addiction, homosexuality, drug use, and mental illness), and devalued group membership—what Goffman refers to as "tribal stigma"—with a specific nationality, religion, or race (Buchanan & Young, 2000; Carr & Friedman, 2005; Goffman, 1963; Kaufman & Johnson, 2004; Lloyd, 2013). Problematic drug users (PDUs), for example, are subject to stigmatization through public discourse, by healthcare professionals and pharmacies, while seeking treatment and in recovery, and by law enforcement personnel tasked with policing drug markets and users, all of which may be compounded by other forms of stigmatization experienced by the user (Lloyd, 2013).

Cannabis use and stigmatization

When Becker (1963) started the conversation about becoming a regular cannabis user, he emphasized the salience of learning to overcome barriers that were intended to restrict the development of routine patterns of use. These barriers were both formal and informal and generally stemmed from the drug's (il)legality and moral beliefs about what is (and is not) considered acceptable social behavior. As aforementioned, this entailed learning tactics of deception to avoid being identified as a deviant drug user by unsupportive others, maintaining control over one's use to avoid being labeled a problematic or addicted user, and gaining access to illicit suppliers through drug (sub)cultures since the law strictly prohibited the production and distribution of the drug for legal purposes. Perhaps most importantly then, cannabis prohibition played an important role in creating barriers by shaping public discourse, perceptions, and policies that depicted users as existing outside the confines of normative society; indeed, the act

of consuming psychoactive substances is seemingly symbolic of one's own moral beliefs, and something judged harshly as a form of weakness or impaired judgment by others (Room, 2005).

Stigmatization is felt on a personal level when family, friends, and acquaintances learn about one's lifestyle and subsequently label them as a *deviant* or *drug user*. Structural marginalization, stemming from local and national policies, further alienates users by negatively affecting their self-perception and ability to fully integrate into the local community through social- and state-sanctioned punishment and demarcation (Becker, 1963; Buchanan & Young, 2000; Stuber, Galea, & Link, 2008). However, during the late-19th and early-20th-century the discourse surrounding cannabis use changed from one couched in Becker's (1963) deviance framework toward more progressive depictions as a "normalized" or "tolerable" form of deviance (Duff, Asbridge, Brochu, Cousineau, Hathaway, Marsh, & Erickson, 2012; Hathaway, 1997a; Hathaway & Atkinson, 2001; Parker et al., 1998; Parker et al., 2002; Stebbins, 1996).

Nearly two decades ago, Parker et al. (1998) and Parker et al. (2002) proposed a theory of normalization to explain adolescent drug use in the United Kingdom. Their position was that some kinds of drug use, especially the use of cannabis during juvenescence, have become objectively normalized behaviors, as evinced by the ubiquity of experimental users, the drugs' seamless availability, and the social acceptance of users by non-using members of society. Since that time, experts have made similar claims for the controlled use of cannabis during adulthood in the United Kingdom (Pearson, 2001) and Canada (Duff et al., 2012; Hathaway, Comeau, & Erickson, 2011).

Tolerance of cannabis use by the general population is a key marker of its acceptance. Support for decriminalization is increasingly becoming the norm among "baby boomers" and younger generations (Savas, 2001). Recent findings from a representative sample of Torontonians suggests that many Canadians may favor the loosening of laws against cannabis, including a sizable portion who oppose legalization but support current laws allowing seriously ill patients to grow and possess cannabis for health-related purposes (Hathaway, Erickson, & Lucas, 2007). Modern depictions of cannabis users as demographically heterogeneous and otherwise law-abiding members

of society are a robust contrast to the heretofore assumption of deviance that tainted users' self-image and prospects for social acceptance.

Many users and non-users now consider cannabis to be a relatively benign lifestyle choice when used in moderation and in the appropriate context (Dahl, 2014; Hammersley et al., 2001; Hathaway, 1997b, 2004; Pearson, 2001). Certainly, many socially integrated users choose to live "in accordance with mainstream society's norms, expectations, and goals, with cannabis use being one of the few exceptions" (Dahl & Heggen, 2014, p. 393). This has cultivated an environment wherein users are comfortable around non-users and willing to use cannabis in a multitude of settings that would not have been appropriate when Becker began his research (Hathaway, 1997a; Hirsch et al., 1990). Law enforcement in many countries, such as Canada and the United Kingdom, are, moreover, seemingly ambivalent about the proactive enforcement of possession-related offenses, thus leading to declining rates of arrest/punishment and perceived threats of legal repercussion by the users (Chatwin & Porteous, 2013; Hathaway & Atkinson, 2001; Hathaway et al., 2011). The number of users that report negative encounters, or concerns about such encounters, with law enforcement because of their cannabis use is minimal (Fischer et al., 2012; Hathaway, 1997a, 2004b; Hathaway et al., 2011). Consequently, the social controls that once deterred the development of routine patterns of use and pushed users toward deviant drug-using groups are now largely discredited for being out of sync with users' own experiences and the growing social acceptance of their lifestyle by others (Hathaway, 1997a, 1997b; Hathaway & Atkinson, 2001). This does not mean that all users are immune to condemnation, however; the stigmatization of such intoxicants remains context-specific, varying between countries, settings, cultures, and user-populations (Hammersley et al., 2001; Room, 2005; Zinberg, 1984).

Adults and medical patients are two populations that continue to internalize some forms of stigmatization even in countries purportedly benefiting from the move toward normalization. Adults, for example, recognize that their work and family obligations are at odds with their identity as a "drug user" to some people, which may result in social stigmatization from friends, family, and colleagues (Hammersley et al., 2001; Hathaway et al., 2011). Socially integrated Canadians have acknowledged that friends, family members, and co-workers are potential sources of social stigmatization, but feel that circumstances, such as driving or working while intoxicated, rather than use per se that

are condemned (Duff et al., 2012). Dahl (2014) found that socially integrated Norwegian adults have experiences like their Canadian counterparts, including concerns about the disconnect between their pro-social roles and use of cannabis. Ultimately, her participants felt that social constructions of cannabis users were more harmful than the drug itself and that they needed to incorporate tactics, such as practicing moderation and strategic use, if they wanted to avoid having to quit or continue facing external social pressure and stigmatization (see also Hathaway et al., 2011 for similarities in Canada). Research from the United States and the United Kingdom provide further evidence that adult users are perturbed by the way their lifestyle is framed in a social and legal context, feeling that the most harmful effects of cannabis use come from its illegal status, not the psycho- or physiological effects it may produce (Chatwin & Porteous, 2013; Shukla, 2006).

Stigmatization of medical cannabis users

Many medical patients do not find that their use creates significant conflict with family members, and instead report feeling that their family is supportive of their use if only to see them comfortable and without pain (Coomber, Oliver, & Morris, 2003; Ogborne, Smart, Weber, & Birchmore-Timney, 2000; Swift, Gates, & Dillon, 2005). Moreover, possible legal repercussions appear to play a trivial role in their decision to use or not use cannabis therapeutically; some are, in fact, drawn to "the 'buzz' of doing something illegal" and accept that the minute possibility of being arrested is merely an aspect of the drug's illegality that must be taken into consideration (Coomber et al., 2003, p. 342). Others feel that the law is a looming concern and the possibility of arrest is something that must be carefully avoided, although the legal ramifications may be less pronounced in countries permitting medical use. For example, one Canadian medical user had a positive encounter with law enforcement after being reported by a neighbor for smoking cannabis. Rather than being further demonized, the officer suggested tactics that would help the user avoid upsetting neighbors in the future (Ogborne, Smart, Weber, et al., 2000). Where they do experience feelings of stigmatization, however, is in relation to their pro-social responsibilities (e.g., childcare and employment), (typically low) economic and social status, ailments, disabilities, and perceived status as a "recreational" user or "stoner" simply trying to exploit loopholes in the law (Bottorff et al., 2013; Hathaway, 2015; Satterlund, Lee, & Moore, 2015).

In instances where their “medical” status is challenged, patients may feel that their experiences are delegitimized and dismissed as purely anecdotal and biased (Chapkis & Webb, 2008). Consequently, medical patients use a variety of tactics to avoid potential feelings of stigmatization. Many will emphasize their “patient” status and praise cannabis’s therapeutic benefits as “necessary” rather than “social” (Bottorff et al., 2013; Pedersen & Sandberg, 2012; Satterlund et al., 2015). As one medical user explained, “I think the recreational is more for relaxation not for pain, what it’s supposed to be for, it’s more for them to party with. For us, it’s more of a life thing” (Bottorff et al., 2013, p.7). Patients also make conscious efforts to procure and use their cannabis-like pharmaceuticals and other analgesics (Bottorff et al., 2013; O’Brien, 2013), although this often entails the use of entrepreneurial “medical cannabis consultants” and “medical cannabis clinics,” because the normative healthcare system and physicians are regarded as dubious sources of information and structural marginalization (Satterlund et al., 2015).

The healthcare system, and physicians as gatekeepers to services and supply sources in particular, is a barrier that patients must learn to overcome (Belle-Isle & Hathaway, 2007). This is especially apparent in countries with conservative views and a reluctance to embrace a regulatory framework that would permit its use for medical purposes. Hakkarainen, Frank, Barratt, Dahl, Decorte, Karjalainen et al. (2015) found that medical users residing in countries with exculpatory laws against medical cannabis had doctors willing to suggest its use as a treatment option proportionally more often than those living in countries with a punitive stance toward the drug. Accordingly, more participants from Australia (23.4%), Belgium (25.5%), and Germany (22.6%) had support from healthcare professionals than those residing in Denmark (13.8%), the United Kingdom (15.5%), and Finland (8.9%), although it is important to note that in almost 60 percent of all cases the doctor did not make a recommendation and the participant did not ask for one.

Despite the reluctance of many healthcare professionals to embrace cannabis as a treatment option, there is evidence that medical users maintain regular contact with their physicians and specialists and openly divulge their use of cannabis. Medical users from Denmark and Norway have reported that healthcare professionals respond to their admissions with outright disapproval or seeming indifference (Dahl & Frank, 2011; Pedersen & Sandberg, 2012). Pedersen and Sandberg (2012) found that many of their

Norwegian respondents spent years trying to convince their primary care provider of cannabis's benefits, only to find that they dismissed it as a treatment option, insisting that they needed more professional support and experts' opinions. Rather than working closely with their patient, physicians would only go as far as recommending that they see other medical professionals. Even after earnest attempts to persuade their physicians with information about diagnoses and personal knowledge that they acquired by conducting their own research, their participants were left feeling angry and bitter that their perspective was disregarded with continued skepticism and reluctance.

Other studies of medical users from Australia and the United Kingdom have found that patients maintain regular contact with their healthcare providers and typically have a positive dialogue about the therapeutic use of cannabis. In Australia for example, Swift et al. (2005) found that most of their participants had a regular doctor (90%) and about half had a regular specialist (55%). Virtually all discussed their therapeutic use with a clinician (90%) and found them to be supportive (75%: 74% for specialists and 81% for nurses). Coomber et al.'s (2003) sample of medical users from the United Kingdom were also active participants in their treatment and regularly interacted with members of the medical community. Of the 33 participants, 25 were being prescribed medication, and the average participant was seeing three different professionals at the time (general physician, neurologist, and district nurse). Among those that had informed their healthcare provider about their medical use, most received a favorable response, while others felt that the news fell on "deaf ears" or was met with ambivalence, rather than disdain or condemnation. Only one participant reported a negative response, but s/he also felt that they already had a poor relationship.

In Canada, where medical cannabis has been embraced to varying degrees as a legitimate treatment option for many ailments, patients have reported mixed experiences interacting with the healthcare system. Almost all the HIV/AIDS patients from Belle-Isle and Hathaway's (2007) Canadian sample spoke to their doctor about their use of cannabis (92%), and most found them to be supportive (69%) or indifferent (10%). Only nine percent had doctors unwilling to sign their application for a federal authorization and three (respondents) said that their doctor questioned the legitimacy of their illness, insisting that they were not sick enough to need cannabis. One of the primary reasons noted for their reluctance to support the patient's application was fear that they would be reprimanded by the medical association. Ultimately, while a few felt that their physician

was a significant barrier to access legal medical cannabis services, this was not considered a huge burden by most respondents.

In a separate study of Canadian medical patients, Belle-Isle et al. (2014) found several instances in which physicians purportedly impeded treatment efforts. Results indicate that 48 percent of the sample wanted to talk about medical cannabis with their physician but had not. The most frequently cited reasons for not discussing it included: "don't feel comfortable" (62%), "illegal" (46%), and "can't afford cannabis" (9%). Respondents also felt that having the conversation could have a negative effect on their physician-patient relationship. Compared to conversations they had about unrelated medical issues, half (50%) were less satisfied with their communication about medical cannabis, and about a third (31%) felt "often" or "always" discriminated against because of their medical use. It is perhaps unsurprising that 32 percent reported changing physicians to find support for their use; 57 percent of whom changed physicians more than once. Additionally, despite having been legalized country-wide in 2001, their participants reported much different experiences interacting with the healthcare system when residing in certain provinces: the proportion who reported speaking to a physician was much higher in British Columbia and lower in the Maritimes, for example. Finally, the authors also found that participants with certain diagnoses/ailment(s) were more likely to discuss medical cannabis use with their physicians. Respondents treating HIV/AIDS and arthritis were more inclined than others to discuss cannabis, while respondents with anxiety and depression were less likely. HIV/AIDS patients were also less likely to change physicians or have their cannabis recommendation declined.

Ogborne, Smart, Weber et al. (2000) asked 50 self-identified medical users from Canada about cannabis and their experiences interacting with the medical community. Much like the other studies discussed so far, their results suggest that healthcare professions are generally ambivalent or supportive of cannabis use as a remedy, especially when participants had HIV/AIDS or were suffering from nausea and weight loss associated with methadone treatment, chronic pain, epilepsy, menstrual cramps, Crohn's disease, repetitive strain injury, and depression. In total, only 12 had not discussed their cannabis use with a physician. Of those that did, physicians were mostly non-committal, but some were clearly supportive and only three were opposed.

Summary:

It appears that the medical community is one of the primary sources of stigmatization for patients. Rather than being integrated into the healthcare system, about half of patients have difficulty finding a physician willing to support their use (Lucas, 2012), insisting that cannabis is a "bad medicine" with high addiction potential rather than an effective analgesic (Bottorff et al., 2013). Contrasting this perspective are positive experiences reported by patients who find that some members of the medical community value cannabis as an effective treatment option and proactively endorse its use by informing patients of its analgesic effects (Ogborne, Smart, Weber, et al., 2000).

Cannabis markets and restricted access as a barrier

A key regulatory objective of prohibitionists has been to control the degree to which cannabis is made available for consumption. In opposition to the punitive stance taken by the international community during the 1960s and 70s, many countries have embraced progressive control measures to better regulate cannabis markets at the national and/or sub-national level (Bewley-Taylor, 2012). Countries that shifted away from the international framework permit, typically under strict confines, the production and distribution of varying quantities of the drug for recreational, medical, or both purposes. The Netherlands, United States, Uruguay, and Canada became among the first countries to consider alternative regimes—Holland and Canada at the national level and the United States at the sub-national level. The Dutch, pulling from the recommendations stipulated in the Baan and Hulsman Commission, implemented what was until recently the most liberal policy shift by permitting the retail-level sale of small amounts of cannabis in "coffee shops" (Bewley-Taylor, 2012). Since the mid-1990s, 25 states and the District of Columbia have decriminalized cannabis for medical purposes (NORML, 2016; ProCon, 2016). In 2001, Canada became the first country to formally decriminalize medical cannabis across the country, effectively requiring the federal government to make cannabis available to certified medical patients.

The United Kingdom has been engaged in a political quandary since the early-2000s. There was a short window of time (2004-2008) where the government seemed willing to treat cannabis with leniency; however, this was quickly reverted to full prohibition, which established harsh penalties for producing and trafficking cannabis. An unintended consequence of this prohibitionist-style approach is directly reflected in market dynamics. Specifically, restrictions placed on supply and distribution as part of

prohibition contribute to the growth and diversification of an illicit market that operates outside the auspice of government oversight.

The fact that many countries have deviated from the international framework and embraced a multitude of supply-side control measures has been met with reactions ranging from dubious to explicit condemnation (Bewley-Taylor, 2012). The countries experimenting with the various forms of decriminalization/depenalization/legalization are, however, optimistic that the change will have more economic and social benefit by reducing the harms associated with illicit markets and the marginalization of people choosing to use the drug. Canada and the United Kingdom offer an exemplary juxtaposition because of the dissimilar approach each government has taken toward the control of cannabis production and distribution. The markets for cannabis and the options medical patients have available to them are country-specific in this sense and deserving of individual recognition. In the following paragraphs, I provide an overview of the two countries' cannabis markets and review the research regarding "medical" cannabis availability as reported by the users.

Cannabis markets in the United Kingdom: the importance of "social suppliers"

The modern cannabis market in the United Kingdom is, like many other European countries, reflective of significant structural changes that have transpired since the 1990s. Technological innovations in horticulture, an established cannabis culture, and a proliferation in consumer demand have cultivated the growth of a flourishing domestic market that is supported in large part by small- to large-scale social growers and, to a lesser degree, profit-driven commercial growers with or without ties to other criminality (Decorte, 2010a; Hough, Earburton, Few, May, Man, Witton, & Turnbull, 2003; Kirby & Peal, 2015; Potter, 2008, 2010). This change—often referred to by economists as "import substitution"—phased out profit-driven foreign producers and drug traffickers by replacing their share of the market with two fragmented domestic markets: one comprised of people growing for personal use and/or that of their friends and acquaintances and a second commercial market where (typically) large-scale commercial producers sell to dealers and end-users for financial gain. Medical users and growers belong to a separate market that has some overlap with the other two (Potter, 2008).

The two markets are distinguished by their structural and cultural differences. Commercial markets are supported by "for-profit" growers and have a clear division of labor, including the use of middlemen and retail-level dealers (e.g., see Pearson & Hobbs, 2001). Producers and dealers make no distinction between types of consumers and will sell to anyone; their culture is, therefore, profit-driven and may or may not have a semblance of cultural ideology (Hough et al., 2003; Potter & Dann, 2005; Potter, 2010). The alternative market is supported by an assortment of fragmented and decentralized small- to large-scale social growers and dealers who are deeply embedded in the cannabis lifestyle and motivated as much by ideology and altruism as they are by the financial rewards. These "social suppliers" are non-commercial and only sell or give cannabis to non-strangers, such as friends and close acquaintances, which results in high levels of trust and familiarity between growers, suppliers, and users (e.g., see May & Hough, 2004 for a discussion of "closed" and, specifically, "social network" markets).[1]

Given the option, it makes sense that users would prefer buy (or be gifted) their cannabis from trusted friends and acquaintances. Indeed, this level of familiarity/closeness gives the user a greater sense of comfort in knowing where their cannabis came from and the conditions under which it was grown. Moreover, it assuages concerns about the (in)accessibility of suppliers and the possibility of being "ripped off" (i.e., overcharged). It is understandable that a large portion of young adults and regular cannabis users get their supply from a friend, a friend of a friend, or a family member (Chatwin & Porteous, 2013; Chatwin & Potter, 2014; Coomber & Turnbull, 2007; Hough et al., 2003; Parker, 2000; Pearson, 2001). When users are disconnected from the lifestyle (i.e., other users, growers, and suppliers), they also tend to have a much harder time accessing a safe, high quality, and affordable supply (e.g., see Coomber et al., 2003).

The available evidence does not suggest that these are major concerns for most users. Instead, analyses of United Kingdom cannabis markets find that young adults and regular users acquire their supply from friends and acquaintances (Chatwin & Porteous, 2013; Chatwin & Potter, 2014; Coomber & Turnbull, 2007; Hough et al., 2003).

[1]Although, as Potter (2009) notes, these are both subjectively defined terms and may not accurately reflect the true scale of operation or the nature of user-dealer relationships

Both Coomber and Turnbull (2007) and Parker (2000) found that young Britons rarely encountered “street” dealers or utilized the illicit market and instead reported obtaining their supply primarily from close friends and acquaintances who share their sentiments that acquisition is yet another “social” aspect of the cannabis lifestyle. Chatwin and Potter (2014) found supplying to be common among adults residing in the United Kingdom as well. Most often, respondents sourced their cannabis from friends, relatives, and partners (39.3%). During the past year, just over one-tenth “sold for profit” and slightly more “sold to fund their own use”, whereas about a third supplied “but not for profit,” two fifths “bought as part of a larger group”, and slightly more had “given cannabis as a gift,” further suggesting that users regularly facilitate transactions among friends and acquaintances even when it is not for their own consumption. The context surrounding medical cannabis use is, however, in need of much more research to make similar claims.

The few studies that provide information about cannabis procurement suggest it is not a major concern even though regulated storefronts are largely inaccessible. One study of 2,969 self-identified medical users found that less than one-tenth stopped using cannabis therapeutically because they could not find a supply (7%) or could not afford to buy it (5.7%; Ware, Adams, & Guy, 2004). Among a sample of 33 medical users, 5 (15.2%) reported concerns about availability, 10 (30.4%) had similar reservations about the legal risks, and an additional 2 worried about “dodgy” or dangerous dealing environments; nevertheless, it is worth noting that none of the interviewees had any cannabis-related problems with the police. It is unsurprising that more than half (54.6%) either bought the drug themselves, grew it, or did both. Others saw problems in terms of availability, growing difficulties, or being dependent on dealers. For example, one interviewee that relied on her son’s connections to obtain cannabis had a difficult time finding a supplier once he moved away for college. Some participants also lamented that their disabilities made it difficult to get around/access a dealer and others were unsure how to access illicit dealers or otherwise had reservations about getting involved with the illicit drug trade. The cost of cannabis posed a problem for nearly half of the sample (42.4%), which forced many to make hard decision about going without their medicine and/or passing on other necessities so that they could afford it; self-reliance through personal cultivation, in this regard, served a viable option for five participants, all of which did not have problems affording their medicine. Considering many of these

supply difficulties, it is perhaps unsurprising that most participants who bought cannabis themselves had a “trusted supplier”. Nevertheless, if suppliers were inaccessible, most said that they would grow it themselves or seek a new source, even if that meant asking around, soliciting unknown street dealers, and overpaying (Coomber et al., 2003).

Cannabis markets in Canada: the importance of a medical model

The Canadian cannabis market that exists outside the confines of medical use resembles the one in the United Kingdom. Canadian studies with samples of non-medical users find that many acquire cannabis from illicit suppliers, either directly or indirectly through a friend (Duff et al., 2012). This is at least partly facilitated by their embeddedness in large social networks of users, which facilitate the friendly supply for cheaper prices and/or without payment. Duff et al., (2012) found that more than 75 percent of their participants spent less than $100 per month and 20 percent did not spend anything. This market dynamic has moved many users away from criminal dealers by ensuring accessibility to a safer and more dependable supply option through friendship networks.

Canadian patients have the legal option to obtain their medicine from Health Canada’s licensed producers, by designated someone to grow it for them, or, because of recent changes in legislation, by growing small amounts themselves. The illicit market is also an option and varies considerably between types of dealers (e.g., street dealers and social suppliers), unsanctioned storefronts (e.g., dispensaries/compassion clubs), and unauthorized personal cultivation.

Before implementing a medical model in 2001, most Canadian patients obtained their cannabis from dealers or friends (Ogborne, Smart, Weber, et al., 2000). After receiving authorization to access one of the legal options however, significantly more authorized users obtained their medicine through Health Canada, designated growers, dispensaries, or by growing it themselves, while unauthorized users continued obtaining theirs from friends and strangers (Walsh, Callaway, Belle-Isle, Capler, Kay, Lucas, & Holtzman, 2013). The onus placed on patients has unfortunately resulted in barriers to access and under-utilization of services, as patients typically report using one (or many) unsanctioned supply sources in addition to (or in lieu of) the permitted outlets (Belle-Isle et al., 2014). Belle-Isle and Hathaway (2007) found that their sample of HIV/AIDS patients had a difficult time accessing legal cannabis: while less than 2 percent obtained

theirs through Health Canada and an additional 12 percent through licensed growers, 86 percent turned to illegal sources, such as compassion clubs (36%), friends and acquaintances (62%), street dealers (31%), and illegal personal cultivation (8%). Similarly, Bottorff et al. (2013) found that less than half (5 of 11) of their sample with a license purchased cannabis from Health Canada and about half (10 of 23) from licensed growers, while the majority (20 of 23) used Compassion Clubs and non-licensed growers (10 of 23). Participants from Lucas's (2012) study (in British Columbia) also reported minimal use of Health Canada's supply (8.2% of participants) and instead opted to grow their own or designated someone to grow for them (80%). Frequenting compassion clubs or dispensaries (>50%) and purchasing from friends (38.8%) and street dealers (22%) were popular options as well, but personal cultivation (65.1%) and dispensaries (24.1%) were reported as preferred methods by most participants.

While the medical model seems to have been a huge step in the right direction, the situation still appears to be evolving in response to patients' outcries and a burgeoning body of research that documents many of their concerns. In one such study, participants that reported buying medical cannabis indicated that the unit cost was a barrier. The median amount spent was $200 per month. More than half felt that they were sometimes or never able to afford enough to relieve their symptoms, and approximately one-third reported that they often or always chose between cannabis and other necessities (e.g., food, rent, or other medicines), because they lacked the financial means. Affordability appeared to disproportionately impact the poorest and most seriously ill patients, such as the group reporting fair-to-poor health, who are far more likely than healthier patients to make decisions about buying their medicine or other life necessities; indeed, over half indicated that financial consideration interfered with their ability to treat symptoms with cannabis (Belle-Isle et al., 2014).

It is clear from this discussion that accessibility continues to be an important barrier that users wishing to maintain regular patterns of use must learn to overcome. Certainly, those with more social connections and a commitment to the lifestyle benefit from solidarity, a sense of belonging, and easier access to safe and affordable supply sources, even when such sources operate outside the law. These networks of close affiliates, friends, and family members provide an option that is better than the street market and, in many cases, the pseudo-legal medical market. Therefore, it would be appropriate to consider the importance of being sociable and, by extension, resourceful

as a viable way to overcome many of the abovementioned barriers. In the next section, I introduce a theoretical framework that encapsulates the essence of sociability and resourcefulness, known as "social capital," and situate it within the conversation about cannabis use.

2.2.4. Social capital and the "resourceful" patient

Social capital refers to the "resources embedded in a social structure which are accessed and/or mobilized in purposive action" (Lin, 1999, p. 35). These resources may benefit the individual(s) involved in transferring capital or the larger collective which is the recipients of pooled capital greater than the cumulative number of people involved in the network (Lin, 1999). Social capital enhances actions and outcomes by facilitating the flow of information, exerting influence over network actors, and can speak to an actor's social credentials (Lin, 1999). Adler and Kwon (2002) refer to the substance of social capital as "goodwill"—the effect of which manifests through the spread of information, influence, and solidarity. Here, social relationships serve as the social structure underpinning social capital; they offer the *opportunity* to exchange/transfer capital when one or more actors are *motivated* (e.g., by expectancies of reciprocity or groups norms) and *able* to provide resources.

Benefits of social capital are wide-ranging and encompass several utilities. One advantage of being well-connected is having access to information, whether that be learning about opportunities, industry innovations, or social events and gatherings (Adler & Kwon, 2002). Medical patients may, for example, be introduced to new treatment options by their physician or specialist. In this context, the presence of a social relationship between the doctor and patient translates to the exchange of information. Social capital also benefits actors involved in the exchange through influence, control, and power (Adler & Kwon, 2002). The outcome of this advantage is clear in business settings, where employers and enterprises can use their social capital as leverage to broker deals or gain status within the organization. Finally, social solidarity is a primary manifestation of social capital apparent in group settings. Collectives of people have established norms governing their social interactions—such as sharing cannabis in social settings, taking turns buying rounds at the pub, or waiting for a turn to contribute to a group conversation rather than interrupting a speaker—and when these norms are disrupted or otherwise dismissed, the collective can exert control over the socialization

process by discouraging negative behavior and/or excluding those actors causing a disturbance. Indeed, solidarity takes several forms and offers a multitude of benefits to the collective: it helps to promote group norms, cultivate a sense of trust and belonging within the group and accelerates the degree to which group members aid one another in times of distress. In this regard, it plays a crucial role in contributing to and reinforcing one's social identity and commitment to the larger social group or organization and helps to enhance the well-being and life chances of group members (Lin, 1999).

Social support is one form of social capital cultivated in environments where solidarity and integration are high. Indeed, integration correlates positively with the quality and quantity of support through the establishment and maintenance of new and preexisting relationships (Song, Son, & Lin, 2011). Social groups and communities play an important role in facilitating access to resources because of the large number of people available to form a relationship with and the social norms of trust, reciprocity, and commitment embedded in group cohesion. In the seminal work by House (1981), social support was conceptualized in four ways: 1) *emotional support* (provision of love, trust, caring, and empathy), 2) *instrumental support* (provision of tangible goods and services), 3) *informational support* (provision of advice, guidance, and information to help with problem-solving), and 4) *appraisal support* (provision of information to assist in self-evaluation). Although the term remains an ambiguous construct because of the numerous ways it has been operationalized over the years, it can be understood broadly as the tangible and intangible aid that is obtained through one's social network (Berkman, 1984; Song et al., 2011).

Both social support and social capital are important features of all social networks, but their availability may be determined by environmental and cultural factors (Kim, Sherman, & Taylor, 2008). For this dissertation, I consider whether social capital is available among social networks of medical cannabis users. In doing so, I incorporate measures of sociability known to be important markers of social cohesion/solidarity (i.e., group norms, trust, and comfort) and the social practices of cannabis users. I also consider participants' (ego) network attributes and the resources that are available through their immediate social relationships. Some of the manifestations of social capital and support I include are: access to information (whether the participant was informed about medical cannabis by a physician or their closest friends, family members and/or acquaintances), access to social suppliers (whether they have been sold/gifted

cannabis by someone close to them), and access to supportive others (whether family/friends and physicians support their use). Moreover, we may speculate that the most well connected and sociable are also the most resourceful, as their affiliations provide information and other resources that can help them overcome many of the barriers. Therefore, I also explore whether a resource-based model can explain one's ability to overcome social, legal and medical stigmatization, as well as supply-oriented autonomy—that is, the ability to grow or obtain for free rather than buy cannabis. In the following paragraphs, I briefly describe cannabis use as a social activity and show how cultural practices and ideologies can facilitate the exchange of resources and help people overcome the previously discussed barriers.

The "allure" of being social

Cannabis belongs to a "user culture" of its own (Becker, 1967; Duff et al., 2012; Reinarman & Cohen, 2007). Users often describe distinct lifestyle preferences that include elements of sociability, mentorship, and solidarity among group members (Becker, 1963). Part of the socialization process includes learning the importance of secrecy and proper settings for use (to avoid unwanted stigmatization), argot necessary to communicate with other users, and conduct norms to follow when making retail purchases from illicit market dealers (Belackova & Vaccaro, 2013; Johnson, Bardhi, Sifaneck, & Dunlap, 2006; Reinarman & Cohen, 2007). Indeed, members of the cannabis culture often report norm expectations among cannabis-using "friends", which emphasize reciprocal buying and sharing of cannabis within friendship networks and brokering to "social dealers" (i.e., small-scale retail-level dealers who tend to be users themselves) when friends need a supply (Belackova & Vaccaro, 2013; R. Coomber & Turnbull, 2007). Perhaps most importantly, these practices help to ensure market separation so that cannabis users are protected against potential law enforcement encounters and drug dealers who subscribe to a disparate, profit-driven, culture (Sandberg, 2012).

"Social suppliers" are increasingly being recognized for the important role they play in supporting users and protecting them from harms associated with illicit retail markets (e.g., law enforcement encounters, exposure to adulterated substances, etc.). The term itself has become a burgeoning topic in the academic literature in recent years and fits with other findings of contemporary cannabis markets (e.g., see Chatwin &

Potter, 2014; Coomber, 2010; Coomber, Moyle, & South, 2016; Coomber & Turnbull, 2007; Coomber & Moyle, 2014; Hakkarainen et al., 2015; Hough et al., 2003; Lenton, Grigg, Scott, & Barratt, 2016; Moyle, Coomber, & Lowther, 2013; Pearson, 2001; Taylor & Potter, 2013; van de Ven & Mulrooney, 2017; Werse & Bernard, 2016). Recent evidence suggests that social supply—often for free (i.e., "gifting")—is a normal part of the cannabis lifestyle, and especially so among groups of heavy users (Caulkins & Pacula, 2006). These suppliers are typically embedded within users' immediate social network or are connected to the user through a friendship or family intermediary and provide the drug as a favor rather than for a profit (Caulkins & Pacula, 2006; Duff & Erickson, 2014; Lenton, Grigg, Scott, Barratt, & Eleftheriadis, 2015; Sandberg, 2012; Smith & Flatley, 2011). The users themselves also report sharing or "gifting" their supply with others (Caulkins & Pacula, 2006; Coomber & Turnbull, 2007; Korf et al., 2007), suggesting that consumption and (informal) "distribution" are correlated and, potentially, normalized behaviors in many social circles (Chatwin & Potter, 2014). Remaining well-connected to other users (and dealers) is thus an important feature of being a regular user in areas where access to supply sources is restricted by policy and law enforcement practices, but less concerning when (pseudo-)legal outlets, such as coffee shops and dispensaries, are available (Caulkins & Pacula, 2006; Liebregts, Benschop, van der Pol, van Laar, de Graaf, van den Brink, & Korf, 2011).

Cannabis use is also associated, to varying degrees, with identity formation. It can serve as the "social glue" that bonds people together, promotes group solidarity, and gives members a shared identity (Hammersley et al., 2001). Many cannabis users report a greater sense of "closeness" to others because of their cannabis use and the shared experience both of being "high" and the cannabis itself (Belackova & Vaccaro, 2013; Liebregts et al., 2011; Sandberg, 2013). Sandberg (2013, p.73) goes so far to explain that "passing something from *lip* to *lip* emits strong signals of togetherness and friendship. Smoking the same joint is, therefore, a more potent marker of solidarity, group belonging and *difference* than buying rounds at the pub or offering cigarettes to other smokers". The strong sense of bonding that exists among users translates to an elevated level of comfort that may not exist among intolerant non-using friends and family members (Hathaway, 1997b).

This does not, however, negate the fact that cannabis use is a form of identity construction among the large number of people who use only occasionally, in certain

contexts (e.g., social gatherings), and for non-social/cultural reasons (e.g., for therapeutic reasons). Indeed, there are ties to the cannabis culture which emphasize the positive qualities of cannabis use and sociability (Holm, Sandberg, Kolind, & Hesse, 2014), but this is only one aspect of cannabis use and one that becomes less important when users enter adulthood and are forced to balance their "cannabis user" identity with their other social roles.

The resourceful and autonomous patient: the case for "doing it yourself"

The population involved in growing cannabis is incredibly heterogeneous, varying considerably in their motivations, demographics, scale of operation, and sophistication (e.g., see Decorte, 2007; Decorte et al., 2011; Potter, 2010). This fact led many experts to consider the differences that exist between growers and the level of influence they have on the overall market. Motivations play a significant role in determining how cannabis is grown and the decision about what to do with the finished product—namely, whether to support personal use, gift to others, and/or sell for a profit. Accordingly, we find that the array of incentives reported by growers ranges considerably between those desiring autonomy, altruism, and the "intangible" rewards (e.g., spirituality, sociability and intrinsic) of growing on the one hand and profit on the other (Bouchard, 2007; Bouchard & Nguyen, 2011; Decorte, 2007; Decorte et al., 2011; Hafley & Tewksbury, 1996; Hakkarainen et al., 2015; Hough et al., 2003; Potter, 2010; Potter & Dann, 2005; Weisheit, 1992, 1991).

Personal cultivation is an attractive alternative for many users that wish to avoid the illicit market or find government sanctioned options inadequate. Certainly, the decision to "do it yourself" offers users more autonomy, control over the growing process, and protection from the illicit market (Bottorff, Bissell, Balneaves, Oliffe, Kang, Capler, Buxton, & O'Brien, 2011; Coomber et al., 2003; Dahl & Frank, 2011; Decorte, 2010a; Hakkarainen & Perälä, 2011; Hough et al., 2003; Potter, 2010; Weisheit, 1992). Because of advances in agricultural technology and know-how, the population of small-scale growers has started booming in recent years and is now using complex growing equipment and methodologies to establish personal, typically home-based, growing operations to develop unique strains and higher levels of independence (Decorte, 2007; Potter & Dann, 2005).

Commercial growers, on the other hand, are probably the rarest but play an important role in supporting the general cannabis market (Potter & Dann, 2005; Weisheit, 1991, 1992). Weisheit (1991, 1992) offered a typology of strictly commercial growers (those growing 20+ plants) in the United States. Among those identified are entrepreneurs who are enticed by monetary gain or the risks involved in growing ("hustlers"), those driven to grow strictly out of economic necessity ("pragmatists"), and those who grow as part of a larger lifestyle choice, including for personal consumption ("communal growers"). The communal growers differ significantly from the other two because growing is more of a social statement than a money-making gimmick. Rarely will they drift into large-scale production or strive to make money from their harvest, although financial gain does help offset short-term financial difficulties. Their ideological mindset also pushes them to share or gift their harvest (i.e., "social supply")—something that would not be contemplated by hustlers—and to regard other growers as "kindred spirits," with whom they can exchange information and share growing stories.

Idiosyncrasies of cannabis users/growers may, moreover, ambiguate the true meaning of a "commercial" grower when one focuses specifically on their ambitions. Hough et al. (2003) show how difficult it can be to differentiate between types of commercial growers when only motivations are considered. Certainly, commercial growers share a profit-driven persona, but a separate group of "social commercial" growers can be distinguished for having an orientation akin to those producing for intangible and altruistic rewards, including appraisal, sociability, gifting and not-for-profit sales. The latter group straddles between the "commercial" and "social" typologies by maintaining a commitment to the social aspect of cannabis cultivation and distribution, while also seeking financial prospects, albeit by selling to people situated within their immediate social network.

The distinction between types of commercial growers may also be predicted on the size and structure of operation. Potter and Dann (2005) suggested that the scale of operation is reflective of growers' motivations, with smaller-scale growers having modest financial desires (e.g., paying rent) and larger-scale growers trading ethics for greed. Like Hough et al. (2003) however, the authors noted the blurred boundaries that exist between altruism and profit. One of the growers from their sample described a highly resourceful cooperative of friendly "cannabis connoisseurs" who took equal part in cultivating a supply to be shared and sold for profit when there was a surplus. As part of

the socialization process, seasoned producers would provide novices with guidance and growing equipment in exchange for a share of their harvest or profits once it was sold. Therefore, while the authors draw a general conclusion about the relationship between the *scale* of operation and *motivation* for growing (i.e., an increase in scale equates to an increase in profit-motive), they also acknowledged that the latter exists on a continuum, encompassing ideological/ethical, practical, and financial incentives. Among the ideological/ethical typology are a group of people growing for strictly therapeutic purposes.

Medical growers are involved in cannabis cultivation primarily for medicinal use. People falling in this classification may be growing for personal use and/or to supply others, such as friends, family members, and acquaintances that they encounter through a primary medical user (Chapkis & Webb, 2008; Dahl & Frank, 2011; Hakkarainen & Perälä, 2011; Potter, 2010). These "others" may have a previous relationship with the grower (e.g., a spouse) or come to learn about their services through an acquaintance or shared social space (e.g., belonging to the same support group, hospital, or clinic). Growers may begin the process together (e.g., cooperative described by Potter & Dann, 2005), or establish their own and then expand as other medical users are introduced to the group or request help (e.g., the cooperative described by Chapkis & Webb, 2008). The growers themselves may also have a social motive beyond the desire to provide others with a supply, although this is likely subsidiary to their altruism (Potter, 2010). A *designated grower* may also be appointed by the government to supply multiple patients under strictly regulated growing conditions (e.g., one of the approaches taken in Canada).

Medical growers, much like most other growers, do not seek a profit for their services and are instead best regarded as altruistic or politically motivated (Potter, 2010). Where transactions do occur, the context surrounding such distribution is starkly different from the more common "criminal" setting traditionally associated with drug dealing; that is, transactions are typically conducted in open or semi-open areas and the actors regard their activities as necessary, political and ideological rather than objectively "illegal" or "criminal" (Potter, 2010). This understanding led Potter (2010) to conclude that there are three general markets for cannabis (in the United Kingdom, at least) that differ by ideology and profit. The third, "hybrid," market has actors with at least some financial motive and a commitment to the larger cannabis culture, but,

importantly, the medical growers are positioned in an “ideological” market of their own and should be thought of as separate from other commercial/non-medical markets.

Summary:

Domestic small- and large-scale cannabis cultivation are increasingly driving local cannabis markets around the world, effectively replacing the previous “importation” model (Decorte et al., 2011; Potter, 2008; Potter & Dann, 2005). This is facilitated in large part by technological innovations in horticulture and communication (e.g., specialized online communities dedicated to cannabis), the appeal of growing top-quality cannabis among “cannabis connoisseurs,” and the expanding number of small-scale growers interested in supporting their own use and that of friends and close acquaintances. Although financial gain motivates some commercial producers, more commonly growers will share their excess harvest out of solidarity and a larger commitment to the social aspect of cannabis culture. One group of cannabis growers is primarily motivated by the therapeutic benefits provided by the plant. Many of them cultivate to support their own use and/or willfully gift to others in need of a supply. This may be done as part of a well-connected cooperative of growers interested in supplementing each other’s harvest (e.g., Dahl & Frank, 2011), or to help a loved one in need of assistance (Hakkarainen & Perälä, 2011). In either case, the motivations for “doing it yourself” are clear: personal and altruistic cultivation provide a better and safer alternative to supporting the illicit market, where the actors involved and the quality of cannabis are both suspect. The drivers underpinning the decision to grow medical cannabis are, therefore, best captured by a “need” and “altruism” or “sociability” perspective. As aforementioned, we may suspect that the most autonomous patients are also the most resourceful and/or needy—choosing to grow their own because “they can” or because of the cost accrued by heavy consumption is too burdensome.

Chapter 3.

Cannabis pharmacology and medical use

Cannabis has been approved for the treatment of several medical conditions in North America. Canada authorizes the possession and use of cannabis for two categories of symptoms: 1) those being treated in accordance with compassionate end-of-life care, or 2) symptoms stemming from specific medical conditions, such as pain, muscle spasms, nausea, and eating disorders associated with multiple sclerosis, spinal cord injury/disease, cancer, HIV/AIDS infection, arthritis and epilepsy (Health Canada, 2012). The United States permits the medical use of cannabis in 29 states and the District of Columbia, although the specifics of each state are variable and the federal government maintains a prohibitive stance against its use regardless of intent. As part of Senate Bill 420-The Medical Marijuana Program Act, California stipulated “serious medical conditions” that must be diagnosed by a patient’s physician to be eligible for a medical cannabis card. These included one or more of the following: AIDS, anorexia, arthritis, cachexia, cancer, chronic pain, glaucoma, migraines, persistent muscle spasms (e.g., associated with multiple sclerosis), seizures (e.g., epileptic), severe nausea, and other chronic or persistent medical symptoms that meet additional requirements (CMA, n.d.).

Much of Europe, including the United Kingdom, has taken a dubious stance against cannabis and is unwilling to endorse its use at this time. In opposition to a 1999 inquiry from the House of Lords recommending that physicians be permitted to prescribe cannabis, legislators declared that, legally, cannabis should not be permitted as an analgesic for any symptom (House of Lords, 1998). The one exception transpired in 2013 when Sativex—the first natural cannabis extract pharmaceutical—was rescheduled from Schedule 1 to Schedule 4, part 1 under the MDA, thus making it a legal option for the treatment of spasticity associated with multiple sclerosis (Home Office, 2013).

Unlike the political environment, the scientific community shares a consensus that the therapeutic benefits of cannabis effectively combat some symptoms, but questions remain whether the positive therapeutic effects outweigh the negatives, especially when other medications are available. Several reviews summarizing the

available research offer important insights in this regard. One review by the Institute of Medicine (IOM) concluded that cannabis may play an important role in treating symptoms associated with chronic pain, AIDS, cancer, muscle spasticity, neurological disorders, and intraocular pressure (Mack & Joy, 2001). Similarly, Hollister's (2001) review highlights several maladies that might be treated with cannabis, although only a few are supported by enough evidence to warrant further consideration. Among these are its use as an antiemetic among chemotherapy patients, appetite stimulant among people with AIDS, antispasmodic or muscle relaxant for those suffering from spinal cord injury and multiple sclerosis, and analgesic (e.g., for cancer patients). Earleywine (2002) concluded his discussion by summarizing the medical conditions that may benefit from cannabis treatment options. The list of symptoms purported to be “effectively” treated by cannabinoids include appetite loss, glaucoma, nausea and vomiting, pain, spasticity, and weight loss. He noted an additional list of symptoms that have the “potential” to be treated with cannabis: anxiety, arthritis, dystonia, insomnia, microbes, seizures, Tourette’s syndrome, and tumor (growth). Although each of the symptoms benefits from the use of cannabis, pain management, stress and muscle spasticity are the most common reasons people use cannabis (Borgelt, Franson, Nussbaum, & Wang, 2013; Walsh et al., 2013). In the following section, I discuss briefly cannabis pharmacology and the medical viability of cannabinoids for the treatment of many common medical conditions.

3.1. Cannabis pharmacology

Cannabinoids are best classified into three categories, emphasizing their plant origin (phytocannabinoids), presence in human and animal tissue (endocannabinoids), and synthetic preparation. Each can interact with cannabinoid-1 (CB1) and cannabinoid-2 (CB2) receptors on the cell surface, and two (plant-based and synthetic preparation) have an abundance of the medically relevant cannabinoids; that is, tetrahydrocannabinol (THC) and cannabidiol (CBD; Elikottil, Gupta, & Gupta, 2009). THC is prevalent in resin and flower buds produced by the female species. THC is popularly known for causing feelings of euphoria typically espoused by recreational users, thus leading to a blurred distinction between truly "recreational" and "medical" use (Bostwick, 2012). CBD, on the other hand, is a major non-psychotropic cannabinoid with abundant pharmacological effects. Clinical applications hint at its efficacy for combating anxiety and sleep

deprivation, psychosis, inflammation, arthritic pain and movement disorders, nausea and vomiting, and pain associated with multiple sclerosis (Izzo, Borrelli, Capasso, Di Marzo, & Mechoulam, 2009).

The endocannabinoid system comprises a group of cannabinoid receptors located in the brain and peripheral tissues. Concentrated amounts of CB1 receptors have been found in regions of the brain affecting mood, motor coordination, autonomic function, memory, sensation, and cognition, while CB2 receptors are widely distributed in peripheral tissues and in immune tissue particularly (Svíženská, Dubovỳ, & Šulcová, 2008). CB2 receptors have been implicated in processes of analgesia, hepatic fibrosis, bone growth, and atherosclerosis (Mackie & Ross, 2008). A recent review of their functionality by Pacher and Mechoulam (2011) also suggested that they may help modulate pathological conditions having to do with internal organs (e.g., kidneys, liver, and lungs) and the cardiovascular, gastrointestinal, reproductive, and nervous systems. Specifically, effects attributed to the stimulation of CB2 receptors include the attenuation or promotion of inflammation in cases involving myocardial infraction (i.e. heart attack), atherosclerosis (i.e., hardening/narrowing of arteries), stroke and spinal cord injury, sepsis (i.e., drastic body changes resulting from infection), hepatic ischemia (i.e., blood and oxygen deficiencies in the liver), autoimmune hepatitis, cirrhotic cardiomyopathy (i.e., abnormal heart structure and functioning in patients with cirrhosis), inflammatory bowel disease and colitis, pancreatitis, nephropathy, neurodegenerative/neuroinflammatory disorders, chronic pain, allergic dermatitis and scleroderma, rheumatoid arthritis, asthma, reproductive dysfunction, and uveitis (i.e., ocular inflammation). The review further notes that CB2 receptors may have attenuating effects among people suffering from age-graded obesity (by reducing fat cell accumulation), fibrosis build-up resulting from cirrhosis, osteoporosis-related bone loss, and cancer tumor growth.

3.2. A profile of medical cannabis users

3.2.1. Demographics

Much of what we currently know about medical cannabis users comes from self-report surveys and interviews. Collectively, the results from these studies show that the population is slightly older than their recreational counterparts, mostly male,

economically and socially marginalized, and experienced using for non-medical reasons prior to (and following) the onset of their ailments. Table 2 summarizes demographic information for several, although not all, recent studies with samples of medical cannabis users.

Gender

When gender selection is not purposive (e.g., Furler, Einarson, Millson, Walmsley, & Bendayan's, 2004 weighted sample of females and Westfall, Janssen, Lucas, & Capler's, 2006 sample of pregnant women), males nearly always comprise the majority (>50%), with many reporting proportions in the 70-80 percent range. Moreover, males and females use cannabis for ostensibly different reasons. Furler et al. (2004) found that female HIV patients are significantly more likely to use cannabis for pain management (45% vs. 5%) and for strictly medical purposes, whereas males typically use for both recreational and medical purposes. Men are also more likely to use medical cannabis consistently for long periods of time, while females opt for intermittent and short-term use (Swift et al., 2005). Bottorff et al. (2011) looked at gender differences in detail and found that the relationship females have with medical cannabis and the larger medical community are in stark contrast to their counterparts. For women, medical cannabis was "life preserving" and a way to improve mental well-being. They would often work with healthcare professionals to ensure proper dosing/self-management and could readily define what excessive or problematic patterns of use looked like. Men, on the other hand, felt that medical cannabis had a positive effect on their physical health and helped them manage feelings of anger and rage. Rather than working closely with the medical community, they preferred independence and felt that cannabis could help them manage their symptoms autonomously. Dosing was treated subjectively as something relative to the user's tolerance and needs rather than something that could be standardized.

Table 2. Summary demographics for samples of medical cannabis users

Study	Sample of medical cannabis users	Country	Demographics			Non-medical use
			Male	Age	Income	
Aggarwal et al., 2012	37	WA, USA	65%	41.4 (SD=10.6)	<$35k (72.7%)	57%
Belle-Isle & Hathaway, 2007	197 HIV/AIDS patients	Canada	83%	35-44 (52.4%)	<$20k (53%)	20 yrs; 9 for medical use
Belle-Isle et al., 2014	628	Canada	71%	39.1 (SD=13.1)	$30-39.9k	82%
Bottorff et al., 2011, 2013	23	BC, Canada	44%	-	$21k	-
Chong et al., 2006	75 MS patients	UK	31%	50+ (53.3%)	-	43.5%
Clark et al., 2004	220 MS patients	NS, Canada	29%	<45 (67.7%)	-	26%
Coomber et al., 2003	33	UK	58%	44	-	69.7%
Dahl & Frank, 2011	19 growers	Denmark	79%	Range=25-71	-	100%
Furler et al., 2004	103 HIV patients	ON, Canada	53%	42.2 (SD=7.8)	<$20k (63.3%)	80%
Hakkarainen et al., 2015	5313 growers	6 countries	88%	32.2	-	-
Harris et al., 2000	100	CA, USA	78%	40 (SD=8)	13% employed	~14yrs
Hathaway & Rossiter, 2007	103	Canada	66%	42	-	-
Hazekamp et al., 2013	953	31 countries	64%	40.7	-	76.5%
Ilgen et al., 2013	348	MI, USA	66%	41.5 (SD=12.6)	51.4% employed	-
Janichek & Reiman, 2012	303	CA, USA	70%	38	<$40k (49%)	-
Lin et al., 2016	10.5% used medically	USA	54%	35+ (55%)	54% employed	-
Lucas, 2012	100	Canada	79%	35+ (87%)	$10-20k (53.1%)	~80%
Lucas et al., 2012	404	BC, Canada	67%	44.1	<$20k (58.2%)	-
O'Brien, 2013[a]	40	CO, USA	-	18-25	Middle-class	-
O'Connell & Bou-Matar, 2007	4117	CA, USA	77%	32	-	-
Ogborne, Smart, Weber, et al., 2000	50	ON, Canada	66%	38	-	74%
Page et al., 2003	420 MS patients	AB, Canada	26%	48 (SD=10.6)	$50-59.9k	43%

Study	Sample of medical cannabis users	Country	Demographics			Non-medical use
			Male	Age	Income	
Pedersen & Sandberg, 2012	25.0% used medically	Norway	88%	20s to early-30s	-	-
Prentiss et al., 2004	252 HIV patients	CA, USA	79%	41-50 (53.4%)	-	-
Reiman, 2009	350	CA, USA	68%	39.4	-	-
Reinarman et al., 2011	1746	CA, USA	73%	35+ (~55%)	64.8% employed	59%
Roy-Byrne et al., 2015	15.1% used medically	WA, USA	60%	48 (SD=11)	82% unemployed	-
Salomonsen-Sautel et al., 2012	74.4% used medically	CO, USA	80%	16	-	-
Satterlund et al., 2015	18	CA, USA	72%	41	-	100%
Sexton et al, 2016	1429	18 countries	55%	36.3 (SD=14.0)	<$40k (47.4%)	-
Swift et al., 2005	128	Australia	63%	45	-	80%
Ware et al., 2004	31.9% used medically	UK	39%	52.7 (SD=12.7)	-	66%
Ware et al., 2003	chronic pain patients	Canada	47%	40-49 (46.9%)	-	-
Westfall et al., 2006	84 pregnant women	BC, Canada	0%	42	-	-

Note: Figures presented in columns 4-7 are averages, ranges, and percentages (of sample population).

[a]=author describes demographics as being consistent with undergraduate population (i.e., Caucasian, upper- to middle-class, in early-20s).

[b]=Most of the sample was female and a larger percentage of males were users than females (30% of males vs. 14% of females).

[c]= Sample was mostly male (53%), although cannabis use was part of a larger study of which 90% were male; authors randomly sampled males to equate with females.

Age

Both medical and non-medical users are represented across a large age continuum. The former group ranges from adolescents to the elderly (range = 13-91 years old), although studies typically report averages between the mid-30s and early-50s—slightly higher than what is reported for non-medical users. One general population survey and another of HIV patients, both from Ontario, Canada, found that medical cannabis users are slightly older than strictly non-medical users and younger than those reporting no cannabis use (Furler et al., 2004a; Ogborne, Smart, & Adlaf, 2000). This does not, however, preclude its use by adolescents and young adults who also report self-medicating for many of the same reasons as their elders (Bottorff, Johnson, Moffat, & Mulvogue, 2009; Fischer et al., 2012; O'Brien, 2013; Salomonsen-Sautel, Sakai, Thurstone, Corley, & Hopfer, 2012).

Socio-economic standing and employment

Economic marginalization is a huge concern for people suffering from physical and psychological hardships, many of whom have a difficult time performing regular work functions and affording their medication. Medical cannabis users likely face similar difficulties, as many report meager incomes and high unemployment rates. Most studies from Canada and the United States indicate typical income levels below $40,000 annually and unemployment rates just under 50 percent; one cross-national study in the United States found that as many as 82 percent of medical users are unemployed or disabled (Roy-Byrne, Maynard, Bumgardner, Krupski, Dunn, West, Donovan, Atkins, & Ries, 2015).

Recreational/Non-medical use

There is compelling evidence that recreational and medical users are similar and different in several important ways. Medical users overwhelmingly report using cannabis for recreational purposes prior to the onset of their ailments. Many have cannabis careers that span several decades, with only about 8 to 10 years being for therapeutic purposes (Belle-Isle & Hathaway, 2007; Bottorff et al., 2011, 2013; Harris, Jones, Shank, Nath, Fernandez, Goldstein, & Mendelson, 2000; Lucas, 2012; Ogborne, Smart, Weber, et al., 2000). In one Canadian study, more than 80 percent of patients reported first using cannabis recreationally and had lengthy careers of up to 30 years prior to the onset of their medical use (Ogborne, Smart, Weber, et al., 2000). In another Canadian study, Belle-Isle and Hathaway (2007) found that HIV/AIDS patients had been using cannabis for 30 years on average, but only treating symptoms for 9 years. Ogborne, Smart, Weber, et al. (2000) found that most their respondents

had a least some experience using cannabis and some had lengthy careers of up to 35 years. In San Francisco, California, Harris et al. (2000) reported an average career duration of 24 years for a sample of dispensary members that had only been experiencing symptoms for 10 years. While they did not differentiate between medical and nonmedical use, Swift et al. (2005) presented a comparable finding in Australia, where 61 percent of the sample reported using cannabis for at least 6 years and about a fifth for more than 20 years. In the United Kingdom, Ware et al.'s (2004) nationwide study of medical use showed that a majority started using cannabis recreationally (66%); yet, despite being older on average than the North American sample, the typical duration of medical use was much lower with a median of four years (range = 2-7).

The fact that so many medical users have lengthy careers using for non-medical purposes prior to and following the onset of their ailments is used in political discourse to cast doubt on the merits of a medical model, essentially implying that such a caveat in policy gives recreational users a semblance of legitimacy. Nevertheless, what we learn from the patients is that the decision to use cannabis medically is not *strictly* motivated by deception. Many people that use cannabis for medical purposes are seasoned recreational users, while a much smaller group have limited experience prior to the onset of their ailments. Athey, Boyd, and Cohen (2017) identified three trajectories for a sample of Canadian medical users: recreational use that segues to medical use, recreational use with a break before first medical use, and medical use only. Similarly, Pedersen and Sandberg (2012) found that Norwegians using cannabis for medical purposes either learned about the therapeutic benefits anecdotally as a recreational user or only after experiencing severe ailments that they believed, based on research, could be relieved with cannabinoids. This is consistent with findings from other studies of medical users who reported long recreational careers before experiencing symptoms or (re)defining their use as therapeutic (Belle-Isle & Hathaway, 2007; Bottorff et al., 2013; Coomber et al., 2003; Dahl & Frank, 2011; Furler et al., 2004; Harris et al., 2000; Ogborne, Smart, Weber, et al., 2000; Reinarman, Nunberg, Lanthier, & Heddleston, 2011; Ware et al., 2004).

There is no reason to believe that recreational and medical use are mutually exclusive motivations, either. Instead, it is more likely that the effects are experienced differently depending on the user's motivations and the setting or context of use (Duff, 2012; Hathaway, 1997b). Some medical patients enjoy the euphoria (i.e., "the high") of cannabis, arguing that the lines between recreational and medical use are often blurry (Coomber et al., 2003; Ogborne, Smart, Weber, et al., 2000), and that the therapeutic effects are just "another 'good reason' to

smoke" (Pedersen & Sandberg, 2012, p.20). Moreover, the fact that traditionally "recreational" effects like enhancing one's mood, artistry, and tranquility are internalized as being therapeutic by some medical users may further challenge the distinction between medical and recreational use (Coomber et al., 2003).

There are nevertheless some indications that medical users see the two as distinct, and feel that the stigma attached to recreational use is reason enough to be wary about being labeled a drug user (Bottorff et al., 2013; Satterlund et al., 2015). Consequently, it is unsurprising that many medical patients attempt to separate the two by restricting their use to symptom relief, using on a routine schedule, and using as an alternative or complement to pharmaceuticals (Hathaway, 2015). Additionally, many medical users dismiss or belittle the euphoric effects of cannabis to disassociate themselves from the stigma surrounding recreational use. As one patient put it, "I think the recreational is more for relaxation not for pain, what it's supposed to be for, it's more for them to party with. For us, it's more of a life thing" (Bottorff et al., 2013, p.7).

Recent comparative analyses shed additional light on the differences and similarities between medical and recreational users. Roy-Byrne et al. (2015) compared recreational, medical, and "other drug" users from the waiting rooms of seven primary care facilities in Washington state. The authors found that 131 of the 868 participants were using cannabis for medical purposes. By comparison, the medical users were significantly more likely to be homeless in the past 90 days and married or living with a partner. They also had greater health problems (e.g., pain and physical mobility problems), more lifetime use of psychotropic medications, lower drug use severity, and fewer alcohol-related problems. In terms of cannabis consumption, more medical users consumed alone, on more days during the past month, and used both prescribed and non-prescribed opioids, but fewer used cannabis with alcohol, stimulants and "multiple" other drugs (although the latter was not statistically significant). In a nationwide investigation, Lin, Ilgen, Jannausch, and Bohnert (2016) used data from the National Survey on Drug Use and Health (NSDUH) 2013 edition to compare medical and recreational users in the United States. The two groups were not significantly different by race/ethnicity, education level, and prevalence of past year depressive episodes. The two groups were, however, contrasted by age, employment, health status, daily or almost daily frequency of use (33% vs. 11%), disabilities performing activities, and psychological distress.

Common medical conditions and symptoms treated with cannabis

People treat a variety of symptoms and medical conditions with cannabis. Although many are listed as approved reasons for use in medical reports and governmental exemptions under state and federal law, the list of therapeutic benefits sought by users extends beyond any government list and frequently encompasses multiple correlated medical conditions and symptoms. Table 3 offers a detailed overview of the most common symptoms and medical conditions reported by self-identified medical cannabis users. Several of these studies focus on user populations with specific medical conditions (e.g., cancer or fibromyalgia patients), while others relax the requirements for inclusion to obtain a representative sample of patient populations with and without recognized medical needs. Column two specifies the sample population under review and column three details the medical conditions and symptoms reported by respondents.

Pain and mental discomfort were the two most frequently cited symptoms. In many cases, the pain was caused by an ongoing medical condition, such as fibromyalgia, HIV/AIDS, arthritis or cancer, although it also stemmed from a traumatic event (e.g., car accident or surgery). People using cannabis to improve mental health typically are coping with stress, depression, and anxiety. Other common symptoms included nausea, appetite loss, muscle spasms, spasticity tremors, and insomnia. Many of these are symptomatic of specific diseases (e.g., spasticity resulting from multiple sclerosis) and treatment options (e.g., nausea because of chemotherapy). However, it is also possible that users see these symptoms as medical conditions, which seems plausible given the disproportionate number of participants that reported treating symptoms rather than objective "medical conditions" such as cancer, epilepsy, or fibromyalgia.[2]

The number living with fibromyalgia, HIV/AIDS, cancer, multiple sclerosis, PTSD, or epilepsy was quite low in nearly every study summarized above. Recall also that the two most common reasons for use were pain and mental discomfort, while nausea/vomiting, appetite stimulation, insomnia, seizure reduction, and muscle spasms were reported less often. Collectively, these findings suggest that many medical patients are using cannabis to relieve or treat specific symptoms rather than specific diseases or medical conditions.

[2]In many of the studies reviewed here, participants cite what could be subjectively labeled as "symptoms" or "medical conditions"; without more information about their specific condition(s) (if any) being treated, it is difficult to conclude whether a specific symptom is the "medical condition" or simply a manifestation of one.

Table 3. Medical conditions and symptoms reported by medical cannabis users

Study	Sample Population	Medical conditions/Symptoms
Aggarwal et al., 2012	Medical cannabis patients	Irritable bowel syndrome (43%), Spasticity (22%), HIV/AIDS (16%), multiple sclerosis (16%), hepatitis C (11%), Cancer (10%), epilepsy and other seizure disorders (8%), glaucoma (5%), and Chron's disease (3%)
Belle-Isle & Hathaway, 2007	HIV/AIDS patients	Stimulate appetite (90%), relax (<90%), reduce anxiety (70%), reduce pain (<70%), reduce nausea/vomiting (<70%), improve mood (60%), depression (~55%), manage/gain weight (<55%), and to help take medication (30%)
Belle-Isle et al., 2014; Walsh et al., 2013	Medical cannabis patients	Sleep (85%), pain (82%), anxiety (79%), depression (67%), appetite/weight (56%), nausea (49%), inflammation (49%), spasms (48%), headaches (40%), aggression (24%), drug withdrawal (13%), glaucoma (12%), mania/psychosis (11%), respiratory (11%), and skin conditions (11%)
Bonn-Miller et al., 2014	PTSD patients	Anxiety (2.7%), chronic pain (55.6%), stress (47.9%), insomnia (47.9%), and depression (41.4%).
Bottorff et al., 2011, 2013	Medical cannabis patients	HIV/AIDS (26%), fibromyalgia (22%), arthritis (17%), mood/anxiety (13%), cancer (9%), neurological disorders (9%), gender dysphoria (9%), and 'other' (18%)
Bottorff et al., 2009	Adolescent medical users	Depression (30%), stress/anxiety (60%), insomnia (45%), focus/concentration (15%), and physical pain (25%)
Clark et al., 2004	Multiple sclerosis patients	Stress, sleep, mood, stiffness/spasms, and pain
Chong et al., 2006	Multiple sclerosis patients	Pain (83.7%), limb spasms (80.4%), headaches (60.0%), anxiety (57.1%), sleep problems (53.2%), low mood (51.4%), difficulty walking (40.0%), sexual dysfunction (33.3%), concentration problems (31.0%), fatigue (29.2%), vertigo/dizziness (26.9%), visual disturbances (26.9%), memory problems (26.1%)
Coomber et al., 2003	Medical cannabis users	Symptoms of multiple sclerosis (42%); symptoms of fibromyalgia, e.g., arthritis (27%); appetite functionality; less nausea, depression, and tremors; cerebellar ataxia; cerebral palsy/dystonia; and spinal cord injuries, e.g., pain
Dahl & Frank, 2011	Medical growers	Use as a "painkiller" and "relaxant"
Fischer et al., 2012	University students	Anxiety, stress, depression (41%), pain (29%), and nausea/vomiting (20%)
Furler et al., 2004	HIV patients	Appetite stimulation (70%), sleep/relaxation (37%), nausea/vomiting (33%), pain management (20%), anxiety/depression (20%), and stimulating energy (10%)
Hakkarainen et al., 2015	Medical cannabis growers	Depression/mood disorder (43%); chronic pain (33%); anxiety/panic disorder (30%); migraines/headaches (24%); ADHD (15.3%); bowel problems (14%); joint inflammation/arthritis (14%); post-traumatic stress disorder (11%); asthma (10%); drug dependence/withdrawal (7%); autism and Asperger's syndrome (5%); hypertension (5%); anorexia, cancer, schizophrenia, glaucoma, hepatitis, nausea, multiple sclerosis, Tourette Syndrome, HIV/AIDS, and Parkinson's disease (<5%)

Study	Sample Population	Medical conditions/Symptoms
Harris et al., 2000	Medical cannabis patients	HIV/AIDS (60%), appetite stimulation (49%), pain (33%), nausea (23%), depression (18%), and muscle spasms (15%)
Hathaway & Rossiter, 2007	Medical cannabis patients	Most common problems were mental health (e.g., depression, anxiety, alcoholism/drug addiction) and chronic pain conditions (e.g., fibromyalgia, irritable bowel syndrome, and arthritis)
Hazekamp et al., 2013	Medical cannabis patients	Top five conditions were: back pain (11.9%), sleeping disorder (6.9%), depression (6.7%), pain resulting from injury or accident (6.2%), and multiple sclerosis (4.1%). Among the most popular symptoms being treated are chronic pain (29.2%), anxiety (18.3%), loss of appetite and/or weight (10.7%), depression (5.2%), and insomnia or sleeping disorder (5.1%).
Ilgen et al., 2013	Medical cannabis patients	Pain relief (87%), non-pain related (9.8%), spasms, nausea, musculoskeletal problems, neurological, cancer, gastrointestinal problems, glaucoma, and chronic infection
Lucas, 2012	Medical cannabis patients	Pain relief (84%), relaxation (78%), appetite stimulation (61%), anxiety reduction (60%), depression (58%), nausea/vomiting (57%), mood improvement (56%), spasticity/tremors (42%), and effects of alternative medication (24%)
Ogborne, Smart, & Adlaf, 2000	General survey	The most frequently cited reason for using marijuana medically was for pain or nausea (41/49 [85%]).
Ogborne, Smart, Weber, et al., 2000	Medical cannabis users	HIV/AIDS, chronic pain, depression, and anxiety
Page et al., 2003	Multiple sclerosis patients	Symptoms relieved include anxiety/depression (67%), spasticity (58%), chronic pain (49%), fatigue (40%), walking/balance problems (33%), tremors (30%), visual problems (16%), weight loss (14%), sexual problems (14%), bowel problems (12%), bladder problems (9%), and memory loss (5%)
Pedersen & Sandberg, 2012	Medical cannabis users	Stress, insomnia, pain and relaxation, multiple sclerosis. Tourette's syndrome, ADHD, and rheumatism
Prentiss et al., 2004	HIV patients	Relieve stress, anxiety, and depression (57%); improve appetite (53%); and relieve pain (28%)
Reinarman et al., 2011	Medical cannabis patients	**To relieve**: Pain (83%), muscle spasms (41%), headaches (41%), anxiety (38%), nausea/vomiting (28%), depression (26%), cramps (19%), panic attacks (17%), diarrhea (5%), and itching (<5%); **To improve**: sleep (71%), relaxation (55%), appetite (38%), concentration/focus (23%), and energy (16%). **To prevent**: Side effects of medication (23%), anger (22%), involuntary movements (6%), and seizures (3%). **As a substitute for**: Prescription medication (51%) and alcohol (13%)
Satterlund et al., 2015	Cannabis patients	Migraines, depression, chemotherapy and radiation effects, chronic pain, and asthma
Sexton et al., 2016	Cannabis patients	Pain (61%), anxiety (58%), depression (50%), headaches/migraines (36%), other (34%), nausea (27%), muscle spasticity (18%), arthritis (17%), irritable bowel syndrome (15%), intractable pain (12%), anorexia (10%), cancer, ulcerative colitis/Crohn's disease, other seizure disorder, tics, tremor, glaucoma, epilepsy, multiple sclerosis, and HIV (<5%)
Swift et al., 2005	Cannabis users	Chronic pain (57%), depression (56%), arthritis (35%), nausea (27%), weight loss (26%), spasms (16%), spinal cord injury (13%) fibromyalgia (13%), chronic fatigue (13%), neuropathy (12%), HIV/AIDS (8%), multiple sclerosis (7%), cancer (4%), post-traumatic stress disorder, irritable bowel syndrome (IBS), and glaucoma (<1%)

Study	Sample Population	Medical conditions/Symptoms
Ware et al., 2004	Cannabis users	MS (12%), neuropathy (11%), chronic pain (11%), arthritis (7%), gastrointestinal, migraines, allergies, spinal pain, asthma, weight loss, spinal cord injury, genitourinary, chronic fatigue, dystonia, limited mobility, epilepsy, psychological discomfort, fibromyalgia, spinal disorder, spinal surgery, cardiovascular condition, bone disorder, spinal disc disorder, spinal paralysis, surgery, visual impairment, insomnia, skin condition, and carcinoma (<5%)
Westfall et al., 2006	Pregnant women using cannabis	Pain (83%), Nausea (77%), anxiety (75%), insomnia (74%), appetite stimulation (70%), depression (68%), fatigue (58%), and vomiting (37%)

[a] Percentages are those that ever tried cannabis to help symptoms.
[b] Percentages for each disease refer to those with "ongoing cannabis use" as a treatment.

Patterns of use

Frequency of use and amount consumed

Medical cannabis users report unique and frequent patterns of use relative to non-medical users (Furler et al., 2004; Ogborne, Smart, & Adlaf, 2000; Walsh et al., 2013). Many consume only enough to treat their medical conditions, which, depending on severity, may require very little or continuous use throughout the day (Cohen, 2009). Some use cannabis only after experiencing discomfort (e.g., pain), while others use proactively to avoid symptoms (e.g., nausea and vomiting). Depending on the intention, cannabis may be used at specific times or as part of the daily routine. For example, patients using cannabis to stimulate their appetite or sleep at night smoke before meal time and right before bed. Alternatively, chronic pain patients may consume cannabis multiple times throughout the day to remain comfortable.

When asked how frequently they use cannabis, patients report patterns of use that range from several times a week to several times a day, while far fewer use rarely or intermittently. Both Coomber et al., (2003) and Ware et al. (2004) found that more than half of their participants from the United Kingdom used cannabis several times a week and at least a third did so daily, while fewer than 10 percent used less than once a week or "rarely." More than a third (39%) of participants from an Australian sample used several times a day and an additional quarter (24%) were daily or near daily users. While only four percent used "less than weekly" or "very seldom," it is interesting that a fifth used "as required," suggesting that their patterns of use were symptom-specific (Swift et al., 2005). North American patients report even more frequent patterns of use on average. North American studies have found that the majority (65-94%) of self-described medical cannabis users consume on a daily or near daily basis and that many of these users do so multiple times throughout the day (Belle-Isle & Hathaway, 2007; Harris et al., 2000; Ilgen et al., 2013; Lucas, 2012; O'Connell & Bou-Matar, 2007; Ogborne, Smart, Weber, et al., 2000; Reinarman et al., 2011).

Despite being such frequent consumers, patients vary considerably in the amount they use. One Canadian study found that about half of users consume an ounce per week (Walsh et al., 2013). In contrast, several other Canadian studies reported relatively moderate patterns of use that ranged from one to two ounces per month (Belle-Isle & Hathaway, 2007; Lucas et al., 2012; Ogborne, Smart, Weber, et al., 2000). As Ogborne, Smart, Weber, et al. (2000) note, the amount used daily can fluctuate from small puffs of a joint to more than 10 joints throughout the day. In California, Harris et al. (2000) found, similarly, that the average user consumes about an ounce per month and almost all participants (86%) consumed at least two joints on days they used while just under a fifth (16.7%) smoked seven or more. Additionally, one large-scale California study (n = 1,746) found that three-fourths (76.6%) of patients use no more than an ounce per month and that about half may use one or

two times per day, while only a small subset (10%) will use three or more times or “all day” (5.3%; Reinarman et al., 2011). Some patients also find it difficult to quantify the amount they use (Coomber et al., 2003).

Medical cannabis users seemingly tailor their patterns of use to alleviate specific symptoms (Dahl & Frank, 2011). This entails consuming variable amounts and at different times of the day. Reinarman et al. (2011) found that evenings and prior to bed were typical for most patients, but nearly half (42.3%) felt that it was largely predicated on their symptoms. Similarly, Ogborne, Smart, Weber, et al. (2000) found that 13 of 50 (26%) patients primarily treating HIV/AIDS-related symptoms, depression, and anxiety consumed cannabis relative to their ailments, which included using before meals for those interested in stimulating their appetite and during the evenings for people suffering from insomnia. Ware et al. (2004) found that about a fourth (24%) of their participants used cannabis as needed and many would regularly adjust their consumption habits in response to what was needed for symptom relief.

Methods of consumption

Methods of consumption are important to consider when deciding to use or prescribe cannabis for treatment (Mack & Joy, 2001). The multitude of options currently available to patients, especially in North America, include traditional and advanced smoking methods, vaporizers, edibles and drinks, oils, creams, and pharmaceuticals (e.g., nabilone, dronabinol, and Sativex; e.g., see Hazekamp, Ware, Muller-Vahl, Abrams, & Grotenhermen, 2013). Each has strengths and weaknesses which must be considered when designing a treatment plan or attempting to alleviate symptoms.

Smoking is by far the most common method of ingestion for medical and non-medical users, although the nuances and practices of doing so vary between populations and cultures. Typically, cannabis is rolled into a cigarette either by itself or with tobacco. Other ways to smoke include pipes (like tobacco) and water pipes or bongs, which use water to cool the smoke before it enters the lungs. Smoking has many positive effects that make it such a viable option. Perhaps most importantly, smoked cannabis provides a consistent means of dosing and the effects are felt almost immediately, thus making it easier for users to adjust their intake until reaching the desired effects (Carter, Weydt, Kyashna-Tocha, & Abrams, 2004). Similarly, because the user has more control over the amount of THC they ingest, the likelihood of consuming too much or experiencing negative psychological effects is reduced (Iversen, 2000).

An important ramification of smoking cannabis is, like tobacco, the production of carcinogens (specifically benzanthracene and benzpyrene), which affect the body’s immune system and promote the spread of cancer cells, thus making it an undesirable option for long-term treatment. This may,

however, be less of a concern for patients with life-threatening diseases like AIDS and cancer who are more concerned about symptom relief than life expectancy. Seasoned users who often inhale deeper and hold the smoke longer before exhaling risk even higher odds of developing cardiovascular and pulmonary complications relative to tobacco smokers and novice users. Additional concerns that smokers of herbal cannabis must consider are the possibility of fungi contamination, which could lead to lung infections, and the loss of cannabinoids to combustion, sidestream smoke, and incomplete absorption once inside the body (Iversen, 2000).

Jurisdictions with a liberal regulatory framework are witnessing significant changes in the way cannabis is used. Americans residing in states that permit medical and/or recreational use report vaporizing and eating edibles significantly more often and complimentary declines in the number of people preferring to smoke relative to residents in states without such laws (Borodovsky, Crosier, Lee, Sargent, & Budney, 2016). "Vaping" is gaining popularity as an effective alternative to smoking cannabis because it delivers comparable amounts of cannabinoids without the respiratory damage associated with inhaling carcinogens. It is also more palatable, efficient, and cost-effective than smoking (Budney, Sargent, & Lee, 2015). Vaporizing

> ...is a technique aimed at suppressing irritating respiratory toxins by heating cannabis to a temperature where active cannabinoid vapors are formed, but below the point of combustion where pyrolytic toxic compounds are made. Vaporizing offers patients who use medicinal cannabis the advantages of the pulmonary routes of administration, that is: rapid delivery into the bloodstream, ease of self-titration, and concomitant minimizing the risk of over- and under-dosing, while avoiding the respiratory disadvantages of smoking. (Hazekamp, Ruhaak, Zuurman, van Gerven, & Verpoorte, 2006, p. 1)

Edibles are also becoming a popular consumption method among younger and older populations who believe they are healthier than smoked cannabis (Lamy, Daniulaityte, Sheth, Nahhas, Martins, Boyer, & Carlson, 2016; Murphy, Sales, Murphy, Averill, Lau, & Sato, 2015). Popular preparations of oral consumption include baked goods (e.g., cookies, brownies, and muffins), candies (e.g., chocolate bars and gummy bears), or infusions (Borodovsky et al., 2016). When prepared this way, cannabis is amalgamated with THC-soluble substances like fats and alcohol. This results in slower metabolism of cannabinoids and a longer duration of psychological and physiological effects (Iversen, 2000). Yet, caution is often warranted when consuming edibles because dosing is highly inconsistent, varying between products and bakers. Many people assume that a unit measurement (e.g., a candy bar) comprises a proportionate amount of THC, but the reality is that the amount of THC varies considerably between products—depending on how they are prepared—and can be several times higher than a typical (safe) dose. The elevated potency and marketing schemes intended to make edibles aesthetically appealing raises concerns about overdosing for adults and children, which can lead to serious anxiety attacks and psychotic episodes (MacCoun & Mello, 2015).

The frequency of consumption and amounts needed may depend on the way cannabis is consumed. Patients using edibles, for example, may require more grams per day than people who drink it in tea (3.4g/day vs. 2.4g/day) or smoke/vaporize (3g/day each). However, the frequency of use is likely higher among people who smoke, vaporize (5-6/day), or use pharmaceutical preparations (mean = 10.9/day). The fact that smoking and vaporizing requires more frequent use is generally considered less desirable for health reasons but is preferred to edibles and pharmaceuticals because it has a much faster time-to-effect and more control over titration. Alternatively, edibles have unpredictable and inconsistent effects and a much longer time until they are felt (mean = 46 minutes vs 29 for tea and 7 for smoking). The way cannabis is smoked can even determine how long it takes to experience the effects: when pure THC (e.g., oils) is vaporized, results are felt in an average of 2.5 minutes, while vaporized herb takes about 6.5 minutes. When asked about their preferred methods of intake, patients identify smoking, vaporizing herb, and inhaled pure THC as best for a quick onset, and edibles, tinctures, and tea as better for a longer effect. Finally, when vaporizing and smoking herb were compared, vaporizing emerged as a clear preference, likely because of the reduced harm to the user's respiratory system (Hazekamp et al., 2013).

Chapter 4.

Methodology

4.1. Comparative analysis

Comparative research takes a pluralist approach to the study of social phenomenon. For some social scientists, it amounts to tautological reasoning, "because it is difficult to think of any analysis in the social sciences that is not comparative" (Smelser, 2003, p. 644), while for others it is "impractical, unfeasible and even undesirable" undertaking (May & Perry, 2011, p. 247). Its scope ranges in size and complexity and includes an array of measures, such as geographical regions (e.g., cities, states or provinces, and countries), political systems and legislative policies, groups of people and their demographics (e.g., gender and ethnicity), societies, and (sub)cultures (May & Perry, 2011; Mills, Van de Bunt, & De Bruijn, 2006). According to one leading expert, "it [comparative research] reflects the understanding we have of traditions that have evolved in the disciplines of anthropology (cross-cultural analysis), sociology (cross-societal), political science (cross-national), history (comparative history) and psychology (comparative psychology)" (Smelser, 2003, p. 645). One form of comparative analysis that has gained popularity in the social sciences because of globalization is cross-national research.

Cross-national research draws comparisons between two or more nations using systematically comparable data with the goal of understanding and explaining similarities and differences between people, cultures, and social structures (Kohn, 1987). Such an approach necessitates a thorough historical review, as the modern political and social climate in each nation are the result of idiosyncratic developments that transpired over an extended period. Once the modern context is established and an equivalent unit of measurement has been selected, cross-national comparison provides social scientists with a framework to test or generalize theories and country-specific phenomenon, control for the manifold complexities of social life that are usually accounted for by experimental design (i.e., it mimics "natural experiments" commonly used in the natural sciences), and explore causal relationships and analogical reasoning in a methodologically rigorous way (Kohn, 1987; Link, 2006; MacCoun, Saiger, Kahan, & Reuter, 1993). When the inquiry is a policy-related construct, a comparative design has the added benefit of accounting for the policy problem and the characteristics of those involved in and/or affected by its implementation (Scharpf, 2000). For example, it is a powerful way to explore factors associated with the convergence or divergence of policies (e.g., the liberalization of drug policy) and similarities and differences in the way policies are

implemented in practice (Belackova, Ritter, Shanahan, & Hughes, 2017; Knill, 2005; May & Perry, 2011). Despite its many advantages, there are several important limitations that must be considered.

The limitations of comparative research stem from the complexity that exists in social life and the fact that societies are marked by high levels of heterogeneity; for example, while any two nations or societies may converge on a policy or type of behavior, they still inevitably diverge in other cultural, political, and economic ways (May & Perry, 2011). As Scharpf (2000) notes, the introduction of one or more social institutions into a comparative model complicates the analysis because of the high amount of variability that exists (between institutions) across time and space. Additionally, many comparative researchers note the inherent weaknesses of sample size and representativeness (Link, 2006). Indeed, a low sample size is almost inevitable in cross-national research when nations are the unit of comparison, largely because there are so few analyses in which enough countries have comparable data. For example, countries may measure and record crime rates differently and therefore raise questions about the reliability and validity of results derived from their comparison (Bennett, 2004).

Mills et al. (2006) note four methodological problems in comparative research: 1) case selection, unit, level, and scale of analysis; 2) construct equivalency; 3) variable or case orientation; and 4) issues of causality. In order to overcome the first limitation, the researcher must clearly specify the parameters of comparison so that the results are meaningful; for example, ensuring that a cross-national economic comparison does not juxtapose GDP with unemployment rates or conflate economic variables with educational attainment. The second limitation, construct equivalency, is essential to ensure the entities under investigation are comparable. In the context of cross-national drug policy research, this would imply a comparison is being drawn between a particular drug, such as cannabis, as opposed to drugs generally or two dissimilar drugs, such as cannabis and alcohol. The third limitation has its roots in the thinking of Emile Durkheim (variable orientation) and Max Weber (case orientation). The former explores statistical differences in causation (between independent and dependent variables) using a larger sample with fewer variables and the latter uses more variables and fewer *cases* (e.g., countries) to illuminate the cases' unique differences (Ragin & Zaret, 1983). Finally, the issue of causality is a general concern that requires the researcher to consider a multitude of confounding factors such as the temporal ordering of events, possible correlation between variables, misleading information derived from aggregated measures, and the possibility that outcomes are either linearly related to predictor variables or the result of a combination of several causally relevant variables.

Other methodological limitations concern the feasibility of conducting transnational comparative research. Accessibility of research participants, language and cultural differences, as well as time and financial constraints, have been noted as possible barriers (Bennett, 2004; Kohn,

1987). Certainly, conducting cross-national research requires that data collection methods (e.g., questionnaires) be translated to the native language and account for nuances in dialect and question phrasing. Moreover, for cross-national research to be most effective, it requires collaboration between multiple researchers, each working in the respective countries, that can facilitate participant recruitment and provide expertise about the local context (e.g., see Barratt, Potter, Wouters, Wilkins, Werse, Perälä et al., 2015).

4.1.1. Comparative cross-national drug research

Drug research is increasingly being explored from a comparative/cross-national perspective because of its ability to account for user characteristics and country-specific policies, thus allowing researchers to differentiate between similarities and differences stemming from cultural and structural forces. Yet, it is important to note that not all comparative approaches are the same; indeed, some studies have focused on the profile of cannabis users (e.g., Reinarman, 2009; Reinarman & Cohen, 2007; Reinarman et al., 2004) or cannabis cultivators (Barratt et al., 2012; Hakkarainen et al., 2015), risk factors leading to adolescent drug use (Beyers, Toumbourou, Catalano, Arthur, & Hawkins, 2004; Link, 2006) and arrest for supply-side offences (Athey, Bouchard, Decorte, Frank, & Hakkarainen, 2013), or epidemiological investigations (Rehm, Zatonksi, Taylor, & Anderson, 2011) in countries with dissimilar policies, but without specific recognition of the differences in policy or their implementation. Alternatively, comparative policy analysts (CPA) study policy differences between two or more jurisdictions at a single point in time, or within a single jurisdiction following a legislative turning point (Pardo, 2014; Ritter, Livingston, Chalmers, Berends, & Reuter, 2016; Shi, Lenzi, & An, 2015). One such example is Belackova et al.'s (2017) juxtaposition of drug laws "on the books" versus "in practice" in three jurisdictions (New South Wales, Australia; Florida, USA; and the Czech Republic). As these examples demonstrate, cross-national comparisons in drug research are powerful because efforts to combat drug use and supply are country-specific, often with sufficient variability between nations to draw meaningful conclusions (MacCoun et al., 1993). This likely explains why cross-national drug research—especially of (medical) cannabis policies—has become so popular in recent years (Ritter et al., 2016).

Unfortunately, however, cross-national comparative drug research is impeded by many of the same factors discussed above. As Link (2006) notes, cross-national research in the drug domain has been largely descriptive because it is difficult to untangle the complexity belied by compounding variables. MacCoun et al. (1993) have, fittingly, emphasized the salience of comparing countries that are more alike (e.g., Canada vs. US as opposed to Canada vs. Singapore) and policy changes that transpired within a relatively short time frame (e.g., not comparing cannabis liberalization today to

alcohol prohibition during the 1920s) in order to control the complexity derived from cultural and behavioral idiosyncrasies. Moreover, accessibility is, in many ways, more difficult to overcome in the context of drug research, especially in countries with punitive policies and cultural overtones, because of possible stigmatization and legal sanctions. Consequently, it is becoming increasingly more common to use the Internet to recruit large samples of hard-to-reach, "hidden," populations (Barratt et al., 2015; Barratt & Lenton, 2015). In the following section, I discuss the strengths and weaknesses of online recruitment and surveying of hidden populations, such as illicit drug users and producers, and explain their relevance to the methodology used for this dissertation.

4.2. Internet-mediated research: benefits and pitfalls

The advent of the Internet has had a profound impact on the way we interact with one another. The ubiquity of interconnectivity facilitated by the online environment has resulted in effortless information exchange and the development of highly homophilous (online) social communities, which tend to form around a shared interest or ideology, such as recreational drugs and their use (Wax, 2002). According to recent estimates, there are now more than 3 billion Internet users in the world, with about 17.0 percent residing in Europe and 8.2 percent in North America (Internet World Statistics, 2017). As this unprecedently high figure continues to rise, on- and offline social worlds become increasingly comparable (Buchanan, Johnson, & Goldberg, 2005). A consequence of this phenomenon has been more research opportunities to learn about and reach "hidden populations," such as drug users, that have historically been difficult to identify and recruit (Barratt & Lenton, 2010).

Past approaches to the recruitment of illicit drug users relied heavily on treatment centers, the criminal justice system (e.g., following arrest), nationwide school-based surveys, and snowball sampling and chain referrals (Duncan, White, & Nicholson, 2003). Indeed, social visibility of "hidden" populations such as these pose a significant methodological problem for researchers, and, as a result, unique recruitment methods like snowball sampling were designed to overcome the issue of accessibility (Faugier & Sargeant, 1997). Unfortunately, these methods have limitations (e.g., representativeness and nonrandomness) that reduce the generalizability of findings. Therefore, the Internet is often used as an alternative means of gaining access to a wealth of data sources and research participants in an expeditious way (Padayachee, 2016). This has been the case within the domain of drug research recently (e.g., Barratt et al., 2012; Chatwin & Porteous, 2013; Coomber, 1997; Decorte, 2010a, 2010b; Miller & Sønderlund, 2010; Temple & Brown, 2011). Certainly, online websites and forums host a wide range of drug users, but the available evidence indicates that these outlets are populated overwhelmingly by males in their twenties, including those using cannabis (Temple & Brown, 2011).

Internet-based participant recruitment and research are becoming more common in the social sciences because of their many benefits. By using the Internet, researchers are in a better position to reach more people from larger geographical regions, including those regarded as "hidden" or otherwise hard-to-reach populations like illicit drug users (Barratt et al., 2015). An online survey design offers both participants and the researcher greater convenience in constructing and completing questionnaires while also significantly reducing operation costs (Barratt et al., 2015; Barratt & Lenton, 2015; Miller & Sønderlund, 2010; Rhodes, Bowie, & Hergenrather, 2003). The fact that online surveys can be completed anywhere—so long as there is Internet access—without the power imbalances that come with the physical presence of a researcher can assuage concerns by giving respondents autonomy to provide consent, opt out/refuse to answer uncomfortable questions, complete the survey in its entirety at their own pace, and provide information that may be too sensitive or difficult to convey in a face-to-face setting, therefore potentially eliciting thoughtful and reliable responses (Bakardjieva & Feenberg, 2000; Miller & Sønderlund, 2010; Rhodes et al., 2003). An online design can also reduce possible error by standardizing the way questions are asked, and by providing technical tools to assist respondents as they work through the survey (Rhodes et al., 2003).

Like many other methods, however, an online survey design is not without its limitations. Typically, people that use the Internet and, therefore, respond to online questionnaires are young, actively engaged, Caucasian, and male—what Rhodes et al. (2003) describe as the "digital divide". Consequently, nonrepresentative samples and selection biases must be regarded as potential recruitment limitations (Chiauzzi, DasMahapatra, Lobo, & Barratt, 2013). Certainly, when a survey is marketed online, there is little that researcher can do to prevent it from being distributed amongst and completed by populations outside the study (or ethics) parameters (e.g., minors, who are not eligible to provide consent). Moreover, while providing anonymity by allowing people to participate from a location of their choosing, online sampling still has issues of confidentiality when identifying markers, such as one's IP address, are collected and stored (Rhodes et al., 2003). Although collecting IP addresses is a helpful way to identify multiple responses from the same computer/participant, it is reasonably argued that participants interested in completing a survey multiple times would have little difficulty doing so with IP anonymizers, such as a Tor browser, or a second electronic device (Barratt et al., 2012; Miller & Sønderlund, 2010). Ability and reachability also result in underrepresentation of, for example, populations challenged by literacy and (physical/mental) disabilities and Internet accessibility, such as those residing in countries with poor connectivity (Rhodes et al., 2003). With its strengths and weaknesses in mind, I now proceed with a description of the recruitment method and survey design.

4.3. Recruitment procedure and survey methodology

Participants are a group of self-identified medical cannabis users from, primarily, Canada and the United Kingdom. To be eligible for participation in the study, respondents had to be current users and with a motivation for use that was, in some way, therapeutic (i.e., to alleviate pain or discomfort, to cope with a medical condition, etc.).

Recruitment occurred by placing a link to the current survey on three pro-cannabis websites. In Canada, this included Dana Larsen's homepage (http://www.danalarsen.ca/) and the website for a well-known magazine—*Cannabis Culture* (http://www.cannabisculture.com/). Cannabis Culture is an activist magazine dedicated to informing the population about cannabis-related issues with the hope of reforming cannabis policies and the war on drugs (e.g., see http://www.cannabisculture.com/about). The magazine was founded in the summer of 1994 and published by Marc Emery—a Canadian activist of cannabis policy, but in December 1994 Dana Larsen assumed the role as editor. In addition to his contribution to the magazine, Dana Larsen speaks publicly about the medical cannabis movement and has been directly involved in setting up several dispensaries in Vancouver, British Columbia.

In the United Kingdom, a link to the survey was placed on *Release's* webpage (http://www.release.org.uk/). Release is a non-governmental organization (NGO) that provides expertise on drugs and drug laws. The organization was founded in 1967 and remains an independent and registered charity. In addition to providing the public and professional world with free drug-related guidance and information, the organization is in Special Consultative Status with the Economic and Social Council of the United Nations and part of the Vienna NGO Committee on Narcotic Drugs (e.g., see http://www.release.org.uk/about).[3]

Interested participants were directed to Survey Monkey (https://www.surveymonkey.com/) where a questionnaire particular to their country's circumstance was posted. The first page described their rights as research participants and provided a detailed summary of the survey. At the end of the first page, respondents checked a box indicating their willingness to participate in the survey. If they agreed to continue, the questionnaire began on the following page. However, if the respondent

[3]While it is difficult to determine how effectively these websites recruited medical marijuana users, each has affiliated social media pages (i.e., Facebook and Twitter) that likely increased the target audience both in numbers and in diversity. To gauge the potential audience of each organization, we review the number of registered followers on the organizations' Facebook (FB) and Twitter accounts. Of the three, Dana Larsen's page had the lowest numbers (FB = 2,337 and Twitter = 2,116), while Release (FB = 4,998 and Twitter = 7,122) and Cannabis Culture (FB = 480,377 and Twitter = 70,417) had much larger potential audiences; although, it is important to note that there is likely some overlap between the websites—especially regarding Cannabis Culture and Dana Larsen's homepage.

rejected the call for participation and consent form, they were forwarded to the end of the survey and thanked for their interest.

The survey comprised a 56-item questionnaire about the participants' demographics, former and current cannabis use, experience with law enforcement, medical conditions/ailments, and immediate social network. It remained online from November 2011 until April 2013 and generated a sample size of 472 users. Because of extensive missing data, 113 participants were dropped from the analysis, therefore yielding a usable sample size of 359 participants. Of the 359 participants used in this sample, 94.5 percent took the survey between January 2012 and May 2012; 82.3 percent of Canadians completed it in January 2012 and an additional 9.7 percent in February 2012, while 52.9 percent of Britons completed it in February 2012 and an additional 37.6 percent in May 2012.

4.4. Variable construction, model specification, and analytic approach

4.4.1. Medical cannabis user profile and needs-based model

The goal of the next chapter (Chapter 5) is to provide a comprehensive overview of the *medical cannabis user profile*, including demographics, medical conditions and symptoms being treated, patterns of use, involvement with the healthcare system, and experience using cannabis for medical and non-medical purposes. A "covariates," "needs-based," and "experience-based" model is constructed in this chapter and used in the final results chapter (Chapter 7) to explore the factors most associated with encountering social and legal barriers created by prohibition.

Demographics and nationality: Demographic questions include participants' age, gender, and income while nationality refers to their country of residence (Canada or the United Kingdom).

Medical conditions and symptoms: Participants offered information about their medical conditions and symptoms as well. Certainly, a symptom, such as stress or pain, could be the medical condition, but we consider the two separately so participants have the option to distinguish between symptoms and a larger medical condition. As will become apparent later, nearly all the participants reported suffering from multiple medical conditions and symptoms.

Healthcare involvement: The third set of questions asks about their healthcare involvement. Specifically, participants are asked whether they have a medical doctor, whether they have informed their medical doctor about their cannabis use, and whether their doctor is supportive of their *medical* cannabis use.

Cannabis careers (i.e., "experience-based model"): Participants are also asked a series of questions about their experience using cannabis for medical and non-medical reasons. Their experiences are explored using a cluster of variables that relate closely to Becker's (1963) notion of a cannabis career. A career framework is well suited to capture important features of cannabis use across the life-course and may offer a fruitful perspective for understanding the process of becoming a medical user. Where it has been applied, the results suggest that patterns of use are shaped by a user's age and previous experience using cannabis (e.g., see Korf et al., 2007 and Reinarmen et al., 2004). Age of onset, duration of use, intensity of use, and age of desistance are important markers of one's career and can be used to differentiate between "stages" or "periods" of use (e.g., "experimental", "intermediate/occasional", and "regular" users) as well as fluctuations in use over time (Kandel & Chen, 2000). As such, I construct cannabis careers using k-means cluster analysis (similar to Kandel and Chen, 2000 and Korf et al., 2007) with information about participants' "age," "years of experience as a recreational/non-medical user," "age of onset for medical use," and "years of experience as a medical user.

Age of onset is measured by subtracting the date (year and month) of first use from their current age. "Age" is reported in years, rather than calendar form, and requires transformation to be used in subsequent computations. As such, "age" is constructed by subtracting their current age from the year they completed the survey (e.g., 43 years old at the time of survey [2013] recorded as 1970). This made it possible to compute an "age of onset" variable by taking the difference between the calendar year of birth and calendar year of first medical use.

In addition to the date of their first use, participants are asked about stopping cannabis use for recreational or non-medical purposes. I was then able to draw conclusions about the overlap (or lack thereof) between recreational/non-medical and medical use, periods of desistance between recreational/non-medical and medical use, and changes in the way they self-identify their use (e.g., whether recreational/non-medical use ceases at the time of first medical use). For the cannabis career, the date of last recreational/non-medical use is subtracted from the date of first recreational/non-medical, which produces the number of years that transpired between first and last use. Medical cannabis career length is calculated in the same way, by subtracting the date of their first medical use from the date of last medical use, therefore yielding a measure (in years) of the duration of use.

Patterns of use (i.e., "needs-based model"): The final set of variables regard participants' patterns of use. Patterns of use are gauged using three indicators: frequency of use, the weekly amount (in grams) consumed, and monthly amount (in Canadian dollars) spent on medical cannabis.

The frequency of use is measured on a "weekly" (0 to 7 days) or "monthly" (0 to 31 days) scale. Monthly responses are approximated from the weekly scale by multiplying days per week by four (approximating a four-week month). The monthly scale has a sample size of 299 and a mean of 26.07 (*SD* = 8.56), although a significant majority use daily or almost daily. Because the data distribution is highly abnormal and contains computed approximations, the response options are better represented as an ordinal scale differentiating between "monthly" (0-11 days), "weekly" (12-27 days), and "daily" (28-31 days) users.

Participants report the weekly amount (in grams) of cannabis consumed during their first and most recent month as a medical user. The difference provides an indication of change—whether the amount consumed has increased, decreased, or remained the same. Two-hundred-and-ninety-one respondents answered the question about their early use, while an additional three (*n* = 294) answered the follow-up question about their most recent month of use. The weekly amounts reported by participants during the first month and the most recent week had wide ranges and large standard deviations. As such, in addition to reporting the raw scores in the results section, I also construct an ordinal scale for *recent use* to differentiate between those who consume 0-3, 4-7, and 7 or more grams for comparative purposes.

The amount of money spent on medical cannabis during the most recent month is used as an additional measure of respondents' consumption habits. Participants from the United Kingdom reported their answers in pounds, reflecting the local currency, and needed to be transformed for comparative purposes. To do so, I multiplied their responses by the Canadian currency exchange rate for the day they completed the survey. A total of 284 participants answered this question. Moreover, an estimated unit price per gram is computed by dividing the number of grams consumed during the most recent month from the amount spent (in Canadian dollars). Two-hundred-and-seventy-nine participants provided information about their recent consumption and the amount spent.

Participants are asked about their most common method of consumption. They could have reported smoking it in a joint, pipe, or bong; vaporizer (i.e., "vaping"); eaten; drink in tea; or an open-ended "other" option. Participants that selected the "other" option often indicated using two primary methods (e.g., "smoked in a joint" and "eaten").

Analytic approach: The analyses for this chapter include descriptive, inferential, and k-means cluster analysis to describe the profile of medical cannabis users from two different countries and a wide age range. I begin by describing respondents' demographics, medical conditions/symptoms, healthcare involvement, early medical use, and patterns of use. Where relevant, comparisons are drawn between countries using t-test and chi-square analysis. In the final analytic phase, a k-means

cluster analysis is used to construct typologies of cannabis use experience leading up to and following the point of becoming a medical user. Like the previous analyses, t-test and chi-square analyses are used to draw comparisons between cannabis career typologies.

4.4.2. Resource-based model

The second results chapter (Chapter 6) explores the social side of cannabis use and describes a "resource-based" model which is used as a predictive model in the final results chapter looking at barriers. A "resource-based" model is established using information about respondents' immediate relationships—what I refer to as their "network composition"—and the degree to which they value "social" cannabis use. However, because the network composition and sociability scale are constructed using advanced methodologies, I begin with a brief discussion of each method and the pertinent terminology.

(Ego) Network composition and social network analysis terminology

Introduction to social network analysis and ego networks

Social network analysis (SNA) is a perspective that assumes interconnectivity between units, whether social or otherwise (Marin & Wellman, 2011). Central to this theoretical and methodological paradigm is a need to identify, measure, and test hypotheses "about the structural forms and substantive contents of relations among actors" (Knoke & Yang, 2008, p. 4). The term "social network" refers to a group of actors and the linkages that connect them together; indeed, the distinction between SNA explanations and non-SNA explanations is the inclusion of information about the relationships among units. Network analysts are tasked with modeling these links, or relationships, to illuminate their structural functionality and/or influence on individual actors' behaviors and ideals (Wasserman & Faust, 1994). Carrington and Scott (2011) succinctly describe SNA as a "specific application of graph theory in which individuals and other social actors, such as groups, organizations and so on, are represented by the points and their social relations are represented by the lines" (p. 4). Graph theory is well-suited for the study of networks because it can be used to analyze and visually present the relationship(s) between actors in different ways. For example, links can be bidirectional—as in the form of reciprocity—or directional—as is the case with influence, binary (i.e., presence of a relationship) or valued (e.g., strength of a relationship), and indicative of a certain kind of relationship (e.g., work, family, friend, or acquaintance). Because SNA sees the social world as a composite of patterned relationships among actors, it emphasizes the salience of structure while treating actor attributes as secondary (Wasserman & Faust, 1994).

SNA, being a well-developed science, has a specialized vocabulary that one must become familiar with to understand its application. In the aggregate, there are two types of variables used to model and analyze networks: structure and composition (Wasserman & Faust, 1994). Structural variables measure the links or relationships connecting actors (e.g., business transactions or information exchange), while the composition refers to the qualities of network actors involved (e.g., gender, age, political affiliation, etc.). Structural features are described in a number of ways, including as ties, links, edges, relationships, or interconnections, while actors are described generically as nodes, points, or, using discipline-specific terminology, any number of descriptors (e.g., cells in biology, countries or political systems in political science, corporations in business, or people/individuals in the social sciences).

Knoke and Yang (2008) describe three elements of network research that dictate how networks will be measured and analyzed. These include sampling unit, relational form and content, and level of data analysis. Sampling unit refers to the type of actors, whether individuals, groups, organizations, communities, or nation-states. Relational form is a property of the relationship that is separate from its content. The authors identify two types of relational form: the intensity, frequency, or strength of interaction between pairs of actors and the direction of relations. Relational content, on the other hand, refers to the substance of a relationship or its reason for existing. Stated differently, relational content refers to the *nature* or *type of tie* between two actors. For example, a social relation can be *role-based*, as in kin, friend, or colleague, or *action-based*, as in talks to, studies with, or uses with. Finally, the level of analysis refers to one of four scales: complete, dyads, triads, and egocentric networks.

Marin and Wellman (2011, p.19) describe the approach to complete networks as taking "a bird's eye view of social structure, focusing on all nodes rather than privileging the network surrounding any particular node". Complete networks comprise all actors within the predefined boundaries, including every relationship that can exist between actors. Collectively, the actors and their possible ties constitute the network's structure, which can be used to explore positions or social roles within the network and the patterning of ties between actors. Analyses of complete networks yield information about cohesion and grouping or clustering within the network (e.g., the presence of dense subgroups), the reachability of particular actors, the diffusion of phenomena across the network (e.g., information or disease), and possible points of vulnerability and disconnection (Wasserman & Faust, 1994). On a micro-level, dyadic networks refer to pairs of actors (e.g., marital relationships) and triadic networks consist of relationships between any three actors. The latter is particularly useful for identifying cliques, where any three actors share a relationship with one another, and structural holes, where, for example, person A and B and person B and C have a relationship, but not person A

and C, therefore placing person B in a strategic position (e.g., see also Burt, 1995, 2005). Egocentric networks refer to an actor (ego), his or her immediate ties (to alters), and the ties between those actors—the "particular node" described by Marin and Wellman (2011) above. Egocentric networks are the unit of analysis used for this dissertation and are, therefore, the focus of the rest of this section.

Information about one's (ego) network can be gleaned from several sources. Where the researcher has data for a complete network, with information about all possible ties between actors, an ego network can be constructed by extracting any one actor and his or her immediate alters. Alternatively, contextual details about the evolution and nature of one's relationships can be obtained through qualitative data collection methods, such as archival written accounts (e.g., diaries and newspapers) and interviews, that is lost when a relationship is merely quantified (Crossley et al., 2015). Moreover, questions about the structural features of one's social life are increasingly being added to survey questionnaires (Burt, 1984; Marin & Wellman, 2011; Marsden, 2011).

Data collection for ego networks is typically approached in one of two ways, using three different methods. The two basic approaches to collecting ego network data are relation-based and person-based. A relation-based approach begins with a relation of interest, such as emotional support, and asks about all the people tied to ego fitting that description. The person-based approach does not begin with an assumption about the relationship but instead asks ego to report a wide list of names from multiple social settings (e.g., gym, home, work) and then asks about the nature of relationships between those listed. For either approach, researchers may be interested in learning about the composition of one's personal community (Chua, Madej, & Wellman, 2011), people occupying social positions of interest, or people with specific resources and abilities. To collect such information, a *position generator*, *resource generator* or *name generator* is required (Chua et al., 2011; Crossley et al., 2015). A position generator includes questions about people occupying, typically advantageous, social positions (e.g., lawyer or security guard), while the resource generator asks about people that ego could turn to for resources. The first two methods tap into notions of social capital, whereas the name generator is intended to broaden the scope to include a predefined number of individuals with whom ego shares a certain kind of relationship, whether beneficial or not (Crossley et al., 2015). Ego network researchers typically also ask questions about alter-alter relationships (social structure) and the composition, or *name interpreters*, of network actors, that is, the qualities, such as age, gender, socioeconomic status, or ethnicity, of alters and the nature of their relationship to ego (Chau et al., 2011; Marsden, 2011).

A chief concern for sociologists, and network analysts in particular, is to bridge structural and cultural aspects of social processes. SNA is adept at uncovering the structural component, while ethnographic and other qualitative methods are fitting for uncovering cultural nuances. In the next

section a *cannabis culture/sociability* scale is introduced to address the cultural component of this argument; however, it is helpful to begin by asking whether a cannabis user's network composition, within the context of cannabis use, matches the emphasis they place on cultural features of cannabis use. While not an analysis of social structure—which would require analyzing alter-alter ties—actor attributes tell us a lot about the type of people our respondents interact with and the general composition of their personal community (albeit within the context of cannabis use). In theory, people that report a stronger connection to, and more time interacting with, other cannabis users should be influenced by their belief system and, therefore, share a similar set of norms and ideologies about cannabis and the lifestyle, paramount among which are consuming cannabis together and engaging in social supply (e.g., see Coomber & Turnbull, 2007; Gallupe & Bouchard, 2013). Consequently, we should expect to find that respondents imbedded in cannabis networks also report higher scores on the cannabis culture/sociability scale. In the section that follows, the network approach and variables used for this study are described with SNA terminology from above. The chapter then continues by introducing the cannabis culture/sociability scale and concludes by bridging the two in what will be the resource-based model in Chapter six.

Network variables

Respondents are asked to report on the five people they feel closest to within the context of their medical cannabis use. As such, the study takes a relation-based approach using a name generator to solicit information about those closest to the respondents regardless of their social position(s) or access to resources. The primary objectives are to 1) describe the composition of respondents' personal communities and, specifically, 2) identify respondents embedded in (medical) cannabis-using networks. For this reason, the sampling unit is "individuals" and respondents' "ego networks" are the level of analysis.

Three measures of relational form are included to provide a better description of the intensity of relationships between ego and alter. These are the strength of tie (SOT), measured on a 1-10 scale with 1 being the lowest and 10 being the highest; experience, measured by the number of years a relationship has existed; and frequency of interaction (FOI), measured as the amount of time spent interacting with alters (daily, weekly, or monthly).

Questions about two types of relational content are included, that is, role-based and action-based relationships. Role-based content include the alters' gender (male or female), whether they are a recent (in the past six months) medical cannabis user, and the type of relationship they share with ego (family, friend, or acquaintance). Three action-based questions particular to medical cannabis are included as proxies of embeddedness in medical cannabis networks. These include whether ego and

his/her alters have exchanged information about medical cannabis in the past six months; exchanged cannabis itself, either by sale or gifting; and/or used medical cannabis together. The decision to restrict the context to the past six months was a pragmatic attempt to overcome issues of memory recall that can serve to bias results and lead to possible misinterpretations.

Sociability scale and exploratory factor analysis

Exploratory factor analysis (EFA) is used to determine whether respondents value the cultural underpinnings typically espoused by recreational cannabis users. Seven questions from the survey address unique qualities of culture and group membership. Specifically, these include:

1. "*I usually interact with other medical marijuana users*" (frequency of interaction): An indication of how frequently users interact with one another; those "agreeing" with this statement likely spend their time with other users.

2. "*I usually consume marijuana when interacting with other medical users*" (ritual or practice): Shows whether cannabis use is a central feature of their social interaction; those "agreeing" with this statement likely see time spent with their cannabis-using friends as "cannabis time".

3. "*When consuming marijuana with other medical users, I treat the process as a social activity*" (cohesion/solidarity): There is a sense of togetherness facilitated by sharing cannabis in social settings; those "agreeing" with this statement are expected to perceive cannabis as a social activity.

4. "*I feel closer to someone after we consume medical marijuana together*" (cohesion/ solidarity): The solidarity promoted by sharing cannabis and consuming it in group settings—whether interpersonal or otherwise—may serve to strengthen bonds of attachment between users; those "agreeing" with this statement likely feel that social cannabis use is a bonding activity.

5. "*I prefer to talk about my use of medical marijuana with other medical users, rather than nonusers*" (secrecy and homophily): Discussing cannabis-related matters with users is important when cannabis is regarded as a deviant activity. Moreover, other users may be able to provide specialized knowledge about the drug and take a compassionate/empathetic view of its use than nonusers. Those "agreeing" with this statement are expected to face higher odd of stigmatization in other areas of their life (i.e.,

by nonusers) and/or feel a greater sense of attachment to their cannabis-using friends and relatives.

6. "*I usually do not consume medical marijuana with other medical users unless I trust them*" (trust/secrecy): The level of deviance surrounding cannabis use remains questionable in many jurisdictions, although, increasingly, there are signs of a move toward normalization (Parker et al., 1998, 2002). A feature of deviant social groups is the emphasis placed on trust and secrecy as a means of avoiding stigmatization; those "agreeing" with this statement can be expected to see cannabis use as more deviant than not and, therefore, feel its use should be restricted to social groups that are familiar and trustworthy.

7. "*I identify myself as a medical marijuana user*" (group identification): A salient feature of culture is feeling a sense of belonging to, and identification with, the larger social group; indeed, self-identifying as a cannabis user is indicative of one's sense of self and the type of people/lifestyle they choose to associate with. Those "agreeing" with this statement likely feel that cannabis represents a significant feature of their personal identity, rather than an activity they do on the side.

Table 4. Cannabis culture: Means, standard deviations, and correlation coefficients (n = 223)

	Interact		Consume		Social activity		Closer		Talk		Trust		Identify	
	M	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
Total	3.65	1.13	3.37	1.24	3.76	1.14	3.43	1.21	3.43	1.29	3.16	1.20	4.12	0.99
Correlation														
Interact	-		0.6***		0.3***		0.3***		0.2**		-0.3		0.2**	
Consume			-		0.4***		0.4***		0.1		-0.1		0.1	
Social activity					-		0.6***		0.1*		-0.0		0.0	
Closer							-		0.2***		0.0		0.1	
Talk									-		0.2***		0.1	
Trust											-		0.1	
Identify													-	

Each of the abovementioned variables is measured on a five-point Likert-scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree"), therefore constituting a scale of agreement. The means, standard deviations, and Pearson correlations are presented in Table 4. Accordingly, we find that

respondents agree most with the statement about cannabis use being a “social activity” (M = 3.76, SD = 1.14) and their identity being that of a “medical cannabis user” (M = 4.12, SD = 0.99). Alternatively, the statements yielding the lowest rates of agreement include whether they typically consume cannabis while interacting with other users (M = 3.37, SD = 1.24) and whether they regard trust as a prerequisite to using medical cannabis with others (M = 3.16, SD = 1.20). The correlations seemingly support this divide as well. The variables with the strongest and most significant correlations appear to tap into notions of sociability, rather than culture and secrecy, which would be important if the behavior in question was regarded as a particularly deviant or stigmatized. Interestingly, only one variable is significantly correlated with self-identification as a medical user (interacting with other users: r = 0.21, p < .01) and trust (talking about medical cannabis with other users: r = 0.24, p < .001), and each of these have relatively weak correlations. Consequently, it appears, based on the correlation matrix, that there is more harmony between measures of sociability, but not as much for measures of secrecy and self-identification.

Table 5. Factor loadings and goodness of fit for cultural and sociability Scale (n = 223)

Variable	Extraction method	Cultural Scale	Sociability scale
Interact with other users	ML	0.7	0.7
	ULS	0.7	0.6
	PAF	0.7	0.6
Consume cannabis with others	ML	0.7	0.8
	ULS	0.7	0.7
	PAF	0.7	0.7
Treat cannabis use as social activity	ML	0.6	0.6
	ULS	0.7	0.7
	PAF	0.7	0.7
Feel closer after using cannabis together	ML	0.6	0.6
	ULS	0.6	0.6
	PAF	0.6	0.6
Prefer to talk with other users	ML	0.2	-
	ULS	0.2	-
	PAF	0.2	-
Trust as prerequisite to talking	ML	-0.0	-
	ULS	-0.0	-
	PAF	-0.0	-
Identify as a medical user	ML	0.2	-
	ULS	0.2	-
	PAF	0.2	-
X^2 Goodness of Fit	ML	77.3***	46.5***
	ULS	282.0***	238.7**
KMO	ML	0.6	0.7
	ULS	0.6	0.7
	PAF	0.6	0.7
Eigenvalue	ML	1.8	1.7
	ULS	1.8	1.7
	PAF	1.8	1.7
Explained variance	ML	25.8%	43.1%
	ULS	25.9%	43.2%
	PAF	25.8%	43.2%

Note: Maximum Likelihood (ML), Unweighted Least Square (ULS), and Principal Axis Factor (PAF).
***p < .001.

To determine whether these elements capture the essence of cannabis culture for this sample, all seven variables are entered in an EFA (Table 5). FA is most appropriate when the researcher believes that the manifest indicators are influenced by some underlying latent construct, or constructs. Because I expect that these seven manifest variables are reflective of cannabis culture—the underlying latent construct, it was hypothesized that they would load well on to a single factor. Consequently, the model is restricted to produce only one factor. To gauge the best model, three analyses were conducted using each of the popular extraction methods (unweighted least squares, maximum likelihood, and principal axis factor). It was expected that the maximum likelihood method would not perform as well because the data are largely non-normal; however, the three models did produce comparable factor loading scores for each of the indicators and explained a similar amount of

variance in the overall model. After considering the similarity between models, and the fact that data are non-normally distribution, the decision was made to proceed with the PAF extraction method (Hatcher, 1994).

The initial (cultural) model performed poorly, likely reflecting the fact that these indicators are not adequately tapping into the same latent construct and/or that these elements of culture do not describe this population of (medical) cannabis users well. Both possibilities seem to be apparent here. Moreover, it is interesting that the four variables addressing various features of sociability, that is, the frequency of interaction, propensity to consume cannabis while interacting with other users, treating cannabis use as a social activity, and feeling closer to someone after consuming cannabis together, had much higher correlations and factor loading scores than the other variables. This finding, in part, helps address both possibilities mentioned above; namely, that the cultural scale is not well-encapsulated with these variables, but the social aspect is. Stated differently, it appears that, for our respondents, we have tapped into a *sociability* scale rather than a *cultural* scale.

By revisiting the indicator variables, we see that the weakest factor loadings are associated with one's self-identification as a medical user, whether they prefer to talk about medical cannabis with other users, and whether trust is an important precursor to social use. The first of these (self-identification) does not perform well because a large portion of respondents "agree" or "strongly agree" with this statement (76.6%); there simply was not enough variability to generate meaningful results. The other two poor performers had sufficient variability but still did not factor well because of the substance of the questions. Certainly, these two indicators are unique in that they are proxies of cannabis use in a deviance context, which I speculated would be important features of cannabis subculture if the practice was regarded as socially unacceptable by users. However, the fact that these variables do not perform well in this model is an indication that the clandestine nature of cannabis culture is not well-represented here. Consequently, I felt it would be advantageous to run the analyses again with only the four *sociability* variables.

The sociability scale performed much better using each of the three extraction methods; nearly every factor loading score increased or remained the same and the model's explained variance increased considerably (from 26% to 43%). Because the variables are not normally distributed, I opted for the PAF extraction method for the final analysis. Contrary to the cultural scale, the sociability scale clearly fit a one-factor model well, as evinced by the fact that only one factor had an eigenvalue higher than one (1.73) and all factor loadings were well within the acceptable range of 0.4 to 0.7 (0.61-0.71). The decision to extract one factor was also buttressed by the scree plot, which shows a clear divide at one factor.

4.4.3. Barriers created by policy

The final results chapter (Chapter 7) considers how respondents think medical cannabis *should be* regulated and then looks at many of the barriers faced by medical cannabis patients. Consistent with Becker's conceptualization and much of the research on drug prohibition, "barriers" are classified by their social and legal implications. Specifically, social barriers include feelings (real or perceived) of stigmatization from friends and family members. Indicators of legal stigmatization are separated into two categories: 1) negative encounters with the criminal justice system since self-identifying as a medical cannabis user and 2) restricted access to a safe and affordable supply.

Manifestations of social stigmatization are more conspicuous in areas where prohibition is endorsed and drug use condemned. Certainly, this (social stigmatization) is one of the key antitheses to the normalization thesis (Parker et al., 1998), which argues that social acceptance, including by nonusers, is a clear indication that drug use by certain populations is tolerated. To determine whether this is the case in Canada and the United Kingdom, one measure of social stigmatization is included; that is, whether participants have ever ceased medical cannabis use because their family and friends did not support it.

Legal stigmatization is an additional manifestation of prohibition. In many ways, it is more objective and damaging than social stigmatization. For example, being asked if you have been arrested for possession clearly points to legal stigmatization, whereas feeling that your friends and family are unsupportive may be real or imagined stigmatization. Moreover, legal stigmatization carries the added harm of a deviant or criminal label. Several survey questions addressing legal stigmatization are included as outcomes. Among these are: 1) whether participants have been a) stopped by the police and had their cannabis confiscated, b) arrested for cannabis possession, or c) arrested for cultivating and/or trafficking cannabis; 2) whether participants have ever stopped medical cannabis use out of fear that they would be arrested; and 3) whether the possibility of arrest is the biggest concern they have about using medical cannabis.

Despite the barriers that medical users face because of law and culture, however, many maintain a belief system in direct contrast to their reality. Medical cannabis users may feel that their choice in medicine is most appropriate for their ailments. Regardless of their own use, moreover, some users likely feel that the decision about how to medicate should be left to the individual and not a be regarded as a concern by agents of control. Alternatively, other users may feel that cannabis is still a dangerous drug (e.g., when used habitually or improperly) and that it should remain illegal to protect people from harming themselves. This poses an interesting question for lawmakers, who must find a balance between harm reduction and autonomy for needy patients. Therefore, one possibility

explored in the “barriers” chapter is whether a disconnect exists between the way respondents *feel* medical cannabis *should be* regulated and how it is. One question was included in the survey to address this concern. Specifically, respondents are asked to indicate which of five options best represents how they feel cannabis should be regulated. These include “full legalization” subject to no restrictions (i.e., free market); “possession regulated similar to alcohol and tobacco, with age and place restriction;” “adult possession and cultivation of small amounts for personal use not penalized in any way” (i.e., depenalization); “possession a civil offence, punishable by fine only—not a criminal offence;” and “possession remains a criminal offence” (i.e., prohibition).

Questions pertaining to “barriers” fell under five domains and are presented accordingly in the results section. First, respondents’ opinions about cannabis regulation are discussed using descriptive statistics and bivariate comparisons (i.e., t-test, analysis of variance, and chi-square analysis). The second section considers respondents’ experience(s) with the criminal justice system since becoming a medical user. Initially, the discussion is descriptive in nature and uses frequency distributions, means, and their standard deviations to compare respondents with “any experience,” “being stopped and having cannabis confiscated,” “being arrested for cannabis possession,” being convicted of cannabis possession,” “being arrested for trafficking/cultivating cannabis,” and “being convicted of trafficking/cultivating cannabis.” The first category— “any experience”—is constructed by adding the other measures together and dichotomizing the sum, therefore differentiating between those who have and have not had a negative encounter with the criminal justice system since becoming a medical user. After the initial, descriptive, analysis, six models are tested using “any experience” as an outcome. Analytically, this requires the use of multivariate binary logistic regression. Each of the substantive areas of interest is considered in the first five models: covariates only (Model 1), cannabis careers (Model 2), needs-based (Model 3), risk-based (Model 4), and resource-based (Model 5). The final, “best fitting,” model (Model 6) then uses only covariates and significant predictor variables from the previous five models.

In the third section, respondents’ reasons for stopping (if ever) and their biggest concern are addressed using descriptive and bivariate analyses. Seven reasons for stopping and one “other” option were listed in the survey. These questions are not mutually exclusive, meaning that, theoretically, respondents could have acknowledged having stopped for all, some, or none of these reasons. Four of the seven options are relevant “barriers” and are therefore retained for the analysis. These include having stopped because “they could not find a supply,” “they could not afford cannabis,” “their family and friends did not support it,” and “they were concerned about the possibility of arrest.” Their biggest concern about using medical cannabis, on the other hand, is mutually exclusive, so only one option could have been reported. The possible options include, “none at all,” “medical

concerns/health effects," "the possibility of arrest," "the cost of cannabis I use," and "other." However, because I am interested in the possible barriers created by policy, only the "possibility of arrest" and "cost" are used in the analysis. Consequently, the comparisons are between those selecting each of these (two) options versus those who chose a different option, including those who chose "none at all."

In the final section, I consider the degree to which accessibility is a barrier and, additionally, the subpopulation that reports growing their own as an alternative to relying on others. Respondents are asked how they acquire cannabis and the specific amounts that they obtain from each source. I use this information to create two outcomes for the analysis. First participants are asked, "In the past six months, what percentage of the medical cannabis that you have used comes from the following sources?" Response options include: "% grown for medical users;" "% from a Compassion Club;" "% from Health Canada program" (in Canada); "% grown myself;" "% bought from dealer(s), friend(s), and family;" and "% obtained for free from dealer(s), friend(s), and family." The first three response options are coded broadly as "% grown for medical users." This created an outcome variable with four options that could have been answered on a scale ranging from 0-100 percent. The amount obtained from each source was then recoded so that the primary supply source received a "1" and all others received a "0," thus providing an indication of the *typical* way in which respondents procure their medicine. It is worth noting, however, that five percent reported an even split between two sources, which required making a fifth category labeled "50-50%."

The second analysis considers the subpopulation of respondents that report growing their own. The outcome variable is binary, differentiating between those who report growing any amount of their own ("1") and those who do not ("0"). The decision to partition by *any amount* rather than as a *primary* method was made because the prevalence of respondents growing their own as a primary method was so low (14.9%).

Whether drawing comparisons with bivariate statistics (t-test, analysis of variance, and chi-square) or multivariate binary logistic regressions, the final chapter uses five predictor models to identify the factors most likely to be associated with experiencing barriers. Four of the five are constructed in Chapter 5 ("covariates," "needs-based," and "experience") and Chapter 6 ("resource-based"), while an additional one ("risk-based") is added to the last chapter specifically because of its perceived relevance to the barriers.

Covariates: Three covariates are included in each of the analyses for Chapter 7. These include respondents' gender (male or female), income, and country of residence (Canada, United Kingdom, or "Other").[4]

Cannabis careers: Three career typologies (described above and in more detail in Chapter 5) are retained to explore the link between cannabis experience and barriers.

Needs-based: A needs-based model is also constructed in Chapter 5 and used in Chapter 7 to predict whether the heaviest and most needy users face increased odds of encountering barriers.

Regarding the latter, a needs-based model is used to determine whether respondents grow their own out of necessity. One possibility is that the heaviest users face increased costs and begin to "do it themselves" as a means of convenience or cost reduction. It is also possible that medical users, who otherwise have little contact with the "cannabis scene," are impeded by a lack of available supply sources. I explore both possibilities using information about respondents' patterns of use and concerns about accessibility. Patterns of use are measured using three indicators: "frequency of use," "amount (in grams) consumed during the most recent week," and "monthly spending" (in Canadian dollars). Importantly, concerns about accessibility are assessed with two questions that are used as outcome variables when discussing the legal barriers; thus, while these two variables are treated as outcomes for comparative purposes initially, they are used again as predictors when I address availability as a separate barrier. The first asks, "If you have ever stopped using marijuana for medical purposes, why did you do so? Response options are not mutually exclusive and only two have relevance to the needs-based model: "I could not find a supply" and "I could not afford to buy it." Respondents that reported stopping for either reason are coded "1" and "0" otherwise. I also ask respondents, "What is the most important concern that you have about your medical marijuana use?" and provide the following response options: "none at all," "medical concerns/health benefits," "the possibility of arrest," "the cost of cannabis I use," and "other." Unlike the previous question, these responses are mutually exclusive, therefore providing an indication of the *greatest* concern. Because of my interest in economic hardship, I dummy code the variable to distinguish between "cost" (reference) and all other options ("0").

Resource-based: The resource-based model is established in Chapter 6 and used in Chapter 7 to determine whether the most resourceful and well-connected face lower odds of encountering barriers. The logic behind this model is that the most well-connected and deeply embedded users (in

[4] Although respondents hail from multiple countries, there is only enough representation from Canada and the United Kingdom to draw meaningful results; therefore, while all respondents are retained, only results for Canadian and British respondents are reported in the country comparisons.

cannabis networks) benefit from having access to more resources (i.e., social capital), which helps them overcome or otherwise avoid possible barriers. The resource-based model is, therefore, constructed using measures of social cannabis use, network composition, and resourcefulness. Social cannabis use is quantified using a *sociability scale* (described above) using a four-item exploratory factor analysis. Network composition is measured using questions about the five people respondents feel closest to emotionally in the context of medical cannabis use. This wording was chosen because of my interest in learning about the people most likely to encourage or constrain behavior, provide needed resources, and offer solidarity and support. I use four (medical) cannabis-related variables to gauge whether respondents belong to a *cannabis network*. These include the number that used medical cannabis during the previous six months (i.e., "recent users"), the number that used medical cannabis with the respondent during the previous six months, the number that discussed medical cannabis with the respondent, and the number that exchange (sell or gift) medical cannabis with the respondent (dichotomized between any selling/gifting [reference] and none ["0"]).

The final two measures of resourcefulness are whether respondents have a physician that supports their use of medical cannabis and whether respondents are affiliated with a pro-cannabis organization. I hypothesize that these types of social support will assuage concerns about stigmatization and legitimize respondents' chosen medical treatment, therefore leading to increased odds of growing a personal supply and avoiding other forms of stigmatization and legal repercussion. Moreover, an additional measure of resourcefulness pulled from the "availability" variable (whether respondents obtained most of their supply for free) is used for the analyses of legal and social stigmatization, because this form of resourcefulness likely means that respondents are embedded in cannabis networks, thus benefitting from solidarity, and do not need to take as many risks seeking a supply (from untrusted dealers) or growing their own. Yet, the same measure of resourcefulness cannot be used for the analysis of "availability" and personal cultivation because it is part of the outcome variable.

Risk-based: A risk-based model is added to the last chapter specifically because it is believed that risk-takers are likely to face increased odds of encountering the criminal justice system and other forms of stigmatization. Four variables are used to construct the risk-based model.[5] These include the degree to which respondents have encountered the criminal justice system prior to self-identifying as a medical user, which is measured using the same variables as after becoming a medical user (namely, whether they have been stopped and had their cannabis confiscated, whether they have

[5] It is important to note that the risk-based model is being used to predict the odds of facing legal and social stigmatization, but not availability or the decision to grown one's own cannabis, because 1) one of the risk-based measures is an "availability" variable (obtaining most of one's supply from a dealer) and 2) the frequency of respondents on many of the risk-based measures that also grew their own was low.

been arrested and convicted of possession, and whether they have been arrested and convicted of trafficking/cultivation); whether they buy most of their supply from a dealer; whether they grown any of their own; and whether they use other illegal drugs. As was the case with the resource-based model, neither "buying most from a dealer," nor "growing any amount of their own" are used as predictors in the "availability" and personal cultivation analyses because they are part of the outcome variable. Readers should, therefore, expect to find these two measures used as predictors for the barriers "encountering the criminal justice system," "the reasons for stopping," and "the biggest concerns," but not for the discussion about availability and the case for "doing it yourself."

4.4.4. Missing data analysis

Missing data was a reoccurring theme in the data. The amount of missingness varied widely between variables, ranging from 0-53.8 percent for several network measures. A considerable number of respondents clearly skipped the network and cultural/sociability scale questions and could not be regarded as missing at random (MAR) or missing completely at random (MCAR); instead, they are missing not at random (MNAR) and, therefore, unfit for imputation. A review of missing data patterns suggests that the data otherwise approximate a MAR pattern and are suitable for multiple imputations. Consequently, before running descriptive, bivariate, and multivariate analyses, missing values are imputed using predictor, covariate, dependent, and highly correlated auxiliary variables (Allison, 2002, 2009; Schafer, 1997). The data imputation process generated five datasets, each with its own model fit indexes and pooled results (whether means, frequencies, or regression coefficients). Therefore, I report only the poorest fitting of the five models for all analyses.

4.4.5. Statistical software

All data coding and analyses are conducted using SPSS 23.0 (IBM, 2014).

Chapter 5.

A profile of medical cannabis users residing in Canada and the United Kingdom

Respondents' demographics, medical conditions/symptoms, experience using cannabis medically and non-medically, healthcare involvement, and consumption habits are presented in Table 6. Because of my interest in teasing out the similarities and differences that exist across jurisdictions, comparisons are drawn between Canadians and Britons in the second and third columns, while the fourth lists results for the total sample; the fifth column lists t-test, analysis of variance, and chi-square results for the comparisons. Moreover, since the discussion is descriptive at this phase, all results are presented using raw data; consequently, notes regarding sample size are indicating where appropriate and listed below the table.

5.1. Demographics

The sample population is mostly Canadian (34.5%) and British (58.5%), male (82.7%), in the early-to-mid-30s (32.1 years old), and has a modest annual income of $24,800 (CAN). The Canadian participants are older (34.8 vs. 30.1 years old) and have more female representation (24.0% vs. 12.5%), while the income between countries is virtually identical. There was, however, an apparent difference in the number of Canadians and British making between $15,000-25,000 and $25,000 or more (CAN); about two-fifths of Canadians (41.1%) make at least $25,000 annually, while Britons are more evenly divided between $15,000-25,000 (32.9%) and $25,000+ (29.0%). Given that the Canadian sample is older on average, this may be an artifact of their age and career experience.

Table 6. Sample demographics (n = 359)

Variable	Canada (n = 124) Mean (SD)	Canada (n = 124) %	United Kingdom (n = 210) Mean (SD)	United Kingdom (n = 210) %	Total (n = 359) Mean (SD)	Total (n = 359) %	F-test (X2)
Gender							(9.0)**
Male		76.0		88.5		82.7	
Female		24.0		11.5		17.3	
Age	34.8 (12.2)		30.1 (11.05)		32.1 (12.0)		-3.59***
Income (Canadian)	$27.3k (23.6)		$25.8k (49.1)		$24.8k (25.6)		-0.34
$0-5,000		21.8		20.5		21.7	
$5,001-15,000		15.3		17.6		16.4	
$15,001-25,000		21.8		32.9		27.3	
$25,0001+		41.4		29.0		34.5	
Symptom[a]							
Stress		67.3		71.4		71.6	(5.30)
Chronic pain		62.4		59.3		60.5	(0.25)
Insomnia		46.0		54.3		50.8	(2.34)
Depression		48.0		52.2		50.5	(0.52)
Reduced appetite		35.6		33.0		33.0	(1.64)
Nausea		41.6		20.3		27.5	(15.1)**
Migraines		30.0		18.6		23.5	(6.44)*
Spasticity		11.9		11.6		12.1	(0.65)
Chronic fatigue		10.0		10.3		10.7	(1.15)
Medical condition							
Arthritis		31.0		23.4		25.7	(2.18)
PTSD		22.0		10.3		14.3	(7.23)*
Asthma		14.0		11.4		12.1	(0.67)
Fibromyalgia		10.0		4.9		7.2	(3.83)
Cancer		2.0		3.3		2.9	(0.54)
Epilepsy		2.0		3.8		2.9	(1.51)
Multiple sclerosis		4.0		2.2		2.9	(0.93)
Glaucoma		4.0		1.6		2.3	(2.21)

Variable	Canada (n = 124)		United Kingdom (n = 210)		Total (n = 359)		
	Mean (SD)	%	Mean (SD)	%	Mean (SD)	%	F-test (X2)
HIV/AIDS		1.0		0.5		0.7	(0.37)
Cannabis experience							
Recreational user first[b]		84.9		75.5		79.2	(3.31)
Age of first recreational use[c]	15.8 (4.5)		16.9 (5.9)		16.5 (5.4)		1.78
Years of recreational use experienced	15.5 (12.2)		12.2 (9.9)		13.6 (11.2)		-2.42*
Age of first medical use[e]	27.1 (11.8)		23.2 (8.9)		24.8 (10.3)		-2.71**
Years of medical use experience[f]	8.4 (8.5)		7.6 (8.0)		8.0 (8.5)		-0.73
Have doctor[g]		86.5		88.0		87.1	(0.59)
Informed doctor about cannabis use[h]		71.8		50.3		57.9	(15.73)**
Doctor is supportive of cannabis use[i]		53.7		35.6		42.1	(11.51)*
Patterns of use							
Frequency of use[j]	6.29 (1.62)		5.83 (1.97)		5.94 (1.91)		-2.13*
Monthly (0-11 days)		8.1		11.2		10.7	(7.86)
Weekly (12-27 days)		13.1		23.0		20.1	
Daily (28-31 days)		78.8		65.7		69.2	
Weekly amount used during first month[k]	11.34 (14.76)		7.98 (14.56)		8.87 (14.36)		-1.79
Recent amount used[l]	19.42 (32.13)m		8.18 (10.53)		11.62 (20.86)		-3.33***
0-3g		27.1		30.7		30.6	(13.71)**
4-7g		21.9		34.1		30.6	
7+g		51.0		35.2		38.8	
Consumption has increased[k]		92.4		93.1		92.3	(1.45)
Proportion that spends nothing on cannabis[n]		9.7		8.9		9.2	(0.05)
Method of consumption							(20.94)***
Vaporizer		20.5		9.9		15.8	
Smoked (joint, pipe, bong)		66.7		81.8		75.2	
Eaten		4.6		3.1		3.9	
Drink in tea		0.9		0.0		0.3	
Other/2+ methods		2.8		5.2		3.9	

[a]*n* = 307, Canada = 100, UK = 184; [b]*n* = 264; [c]*n* = 332; [d]*n* = 319; [e]*n* = 280; [f]*n* = 270; [g]*n* = 253; [h]*n* = 311; [i]*n* = 278; [j]*n* = 299; [k]*n* = 287; [l]*n* = 294; [m]median = 7.00, 7.50, and 7.00; [n]*n* = 284; [o]*n* = 323; ***$p < .001$.

**$p < .01$; *$p < .05$.

5.2. Medical conditions and symptoms

The two most common symptoms and medical conditions are stress and chronic pain. Stress is reported by just over two-thirds of Canadians (67.1%) and nearly three-fourths of Britons (71.1%), while about three-fifths of the sample are treating ongoing pain (61.8% in Canada and 57.8% in the United Kingdom). Excluding migraines, PTSD and nausea, each of the remaining symptoms and medical conditions is reported proportionately between the two countries.

Nearly three-fourths are using cannabis therapeutically to cope with feelings of stress. Stress is correlated with several additional medical conditions and symptoms, suggesting that medical cannabis users are trying to cope with multiple physiological and/or psychological hardships. For example, significantly more respondents using cannabis for depression ($X^2 = 32.57$, $p < .001$; 60.7%), PTSD ($X^2 = 11.61$, $p < .001$; 18.7%), migraines ($X^2 = 7.87$, $p < .01$; 28.0%), chronic fatigue ($X^2 = 6.67$, $p < .01$; 13.7%), insomnia ($X^2 = 18.08$, $p < .001$), and reduced appetite ($X^2 = 11.74$, $p < .001$) have stress. Respondents with stress were otherwise similar to their counterparts. Apart from being slightly younger on average (stress = 32.22 years old, all others = 34.30 years old), the prevalence of stress is similar across genders, income levels, and level of experience using cannabis recreationally and medically. Stress is not associated with having a medical doctor ($X^2 = 1.04$, $p > .05$; 87.2% vs. 88.5%), deciding to inform a medical doctor about one's cannabis use ($X^2 = 0.52$, $p > .05$; 59.4% vs. 55.2%), or receiving support after such a confession ($X^2 = 0.27$, $p > .05$; 41.2% vs. 44.6%).

Chronic pain was the second most prevalent symptom/medical condition in the survey, being reported by three-fifths of our participants (60.5%). Like those suffering from stress, chronic pain was one of many symptoms/medical conditions affecting participants' lives. Significantly more participants with arthritis ($X^2 = 41.51$, $p < .001$; 91.1%), fibromyalgia ($X^2 = 9.09$, $p < .01$; 90.9%), migraines ($X^2 = 15.84$, $p < .001$; 80.6%), reduced appetite ($X^2 = 4.94$, $p < .05$; 69.3%), spasticity ($X^2 = 11.77$, $p < .001$; 86.5%), and nausea ($X^2 = 15.99$, $p < .001$; 78.6%) are coping with ongoing pain. Unlike those with stress however, participants with chronic pain are significantly older ($t_{(304)} = -3.09$, $p < .01$; 34.54 years old vs. 30.18 years old). They also report having a medical doctor ($X^2 = 4.61$, $p < .05$; 90.8% vs. 82.5%), informing their medical doctor about their

cannabis use (X^2 = 16.60, p < .001; 63.2% vs 50.4%), and finding them to be supportive (X^2 = 9.24, p < .02; 47.0% vs. 34.9%). Distinctions between those with or without chronic pain were comparable otherwise (i.e., across gender, income levels, preferred methods of consumption, and experience using cannabis recreationally and medically).

5.3. Healthcare participation

To gauge their level of healthcare involvement, respondents are asked if they have a medical doctor, have informed their medical doctor about their cannabis use, and whether their medical doctor is supportive of their use. Irrespective of where they reside, the majority currently have a medical doctor (87.1%, X^2 = 0.59, p > .05). However, only about half of British respondents have informed their medical doctor (50.3%) and only about a third have found them to be supportive (35.6%). Contrarily, just under three-fourths (71.8%) of Canadians have informed their medical doctor and over half found them to be supportive (53.7%).

5.4. Patterns of use

5.4.1. Frequency of use

The average participant uses cannabis almost daily (M = 5.94 days/week, SD = 1.91), although Canadians use significantly more often than the British participants (6.29 days vs. 5.83; $F_{(237)}$ = -2.13, p < .05). Yet, the proportion of "daily," "weekly," and "monthly" users does not differ significantly between the two countries. Instead, a comparable number are monthly users (8.1% in Canada and 11.2% in the United Kingdom) and a notable, albeit non-significant, difference exists between "daily" and "weekly" users; the former comprising more Canadians (78.8% vs. 65.7%) and the latter more British (23.0% vs. 13.1%).

5.4.2. Amount consumed

The average weekly amount used during the first month as a medical user had a wide range (0-150 grams/week) and an average of more than a quarter ounce (M = 8.87, SD = 14.36); the median was, however, lower than a fifth of an ounce (5 grams/week). While the difference does not amount to statistical significance, Canadians report having

used 11.34 grams (*SD* = 14.76), while British participants consumed just under 8 grams per week (7.98, *SD* = 14.56). In the follow-up question about the weekly amount consumed during the most recent month, an even wider range (0-225 grams/week) and mean (*M* = 11.62, *SD* = 20.86) is reported. Again, the median is a more accurate representation of the average user, yielding a figure of about 7 grams per week. Canadians are, however, by far the heaviest current users. These participants report an average weekly consumption of 19.42 grams (*SD* = 32.13) compared to only 8.18 (*SD* = 10.53) for British participants.[6] When recoded to differentiate between "light" (0-3g/week), "moderate" (4-7g/week), and "heavy" (7+g/week) users, the results show that Canadians are the heaviest users, with over half (51.0%) using seven or more grams per week, while Britons are evenly divided between the three categories ($X^2 = 13.71$, $p < .01$).

After subtracting the quantity consumed during the most recent month from the first month, data for 287 participants are available. This provides an approximation of how much their consumption has increased or decreased since their first month of use. The results suggest a significant change in consumption for many participants (range = -19.0 to 364 grams; *M* = 33.89 grams, *SD* = 51.78; median = 21.0 grams). Interestingly, only 4.2 percent consume less and 3.5 percent consume the same amount, while the remaining 92.2 percent have increased the amount they use; roughly 60 percent report an increase of 1 to 28 grams and 10.0 percent use at least three ounces more than what was used during the first month.

5.4.3. Amount spent

Respondents' monthly spending habits range from $0.00 to $8,800.00 with a mean of $211.19 (*SD* = $347.87) and a median of $160.00. The mean price-per-gram is $12.40 (*SD* = $15.37) and the median is $9.90. Just over one-tenth (10.4%) did not buy cannabis at all, slightly more than one-fourth (28.7%) spent $6 or less, and 12.0 percent spent $20 or more per gram. The average price-per-gram ($10.69, *SD* = $16.19 in Canada and $12.74, *SD* = $12.36; $t_{(256)} = 1.13$, $p = .26$) and the proportion that spent

[6]The average reported in Canada is highly skewed by a few participants that report much larger amounts consumed than the average. If we remove the top two heaviest consumers—who used 225 and 195 grams during the most recent week, the mean average drops to 14.06 grams (SD = 19.19), which is still much higher than the United Kingdom average but not by double the amount.

nothing (9.7% in Canada and 8.9% in the United Kingdom; $X^2 = 0.05$, $p = .98$) are not significantly different between countries.

5.4.4. Methods of consumption

Smoking is the most common "primary" method of consumption, whether in a joint, pipe, or water bong. While about three-fourths smoke their cannabis (75.2%), the proportion is higher for Britons than Canadians (81.8% vs. 66.7%)—likely because of the many other options available in North America. In lieu of smoking, about one-fifth of Canadians (20.5%)—roughly double the number of British—prefer "vaping," while five percent or fewer of all participants prefer eating, drinking, or multiple methods of ingestion.

5.5. Cannabis careers: Becoming a "medical" user

5.5.1. Age at time of first medical use and previous recreational/non-medical use

Most participants began using cannabis during adolescence ($M = 16.5$, $SD = 5.4$) and nearly all had at least tried it by the time they were 18 years old (80%). Canadians have a younger age of onset ($M = 15.8$, $SD = 4.5$ vs. $M = 18.9$, $SD = 5.9$) and more experience using for recreational/non-medical purposes than the British (15.5 years, $SD = 12.2$ vs. 12.2 years, $SD = 9.9$). Nearly four-fifths (79.2%) had experience using cannabis recreationally prior to their first medical use. The proportion is slightly higher in Canada than in the United Kingdom (84.9% vs. 75.5%). Despite having a younger age of onset, Canadians did not define their use as medical until their late-20s (27.1 years old, $SD = 11.8$), while Britons began doing so during their early-to-mid-20s (23.2 years, $SD = 8.9$). Notably, the proportion of participants that stop recreational use at the time of first medical use is twice as high in Canada (35.4% vs. 15.0%, $X^2 = 13.68$, $p < .001$). Respondents have been using cannabis therapeutically for about eight years. Canadians report slightly more experience, but this does not amount to a significant difference (Canada = 8.4 years, $SD = 8.5$; United Kingdom = 7.6 years, $SD = 8.0$; $F_{(248)} = -0.73$, $p > .05$).

To this point, the focus has been on drawing cross-national comparisons between two populations of medical cannabis users residing in Canada and the United Kingdom. The initial profile that emerges is one of a male in early adulthood that uses cannabis to treat symptoms of stress and pain. Respondents from each of the two countries resemble one another both economically (by income) and medically (medical conditions); however, they appear to have different consumption habits, experiences using cannabis recreationally, and healthcare involvement. Differences in support from one's healthcare provider are likely reflective of the local context, which would explain why support is much lower in the United Kingdom. However, variations in experience and consumption are individual-specific and likely have less to do with national policies or cultural practices. Canadians are older and more experienced, use cannabis on more days, and consume considerably more on a weekly basis. This distinction suggests that respondents differ in ways that have little to do with their nationality. Because the nature of cannabis use is highly reflective of the user's age and previous (cannabis) experience, it is important to consider separately this "career profile." In the following section, k-means cluster analysis is used to explore the extent to which respondents differ by "age," "age of first medical use," "years as a medical user," and "prior years as a recreational/non-medical user."

5.5.2. Cannabis career typologies

Several cluster analyses are run with varying numbers of groups specified in order to obtain the best fitting model. The results suggest that the data is best represented as a three-cluster model (n = 264), differentiating between "older-recreational" (n = 64), "older-medical" (n = 44), and "younger" (n = 156) users (see Table 7).

Table 7. Cannabis career typologies (n = 264)

Variable	Cluster 1: Older-Recreational (*n* = 64)	Cluster 2: Older-Medical (*n* = 44)	Cluster 3: Younger (*n* = 156)	*F*-test (X^2)
Age	44.50	44.34	24.39	
Age of first medical use	39.05	22.31	19.25	
Years as a medical user	5.37	21.99	4.98	
Prior years as a recreational user	22.33	3.70	3.62	
Differences between clusters				
Gender (Male)	81.3	81.8	87.2	(1.62)
Country				(6.91)
Canada	31.4	14.0	54.7	
United Kingdom	19.5	17.0	63.5	
Previous knowledge of therapeutic benefits	70.3	51.2	49.7	(8.09)*
Recreational use prior to onset of symptoms	96.9	59.1	77.6	(23.16)***
Have a medical doctor	89.1	86.0	88.7	(0.27)
Informed medical doctor of cannabis use	71.9	67.4	51.0	(9.71)*
Have supportive medical doctor	53.4	55.0	36.1	(9.14)
Medical conditions and symptom(s)[a]				
Multiple sclerosis	3.1	9.3	0.7	(9.46)*
Arthritis	48.4	37.2	14.7	(28.88)***
Asthma	15.6	2.3	12.0	(4.73)
PTSD	17.2	18.6	8.7	(4.78)
Insomnia	48.4	37.2	56.0	(4.94)

Variable	Cluster 1: Older-Recreational (*n* = 64)	Cluster 2: Older-Medical (*n* = 44)	Cluster 3: Younger (*n* = 156)	*F*-test (X^2)
Spasticity	17.2	19.0	8.8	(4.77)
Patterns of use				
Frequency of use				(6.02)
Monthly (0-11 days/month)	9.4	2.5	12.4	
Weekly (12-27 days/month)	15.6	15.0	22.1	
Daily (28+ days/month)	75.0	82.5	65.5	
Amount consumed (*n* = 248)				(14.44)*
0-3g	23.8	19.5	31.1	
4-7g	19.0	36.6	36.1	
7+g	57.1	43.9	32.6	
Amount consumed has increased (*n* = 244)	85.0	97.5	95.1	(8.19)*
Illicit drug use during past month (*n* = 244)	1.7	0.0	14.0	(12.80)**

***$p < .001$; ** $p < .01$; *$p < .05$.

The “older-recreational” users are between 25 and 64 years old (*M* = 44.50, *SD* = 8.31), mostly male (81.3%), and hail from both Canada (42.2%) and the United Kingdom (48.4%). Most have extensive recreational/non-medical cannabis careers before their first medical use (*M* = 22.33, *SD* = 9.37, range = 0-41.5 years), but limited experience using cannabis for medical purposes (*M* = 5.37 years, *SD* = 4.56). The second group of “older-medical” users has a similar age (*M* = 44.34, *SD* = 8.35, range = 32-64 years) and gender profile (81.8% male); however, more are from the United Kingdom (61.4%) than Canada (27.3%). Despite having a similar age, the second group of older participants began using cannabis therapeutically during their early-20s (*M* = 22.31, *SD* = 6.14, range = 12.5-35 years) and had only been using cannabis recreationally/non-medically for about 3.70 years (*SD* = 4.57, range = 0-16 years) before their first medical use. The third (and largest) cluster of “younger” users is nearly half the age of the other two (*M* = 24.39, *SD* = 5.03, range = 15-40 years), but similar in that they are mostly male (87.2%) and from the United Kingdom (64.7% vs. 30.1%). The younger participants were using cannabis recreationally/non-medically for about 3.62 years (*SD* = 3.88, range = 0-15 years) before their first medical use and have since acquired slightly more experience using medically (*M* = 4.98, *SD* = 4.06, range = 0-16.5 years). These results certainly imply that the users are not all the same, nor do they reach the point of self-identifying as a “medical” user in the same way.

Many people begin using cannabis therapeutically (or self-identifying their use as “medical”) after experiencing the drug’s benefits in the context of recreational/non-medical use. To gauge whether this is the case for this sample, I consider whether recreational/non-medical use preceded the onset of medical use and, furthermore, whether they knew about the therapeutic benefits before first experiencing their symptoms. Unsurprisingly, nearly all the older-recreational users started their cannabis careers as recreational/non-medical users (96.9%), while the younger users were second highest (77.6%); just over half of older-medical users were first using cannabis recreationally/non-medically (59.1%). More than half had previous knowledge of the medical benefits (56.8%), but there were significant variations between user typologies, suggesting, in fact, that previous recreational/non-medical use may help to distinguish between types of medical users. It should be unsurprising, then, that the first cluster of older-recreational users reports having previous knowledge of the medical benefits more often than the other two groups (70.3% vs. 51.2% and 49.7%, respectively; $X^2 = 8.09$, $p < .05$). Moreover, it is noteworthy that the other two user typologies have very similar recreational/non-medical experiences (3.70 and 3.62 years of experience, respectively) and proportionate numbers that had previous knowledge of the medical benefits.

I also consider whether healthcare involvement is related to the respondents’ age and experience using cannabis. For example, we may expect to find that older and experienced users are

willing to discuss their use with a physician, and find that they are supportive—if only because they have more knowledge and experience using the drug. While nearly all the participants report having a medical doctor (87.1%), the proportion that admits using cannabis to their physician is much higher for the older-recreational (71.9%) and older-medical (67.4%) users than it is for the younger users (51.0%; $X^2 = 9.71$, $p < .05$). However, when asked whether their physician is supportive of their use, the proportion of older-recreational and younger users drops much more than it does for the older-medical users, implying that older-medical users have more actual or perceived legitimacy in the eyes of the medical community ($X^2 = 9.14$, $p < .10$). Certainly, this seems plausible given that they have less recreational/non-medical and more "medical" use experience relative to their age.

The medical conditions and symptoms being treated with cannabis also differ by age and experience. Table 7 lists conditions that are significantly different between user typologies. More older-medical users have multiple sclerosis (9.3% vs. 3.1% and 0.7%; $X^2 = 9.46$, $p < .05$) and less have asthma (2.3% vs. 15.6% and 12.0%; $X^2 = 4.73$, $p < .10$). Older-recreational and older-medical users have much higher rates of arthritis (48.4%, 37.2%, and 14.7%, respectively; $X^2 = 28.88$, $p < .001$), PTSD (17.2%, 18.6%, and 8.7%, respectively; $X^2 = 4.78$, $p < .10$), and spasticity (17.2%, 19.0%, 8.8%, respectively; $X^2 = 4.77$, $p < .10$) compared to their younger counterparts, while younger users report higher rates of insomnia (56.0% vs. 48.4% and 37.2%; $X^2 = 4.94$, $p < .10$). Although not significant different, most younger users report treating chronic pain (59.1%) and stress (76.5%).[7]

In the final segment, I investigate whether user typologies differ regarding their patterns of use. A proportionate number of users from each cluster are daily, weekly, and monthly users; however, the amounts consumed is significantly different ($X^2 = 12.94$, $p < .05$). For comparative purposes, the most recent weekly amount (in grams) consumed is recoded to distinguish between those using 0-3 grams, 3-7 grams, 7 or more grams. Moreover, I consider whether the amount consumed has increased since first medical use and whether participants have used any other illicit substances during the past month, both of which are significant (see Table 7).

Collectively, their patterns of use suggest some important distinctions. More older-medical users consume on a daily or near-daily basis. Nearly half (43.9%) consumed seven or more grams during the most recent week, while less than one-fifth used zero-to-three grams (19.5%). More older-medical users increased the amount they consume since first becoming a medical user and none have used other illicit substances during the past month. Alternatively, about three-fourths of older-recreational users consume cannabis on a daily or near daily basis and more than half used seven or more grams during the most recent week (57.1%). Fittingly, older-recreational users have the lowest

[7]These results are not reported in Table 6 for brevity.

rate of increased consumption since first medical use and less than two percent report having used illicit substances during the past month. Apart from their past-month illicit substance use (14.0%), the younger users have the most moderation: proportionately, they have the fewest number of daily or near daily users and the most weekly and monthly users; less than one-third consumed seven or more grams during the most recent week, while more than two-thirds used less than seven grams (67.2%)

Chapter 6.

"Let's get together and feel all right:" Exploring the importance of sociability and resourcefulness

When Bob Marley poetically called for solidarity in his infamous song, "One Love," he was not attempting to illuminate the inherently social nature of cannabis use in many cultures, including the reggae and Rastafarian scene. Nevertheless, it is fitting to begin this chapter, looking at the social side of cannabis use, with his lyrics advocating that we "get together and feel all right." Indeed, the undertone of "getting together" for the sake of feeling better seems fitting given that the respondents reported here are, in fact, using cannabis to feel better.

The pressing question that I address in this chapter is whether the sociability traditionally espoused by young recreational users is also valued by medical users with varying levels of cannabis experience. On the one hand, we should expect to find that sociability is present, because suffering patients require more assistant than healthier people and, therefore, need to rely on others for social support. Additionally, because of the cultural contours that promote socializing and solidarity in cannabis scenes, and the fact that the lion's share of this sample is "younger" users, the social aspect should be emphasized for all the obvious reasons that are well documented in the literature (see Chapter 2). As we learn in Chapter 2 however, cannabis use becomes less social with age and experience, which suggests that the social side will be deemphasized by the older-medical users specifically and, perhaps, older-recreational users, who may have "aged out" of the social phase of their cannabis careers. Finally, because accessibility to an affordable and safe supply is a prerequisite to developing routine patterns of use, we should also expect to find that the British value sociability more than Canadians, because, unlike the Canadians, they likely rely on their friends and acquaintances to gift or sell them cannabis if they are not willing to "do it themselves."

6.1. Network composition

Participants are asked about the five people within the context of their medical cannabis use to whom they feel closest *emotionally*. The question was worded this way

to solicit information about the people most likely to encourage or constrain behavior, provide needed resources, and offer solidarity and support. In Table 8, network composition is described using information about respondents' closest contacts and the nature of their relationship. Nearly all of those that answered questions about their closest relationships provided at least partial information for a total of five people (n = 150/177), while the remainder reported somewhere between one and four. The typical composition is a friendship network (M = 2.72, SD = 1.45) between males from the United Kingdom. Males represent the lion's share of the subsample (84.2%) and report significantly more relationships with other males ($t_{(175)} = 3.97$, $p < .001$); female respondents, on the other hand, report mixed-gender friendship networks.

The subsample also appears to be young frequent users with less cannabis experience. More than half (60.4%) fit the "younger" typology and nearly three-fourths (71.2%) consume cannabis daily. Compared to the older-recreational and older-medical typologies, the "younger" respondents report significantly more friendships ($F_{(175)} = 5.12$, $p < .01$) with people of the same gender—typically males ($F_{(175)} = 8.84$, $p < .001$). This provides further evidence that the respondents (and networks) canvased in this section of the survey are young males from the United Kingdom. Respondents' cannabis networks do not, however, vary significantly by their consumption habits. This is likely because the subsample lacks heterogeneity (nearly all are daily users), but even the weekly amount consumed, which was coded to create variability, is not significantly different between males and females or relationship types. However, although not reaching significance, the heaviest users (7 or more grams/week) do report more family in their networks (M = 1.77, SD = 1.43 vs. M = *1*.30, SD = 1.17 and M = 1.42, SD = 1.32), while the most frequent users report more friendships (M = 2.81, SD = 1.41 vs. M = 2.49, SD = 1.40 and M = 2.50, SD = 1.83).

Table 8. Network composition of individuals and their relationship (mean and standard deviations)

Variable	# of alters	# same gender	Family	Friend	Acquaintance	Total
Total	4.63 (0.98)	3.01 (1.34)	1.55 (1.35)	2.72 (1.45)	0.36 (0.78)	
Gender	-	***	-	-	-	
Male	4.63 (0.98)	3.18 (1.31)	1.54 (1.39)	2.71 (1.46)	0.38 (0.80)	84.2
Female	4.61 (0.96)	2.11 (1.16)	1.61 (1.13)	2.75 (1.40)	0.25 (0.65)	15.8
Country	-	-	-	-	-	
Canada	4.71 (0.75)	2.93 (1.33)	1.47 (1.31)	2.69 (1.43)	0.55 (1.05)	32.8
United Kingdom	4.57 (1.10)	3.02 (1.33)	1.63 (1.37)	2.67 (1.44)	0.27 (0.59)	60.5
Income (Canadian)[a]	-0.07	-0.08	0.00	-.08	-0.06	$23.69 (21.32)
Cannabis careers	-	***	-	**	-	
Older-recreational	4.57 (1.09)[a]	2.80 (1.39)	1.92 (1.57)[a]	2.41 (1.55)	0.24 (0.60)	24.0
Older-medical	4.46 (1.18)	2.21 (1.29)	1.92 (1.59)	2.04 (1.40)	0.50 (1.14)	15.6
Younger	4.79 (0.69)	3.35 (1.17)	1.42 (1.16)	2.95 (1.28)	0.42 (0.80)	60.4
Needs-based						
Frequency of use	-	-	-	-	-	
Monthly (0-11 days)	4.56 (1.21)	3.33 (1.92)	1.50 (1.75)	2.50 (1.83)	0.56 (0.73)	9.0
Weekly (12-27 days)	4.43 (1.29)	2.60 (1.46)	1.66 (1.43)	2.49 (1.40)	0.29 (0.75)	19.8
Daily (28-31 days)	4.69 (0.83)	3.09 (1.20)	1.52 (1.35)	2.81 (1.41)	0.36 (0.80)	71.2
Weekly amount consumed	-	-	-	-	-	
0-3g	4.56 (1.13)	2.87 (1.64)	1.42 (1.32)	2.81 (1.48)	0.33 (0.70)	28.1
4-7g	4.57 (1.07)	3.15 (1.20)	1.30 (1.17)	2.93 (1.34)	0.34 (0.81)	31.0
7+g	4.69 (0.83)	3.03 (1.26)	1.77 (1.43)	2.53 (1.46)	0.39 (0.84)	40.9

[a] = violates Levene's test for homogeneity of variance.
***$p < .001$; **$p < .01$; *$p < .05$.

Table 9. Network composition: Cannabis use and resourcefulness (means, standard deviations, and frequencies)

Variable	# users	# used with	# taught	# taught by	# given	% given	# been given	% been given
Total	2.78 (1.60)	2.57 (1.60)	3.60 (1.64)	1.63 (1.56)	1.38 (1.68)	51.8	1.39 (1.57)	58.1
Gender	-	-	-	-	-	-	-	-
Male	2.73 (1.62)	2.57 (1.60)	3.61 (1.65)	1.60 (1.59)	1.37 (1.66)	51.1	1.42 (1.55)	59.7
Female	3.07 (1.49)	2.54 (1.67)	3.54 (1.64)	1.79 (1.40)	1.44 (1.83)	55.6	1.25 (1.69)	50.0
Country	-	-	-	-	-	-	-	-
Canada	2.94 (1.58)	2.49 (1.61)	3.51 (1.65)	1.88 (1.63)	1.33 (1.62)	54.5	1.32 (1.58)	58.2
United Kingdom	2.67 (1.61)	2.62 (1.61)	3.65 (1.66)	1.46 (1.49)	1.42 (1.73)	51.0	1.44 (1.58)	59.4
Income (Canadian)	-0.09	-0.11*	-0.04	-0.05	-0.02	$24.00 (24.00)	-0.13*	$21.66 (23.00)
Cannabis careers	-	**	-	-	-	-	-	-
Older-recreational	2.67 (1.43)	2.29 (1.56)	1.64 (1.68)	3.72 (1.68)	1.03 (1.49)	42.9	1.46 (1.70)	57.1
Older-medical	2.71 (1.68)	1.67 (1.71)	3.04 (1.99)	1.63 (1.53)	1.29 (1.82)	42.9	1.00 (1.34)	47.6
Younger	2.85 (1.63)	2.84 (1.49)	3.82 (1.47)	1.63 (1.52)	1.66 (1.72)	61.5	1.59 (1.59)	64.8
Frequency of use	-	-	*	-	-	-	-	-
Monthly (0-11 days)	3.06 (1.73)	2.40 (1.81)	2.94 (1.98)	1.69 (1.45)	1.33 (1.29)	66.7	1.07 (1.16)	53.3
Weekly (12-27 days)	2.61 (1.64)	2.59 (1.41)	3.12 (1.85)	1.70 (1.26)	1.97 (1.36)	41.9	1.19 (1.49)	53.1
Daily (28-31 days)	2.79 (1.58)	2.58 (1.64)	3.81 (1.50)[a]	1.60 (1.65)	1.50 (1.79)	52.5	1.49 (1.63)	60.0
Weekly amount consumed	-	-	-	-	-	-	-	-
0-3g	2.81 (1.56)	2.64 (1.62)	3.32 (1.63)	1.89 (1.37)	1.09 (1.56)	45.2	0.93 (1.32)	44.2
4-7g	2.83 (1.66)	2.58 (1.53)	3.42 (1.79)	1.64 (1.52)	1.18 (1.48)	51.0	1.55 (1.55)	68.6
7+g	2.77 (1.51)	2.52 (1.65)	3.90 (1.53)	1.45 (1.68)	1.69 (1.88)	55.2	1.52 (1.67)	58.2

Note: Mean differences compared using t-test and ANOVA and verified with Mann-Whitney U and Kruskal-Wallis H because some distributions are not normally distributed. [a] = Violates Levene's test of homogeneity of variance and Kruskal Wallis Test suggest the association is slightly less significant ($X^2 = 5.45$, $p = .07$); ***$p < .001$; **$p < .01$; *$p < .05$

Table 9 describes network composition in more detail by focusing on variables pertinent to medical cannabis use and resourcefulness. The typical network described by respondents has nearly three recent users (M = 2.78, SD = 1.60), most of whom have used cannabis with the respondent during the past six months (M = 2.57, SD = 1.60). Respondents reportedly teach, on average, one more person and are taught by one less (M = 1.63, SD = 1.56) person than they use cannabis with (M = 3.60, SD = 1.64), suggesting that they may be advocates of medical cannabis and "spreading the good word." Moreover, this also implies that our respondents are more actively involved in disseminating information than they are in receiving it. However, by looking at the proportion that sells/gifts and are sold/gifted cannabis, reciprocity of exchange is more apparent. Indeed, respondents sell/gift to (M = 1.38, SD = 1.68) and are sold/gifted by (M = 1.39, SD = 1.57) a similar number of their close contacts, but when the two measures are dichotomized to differentiate between selling/gifting or being sold/gifted by at least one of the possible five contacts, proportionally fewer respondents contribute to the exchange (51.8% vs. 58.1%), suggesting that the average respondent contributes knowledge but receives cannabis.

When the medical cannabis and resource-based measures are compared between covariates the results are non-significant and consistent. Neither their gender nor their nationality differentiated between any of the variables beyond statistical significance. However, it is notable that Canadians report using cannabis with (M = 2.49, SD = .61 vs. M = 2.62, SD = 1.61), teaching (M = 3.51, SD = 1.65 vs. M = 3.65, SD = 1.66), selling/gifting (M = 1.33, SD = 1.62 vs. M = 1.42, SD = 1.73), and being sold/gifted by fewer of their closest contacts, although slightly more Canadians do report selling/gifting to at least one close contact when compared to the British (54.5% vs. 51.0%). Their income has a slight, although significant, negative correlation with the number of close contacts that they use with (ρ = -0.11, $p < .05$) and receive cannabis from (ρ = -0.13, $p < .05$).

Table 9 shows that (cannabis) network composition is largely the same for all respondents regardless of how comparisons are drawn. However, two of the rare exceptions are the influence of "age and experience" and "consumption habits." When juxtaposed by career typology and patterns of use, it becomes evident that young, frequent, and heavy users are the most embedded in cannabis networks. In fact, one of the only significant differences in network composition is that younger respondents use

with more of their closest contacts than either of the older typologies. The younger typology reports more recent users in their network (M = 2.85, SD = 1.63 vs. M = 2.67, SD = 1.43 and M = 2.71, SD = 1.68). They also use with (M = 2.84, SD = 1.49 vs. M = 2.29, SD = 1.56 and M = 1.67, SD = 1.71), teach (M = 3.82, SD = 1.47 vs. M = 1.64, SD = 1.68 and M = 3.04, SD = 1.99), sell/gift to (M = 1.66, SD = 1.72 vs. M = 1.03, SD = 1.49 and M = 1.29, SD = 1.82), and are sold/gifted by (M = 1.59, SD = 1.59 vs. M = 1.46, SD = 1.70 and M = 1.00, SD = 1.34) more others than either of the older career typologies. Frequency of use is the only other feature of the user-profile that seems to be significantly associated with network composition, but even this finding, regarding the number of close contacts that respondents "teach" about medical cannabis, is suspect because it violates Levene's test of homogeneity of variance; moreover, the Kruskal Wallis Test suggests the association is slightly less significant (X^2 = 5.45, p = .07), indicating that the difference should be interpreted with caution. Despite this limitation, it is apparent that a degree of association exists between the frequency and amount consumed and the composition of respondents' cannabis networks.

Relationship typologies and cannabis-related variables are also compared by the strength of tie, measured as "emotional closeness" on a 1-10 scale; length of time the relationships have existed, measured in years; and frequency of interaction, measured as "daily," "weekly," and "monthly" (Table 10). These comparisons include all alter ties reported by respondents (n = 815) with some variation between measures (range = 761-815). Most of the analyses violate the Levene's test of homogeneity of variance and have non-normal data distributions (especially "years known"); consequently, both parametric and non-parametric comparisons were made to verify statistical significance. While all (non)significant results were consistent for both the parametric and non-parametric tests, the means are still highly suspect for several models. Because the results are used for descriptive purposes only, both the means and standard deviations, as well as the medians, are reported below. The objective of this sections is, therefore, a modest one; namely, to provide some context buttressing the relation (and lack thereof) of cannabis-related variables.

Table 10. Strength of relationship (means, standard deviations, medians, and frequencies; n = 815)

Variable	Mean average closeness [median]	Frequency of interaction			Years known [median]
		Daily	Weekly	Monthly	
Total	7.38 (2.67) [8.00]	-	-	-	14.48 (12.33) [10.00]
Relationship type	***		***		***[a]
Family	8.32 (2.59) [9.50]	50.2	26.8	23.0	23.76 (12.79) [22.00]
Friend	7.22 (2.37) [8.00]	34.3	39.9	25.8	10.44 (9.18) [7.00]
Acquaintance	4.40 (2.86) [4.00]	9.8	37.7	52.5	5.26 (6.25) [3.00]
Cannabis use and resourcefulness					
Recent user	7.18 (2.63)* [8.00]	38.5	35.0	26.5	11.74 (10.65)***[a] [8.00]
Used with	7.53 (2.51)[a] [8.00]	42.9***	37.0	20.1	11.23 (9.84)***[a] [8.00]
Taught about	7.69 (2.53)***[a] [8.00]	41.1***	34.7	24.2	14.39 (12.00) [10.00]
Been taught about	7.33 (2.53)[a] [8.00]	36.5	39.4	24.1	11.67 (11.19)***[a] [7.00]
Sold/Gifted	7.93 (2.35)***[a] [9.00]	47.6***	37.7	14.7	11.49 (9.89)***[a] [8.00]
Been sold/gifted	7.13 (2.66) [8.00]	37.4	39.6	23.0	11.18 (9.75)***[a] [7.00]

Note: Comparisons between "relationship type" and "average closeness" as well as "years known" are analyzed using analysis of variance, while "cannabis use and resourcefulness" variables use t-test; all comparisons with "frequency of interaction" use chi-square analysis; [a] = Violates Levene's test for homogeneity of variance; ***$p < .001$; **$p < .01$; *$p < .05$

As the first row shows, the average tie strength is 7.38 (SD = 2.67; median = 8.00) and the average relationship is 14.48 years (SD = 12.33; median = 10 years). Relationship typologies vary significantly, with family relationships being the strongest (M = 8.32, SD = 2.59) and acquaintances by far the weakest (M = 4.40, SD = 2.86). Family relationships are also the longest lasting (M = 23.76, SD = 12.79), amounting to twice the median length of friendships (22 years vs. 7 years). Their frequency of interaction with friends, family, and acquaintances was highly significant ($X^2_{(4)} = 49.47$, $p < .001$). Respondents interact with their family daily about half the time, while the other half are almost evenly split between weekly and monthly interaction (26.8% and 23.0%, respectively). Alternatively, respondents typically interact with their friends daily (34.3%)

or weekly (39.9%). Rarely do they interact with acquaintances daily (9.8%); rather, more than half report monthly interactions (52.5%).

Cannabis-related variables vary significantly for several "strength of tie" measures. While respondents report interacting with other users on a daily (38.5%), weekly (35.0%), and monthly (26.5%) basis, significantly more report daily (42.9%) or weekly (37.1%) contact with people that they consume medical cannabis with ($X^2_{(762)}$ = 26.00, $p < .001$). Similar rates of interaction are reported when respondents teach (daily = 41.1%, weekly = 34.7% and monthly = 24.2%; $X^2_{(784)} = 22.74$, $p < .001$) and supply/gift (daily = 47.6%, weekly = 37.7%, and monthly = 14.7%; $X^2_{(761)} = 29.69$, $p < .001$) medical cannabis. Being taught about and sold/gifted cannabis, on the other hand, are not significantly related to frequency of interaction, because more of these relationships are infrequent (on a "monthly" basis), suggesting that users will only share information and their supply with their strongest and most frequent relationships—a finding buttressed by their "closeness" and "years of experience" (see below).

Relationship closeness and longevity are slightly, although significantly, correlated ($r_{(806)} = 0.14$, $p < .001$). Respondents have both a weaker ($t_{(783)} = 2.50$, $p < .05$; Mann–Whitney $U = 63487.00$, $p < .001$) and shorter ($t_{(552.06)} = 7.06$, $p < .001$; Mann–Whitney $U = 51751.00$, $p < .001$) relationship with recent users. However, while the mean and median average strength of tie for "closeness" are comparable (M = 7.18, SD = 2.63 vs. M = 7.67, SD = 2.75 and median = 8.00 vs. 9.00), the difference in relationship longevity for recent users is about three years (M = 11.75, SD = 10.65 vs. M = 18.07, SD = 13.26 and median = 8.00 vs. 17.00). What is more, the profile is virtually identical when respondents report using cannabis with their contacts. While the strength of (emotional) closeness is comparable for both the mean (M = 7.53, SD = 2.51 vs. M = 7.16, SD = 2.88; $t_{(669.44)} = -1.89$, $p = 0.06$) and median (8.00 vs. 8.00; Mann–Whitney $U = 67605.00$, $p = 0.21$), mean relationship longevity is, again, about three years longer than the median (M = 11.23, SD = 9.84 vs. M = 17.85, SD = 13.59, $t_{(593.53)} = 7.53$, $p < .001$; median = 8.00 vs. 17.00, *Mann–Whitney* U = 51935.50, p < .001), suggesting, in both cases, that relationships with other users are not as strong or well-established as they are with non-users, but that relationships are (still) stronger when respondents use cannabis with others (see above).

Both teaching/being taught and supplying/being supplied medical cannabis show a similar trend in emotional closeness and relationship longevity. When respondents

report teaching others about medical cannabis, the median closeness only differs by one (8.00 vs. 7.00) and the "years known" is identical for both the median (10.00 years) and mean (M = 14.39, SD = 12.00 vs. M = 14.08, SD = 12.79), while the mean difference in closeness is slightly greater (M = 7.69, SD = 2.53 vs. M = 6.23, SD = 2.92). Being taught about medical cannabis, on the other hand, has an identical median (8.00) and mean (M = 7.33, SD = 2.53 vs. M = 7.41, SD = 2.77) for emotional closeness but much lower (and different) "years known" (M = 11.67, SD = 11.19 vs. M = 15.69, SD = 12.45; median = 7.00 vs. 13.00 years). Similarly, when respondents sell/gift medical cannabis both the mean and median closeness are significantly higher (M = 7.93, SD = 2.35 vs. M = 7.10, SD = 2.80; $t_{(511.28)}$ = -3.91, p < .001; median = 9.00 vs. 8.00, Mann–Whitney U = 50917.50, p < .001), while both are significantly lower for "years known" (M = 11.49, SD = 9.89 vs. M = 15.29, SD = 12.85, $t_{(556.27)}$ = 4.45, p < .001; median = 8.00 vs. 12.00 years, Mann–Whitney U = 52532.00, p < .001). Being sold/gifted medical cannabis, much like being taught about medical cannabis, is associated with identical mean and median emotional closeness (M = 7.13, SD = 2.66 vs. M = 7.44, SD = 2.70; median = 8.00 vs. 8.00) and very different relationship longevity (M = 11.18, SD = 9.75 vs. M = 15.55, SD = 12.88 years; $t_{(560.99)}$ = 5.15, p < .001; median = 7.00 vs. 12.00 years, Mann-Whitney U = 50083.50, p < .001). Collectively, then, the results suggest that emotional closeness is an important aspect of giving, but not receiving, information about cannabis and cannabis itself. Relationship longevity, on the other hand, is not associated with teaching others about medical cannabis, but may be associated with receiving information, selling/gifting cannabis, and being sold/gifted cannabis, with all three occurring between short(er) lived relationships.

In the final section, the sociability scale is compared between covariate, cannabis experience, needs-based, and network variables. First, mean differences are reported for all but the network variables (Table 11) and then all network variables and the sociability scale are compared using Spearman correlations (Table 12).

6.2. Sociability scale

The findings regarding sociability are consistent with the profile depicted above. Specifically, higher scores on the scale are associated with being male (M = 2.54, SD = 0.84 vs. M = 1.27, SD = 0.95; $t_{(179)}$ = 2.07, p < .05) and from the "younger" career typology (M = 2.62, SD = 0.82 vs. M = 2.43, SD = 0.79 and M = 2.18, SD = 0.89; $F_{(149,2)}$ = 2.84, p < .10). Country of residence, income, and patterns of use, on the other hand,

are quite comparable. Canadians score slightly lower than Britons on the scale (*M* = 2.37, *SD* = 0.98 vs. *M* = 2.54, *SD* = 0.80); daily users, representing the lion's share of the sample, have the same average as the larger (sub)sample (*M* = 2.48, *SD* = 0.87), while monthly users, likely because of low sample size, are the only ones to have a score above average (*M* = 2.54, *SD* = 0.93); and both the lightest (0-3g/week) and heaviest (7+g/week) users score above the (sub)sample average, while respondents in the mid-category (4-7g/week) score much lower (*M* = 2.52, *SD* = 0.86 and *M* = 2.53, *SD* = 0.82 vs. *M* = 2.38, *SD* = 0.94).

Table 11. Sociability scale (mean and standard deviations)

Variable	Sociability scale [range]
Total	2.48 (0.86) [0.00-3.72]
Gender	$t_{(179)} = 2.07$*
Male	2.54 (0.84)
Female	2.17 (0.95)
Country	$F_{(178,2)} = 0.76$
Canada	2.37 (0.98)
United Kingdom	2.54 (0.80)
Income (Canadian)	-0.09
Cannabis careers	$F_{(149,2)} = 2.84$
Older-recreational	2.43 (0.79)
Older-medical	2.18 (0.89)
Younger	2.62 (0.82)
Needs-based	
Frequency of use	$F_{(178,2)} = 0.10$
Monthly (0-11 days)	2.54 (0.93)
Weekly (12-27 days)	2.43 (0.85)
Daily (28-31 days)	2.48 (0.87)
Weekly amount consumed	$F_{(171,2)} = 0.48$
0-3g	2.52 (0.86)
4-7g	2.38 (0.94)
7+g	2.53 (0.82)

*$p < .05$.

Spearman correlation coefficients for all network variables and the sociability scale suggest a high level of association (Table 12). The number of close contacts reported is positively correlated with all measures, and all but one (selling/gifting to others) reaches statistical significance. Familial networks have the most negative correlations with the cannabis variables and friendship networks have the most (significant) positive correlations. For example, an increase in family contacts is associated with declines in friendship ($\rho = -0.22$, $p < .01$), gender homogeneity ($\rho = -0.20$, $p < .01$), recent users ($\rho = -0.21$, $p < .01$), using with others ($\rho = -0.19$, $p < .05$), and

being taught about medical cannabis (ρ = -0.17, p < .05). Increases in friendship, on the other hand, are positively correlated with gender homogeneity (ρ = 0.42, p < .01), recent users (ρ = 0.38, p < .01), using with others (ρ = 0.46, p < .01), teaching (ρ = 0.21, p < .01), being taught (ρ = 0.26, p < .01), and being sold/gifted cannabis (ρ = 0.18, p < .05). Apart from family ties, gender homogeneity is positively correlated with all network measures, which reaches significance for all but being taught and supplying/being supplied medical cannabis.

Medical cannabis-related measures are positively correlated and all but one (being taught x selling/gifting) reach significance, suggesting that the presence of users in one's network is associated with social use (ρ = 0.54, p < .01), teaching (ρ = 0.23, p < .01), being taught (ρ = 0.45, p < .01), selling/gifting (ρ = 0.26, p < .01), and being sold/gifted (ρ = 0.21, p < .01). Moreover, the strongest correlate of supply, whether gifting/selling or being gifted/sold to, is the number of contacts that respondents use cannabis with, suggesting a clear association between social use and supply.

The sociability scale, while not statistically related to the number of alters reported, is negatively associated with the number of family members (r = -0.20, p < .01) and acquaintances (r = -0.14, p > .05), but positively associated with friendships (r = 0.31, p < .001) and same gender relationships (r = 0.36, p < .001). When respondents report more recent users in their network, they also score higher on the sociability scale (r = 0.24, p < .01); however, the strength of correlation is much higher when respondents use cannabis with other recent users (r = 0.37, p < .001). Interestingly, while positively correlated, neither teaching (r = 0.16, p > .05) nor being taught (r = 0.09, p > .05) about medical cannabis is significantly associated with sociability scores, but social supply, whether selling/gifting (r = 0.28, p < .01) or being sold/gifted (r = 0.17, p < .05), is.

Table 12. Correlation matrix for network composition variables

	Num. of alters	Family	Friend	Acquaintance	Same gender	User	Used with	Taught	Been taught	Supplied	Been supplied	Social Scale
1	-	0.24**	0.34***	0.18*	0.48**	0.32**	0.23**	0.45**	0.19*	0.05	0.16*	0.09
2		-	-0.63**	-0.13	-0.20**	-0.21**	-0.19*	0.19*	-0.17*	0.06	-0.02	-0.20*
3			-	-0.22**	0.42**	0.38**	0.46**	0.21**	0.26**	0.10	0.18*	0.31***
4				-	0.19*	0.13	-0.08	-0.07	0.16*	-0.11	0.10	-0.14
5					-	0.32**	0.36**	0.25**	0.12	0.08	0.09	0.36***
6						-	0.54**	0.23**	0.45**	0.26**	0.21**	0.24**
7							-	0.29**	0.30**	0.53*	0.51**	0.37***
8								-	0.17*	0.31**	0.17*	0.16
9									-	0.14	0.18*	0.09
10										-	0.50**	0.28**
11											-	0.17*
12												-

***p < .001; **p < .01; *p < .05

Chapter 7.

Cannabis regulation and manifestations of prohibition

7.1. Opinions about cannabis regulation

Respondents were asked to indicate which of five options best represent how they feel cannabis should be regulated (Table 13). These include "full legalization" subject to no restrictions (i.e., free market); "possession regulated similar to alcohol and tobacco, with age and place restrictions;" "adult possession and cultivation of small amounts for personal use not penalized in any way" (i.e., depenalization); "possession a civil offense, punishable by fine only—not a criminal offense;" and "possession remains a criminal offense" (i.e., prohibition).

Table 13. Opinions about how cannabis should be regulated (n = 333)

Variable	Full legalization	Regulated like alcohol and tobacco	Adult possession and cultivation depenalized	Possession civil offense, punished by fine	Other	*F* (X^2)
Total	24.6	47.2	26.4	0.0	1.5	
Gender						(2.41)
Male	25.4	47.8	24.6	0.0	1.8	
Female	21.1	43.9	35.1	0.0	00	
Country						(2.85)
Canada	25.5	44.6	30.0	0.0	0.0	
United Kingdom	23.4	47.8	25.9	1.0	2.5	
Income (Canadian)	$18.92 (16.78)	$22.39 (18.44)	$23.95 (19.34)	-	$15.36 (9.37)	1.69
Cannabis careers						(8.87)
Older-recreational	32.2	33.7	32.9	1.0	1.0	
Older-medical	27.0	47.9	22.5	0.0	2.3	
Younger	20.5	52.9	24.8	0.0	1.7	
Needs-based						
Frequency of use						(1.18)

Variable	Full legalization	Regulated like alcohol and tobacco	Adult possession and cultivation depenalized	Possession civil offense, punished by fine	Other	*F* (X^2)
Monthly	25.0	54.0	21.0	0.0	0.0	
Weekly	21.1	51.1	27.2	1.0	0.0	
Daily	25.6	44.6	27.3	0.0	2.2	
Weekly consumption						(5.99)
0-3g	22.9	47.7	28.4	0.0	1.0	
4-7g	17.5	56.5	24.5	0.0	1.1	
7+g	30.8	40.4	26.2	0.0	2.2	
Monthly spending	$490.38 (138.05)	$333.70 (46.11)	$373.00 (62.22)	$374.95 (27.65)	$275.16 (263.87)	0.91
Risk-based						
Prior experience with CJS	22.3	49.3	26.5	0.0	1.9	(1.85)
Obtained most from a dealer	23.6	47.3	27.3	0.0	1.4	(0.22)
Grow any amount	34.9	35.9	27.8	0.0	1.2	(5.44)
Illegal drug use	18.0	56.2	24.7	1.0	12.9	(2.19)
Resource-based						
Supportive physician	25.9	45.2	26.5	0.0	2.4	(0.39)
Obtained any for free	22.0	40.5	34.2	1.0	2.7	(5.49)
Affiliated with organization	27.4	49.7	20.0	0.0	2.6	(6.12)*
Taught/Been taught	3.93 (0.24)	3.98 (0.16)	4.02 (0.22)	0.00 (0.00)	4.25 (0.48)	0.04
Used with (0-5)	2.80 (0.28)	2.48 (0.17)	2.32 (0.26)	0.00 (0.00)	3.75 (0.48)	0.96
Sold to (0-5)	1.66 (0.30)	1.31 (0.18)	1.08 (0.24)	0.00 (0.00)	2.50 (0.13)	1.25[a]
Sociability scale	2.62 (0.13)	2.42 (0.11)	2.29 (0.12)	0.00 (0.00)	2.03 (0.46)	1.20

[a]Violates Levene's Test of Homogeneity of Vairnace.
*$p < .05$.

About half (47.2%) believe cannabis possession should be regulated like alcohol and tobacco, with restrictions on age and location; the other half support full legalization, without restrictions, of possession and use (24.6%) or depenalization of adult possession and cultivation (26.4%). The findings remain consistent across nearly all

indicators, too. Of all the measures included, only three reach significance at the $p < .10$ level and one at the $p < .05$ level.

Opinions about cannabis regulation vary between career typologies, largely because more than half of the younger users (52.9%) and nearly half of older-medical users (47.9%) prefer that cannabis is regulated like alcohol and tobacco, while the other half choose either full legalization or depenalization. The older-recreational users, on the other hand, are evenly split between the three (32.2%, 33.7%, and 32.9%, respectively). Respondents that grow any of their own supply have different opinions about cannabis regulation. About two-thirds are split between full legalization (34.9%) and regulation akin to tobacco and alcohol (35.9%), while about one-fourth (27.8%) prefer depenalization. Respondents that obtain any amount of their supply for free prefer that it be regulated like tobacco and alcohol (40.5%) or depenalized (34.2%) rather than fully legalized (22.0%). Finally, being affiliated with a pro-cannabis organization is the only measure to vary significantly, with nearly half (49.7%) of affiliated respondents favoring regulation similar to tobacco and alcohol, one-fourth (27.4%) supporting full legalization, and one-fifth (20.0%) for depenalization.

The fact that respondents share roughly the same opinions about cannabis regulation regardless of their individual attributes is an important starting point for our discussion about barriers created by policy. Clearly, most medical users in our sample favor a regulatory framework that treats cannabis like tobacco and alcohol, and, with rare exception, none prefer the traditional prohibitionist approach. It is, however, just as important to note that about half are divided between full legalization and depenalization, suggesting the absence of a consensus, excluding opposition to prohibition, among users. What becomes more telling in future analyses, moreover, is the way policies affect respondents in practice.

7.2. Legal stigmatization

Descriptive and bivariate analyses

Legal barriers are operationalized as *experience with the criminal justice system (CJS)*, measured as 1) being stopped by the police and having cannabis confiscated, 2) arrested for cannabis possession, 3) arrested for trafficking or cultivating cannabis, 4)

convicted of cannabis possession, and 5) convicted of trafficking or cultivating cannabis. An additional measure was computed by dichotomizing the sum of these measures, therefore differentiating between respondents who have had experience with the CJS since becoming a medical user and those who have not. This computed variable is used as an outcome variable in the proceeding binary logistic regression analyses; however, for descriptive purposes, I begin with a discussion of each measure independently using descriptive and bivariate statistics (Table 14).

The first row shows the frequency distribution for respondents' experiences with the CJS. About one-third (32.7%) have had some experience, but the bulk of this is accounted for by people being stopped by the police and having their cannabis confiscated (25.4%). Half as many have been arrested for possession (13.5%) and just under two-thirds of them were convicted (8.4%). Less than one-tenth (8.1%) report being arrested for cultivating and/or trafficking cannabis, and half of them were convicted (4.2%).

Males report all offense encounters with the CJS more than females, although this only amounts to a statistically significant difference for "any experience" (36.2% vs. 15.8%, $X^2 = 8.97$, $p < .01$) and being stopped by the police and having cannabis confiscated (29.0% vs. 8.8%, $X^2 = 10.15$, $p < .001$). Income is not significantly different for any of the legal barriers. It is worth noting, however, that respondents arrested for and convicted of possessing cannabis were the only ones with incomes below the sample average.

Table 14. Descriptive and bivariate statistics for "experience with the criminal justice system (CJS)" (n = 333)

Variable	Any experience	Cannabis confiscated	Possession		Trafficking/Cultivation		Total
			Arrested	Convicted	Arrested	Convicted	
Total	32.7	25.4	13.5	8.4	8.1	4.2	
Gender	**	***	-	-	-	-	
Male	36.2	29.0	15.1	9.6	8.9	5.2	83.1
Female	15.8	8.8	6.9	3.4	6.9	1.7	16.9
Income (Canadian)	$22.06 (18.03)	$22.56 (18.09)	$19.01 (16.51)	$18.28 (14.76)	$23.28 (18.09)	$23.75 (16.97)	$22.02 (18.45)
Country	***	*	***	***	-	*	
Canada	20.0	17.3	3.5	0.9	3.6	0.0	33.4
United Kingdom	40.8	30.8	19.5	12.9	10.9	6.7	60.1
Cannabis careers	*	-	*	*	***	*	
Older-recreational	22.6	18.4	9.2	7.1	7.6	5.1	23.6
Older-medical	41.7	24.2	26.0	19.1	24.2	11.9	16.5
Younger	34.3	28.8	12.4	6.3	4.3	2.0	59.8
Needs-based							
Frequency of use	*	-	-	-	*	-	
Monthly	31.3	22.4	8.1	6.7	5.4	4.5	13.2
Weekly	22.9	19.8	11.0	5.4	2.5	1.0	18.8
Daily	35.9	28	15.8	9.8	10.4	5.4	68.0
Weekly amount used	***	*	-	*	**	-	
0-3g	20.8	14.4	8.6	4.6	2.3	2.1	31.1

Variable	Any experience	Cannabis confiscated	Possession		Trafficking/Cultivation		Total
			Arrested	Convicted	Arrested	Convicted	
4-7g	34.0	28.6	17.3	4.9	7.8	4.1	29.5
7+g	41.1	32.6	15.5	13.2	13.5	6.6	27.2
Risk-based							
Prior experience with CJS							
Stopped, cannabis confiscated	59.8***	53.9***	22.5**	10.8	6.9	2.9	30.6
Arrested, possession	66.1***	46.4***	50.0***	25.0***	12.5	7.1	16.8
Arrested, cultivation	83.3***	44.4	50.0***	22.2*	50.0***	22.2***	5.4
Convicted, possession	65.5***	41.4*	41.4***	48.3***	17.2	13.8**	8.7
Convicted, cultivation	70.0*	30.0	40.0*	40.0***	40.0***	50.0***	3.0
Bought most from a dealer	30.7*	30.5*	16.5	8.6	6.1	3.9	59.4
Grow any amount	39.1	30.0	15.1	11.6	15.8**	10.7**	25.4
Used other illegal drugs	51.6**	46.4*	18.0	0.0	2.6	0.0	7.9
Resource-based (n = 166)							
Have a supportive physician	37.3	37.0	37.8	26.9	25.0	22.2	41.7
Obtained any amount for free	40.4*	34.0*	21.2*	11.1	9.8	8.5*	32.0
Affiliated with pro-cannabis	34.9	62.4	59.6	57.7	70.6	77.8	58.7
Taught/Been taught	4.40 (1.28)**	4.39 (1.33)*	4.36 (1.18)	4.00 (1.54)	4.21 (1.42)	4.63 (0.52)***	3.98 (1.47)
Used with	2.75 (1.65)	2.77 (1.68)	2.91 (1.60)	2.65 (1.69)	2.71 (1.60)	2.25 (1.28)	2.55 (1.60)
Sold to	1.68 (1.92)	1.68 (1.90)	1.72 (1.98)	1.47 (1.88)	2.00 (2.11)	1.63 (2.07)	1.37 (1.68)
Sociability scale	2.51 (0.85)	2.59 (0.85)	2.56 (0.67)	2.69 (0.59)	2.30 (0.85)	2.72 (0.40)	2.50 (0.84)

***p < .001; **p < .01; *p < .05.

Respondents residing in the United Kingdom face greater odds of having a negative encounter with the CJS than their Canadian counterparts. Fewer than five percent of Canadians have been arrested for possessing, cultivating and/or trafficking cannabis and less than one percent have been convicted. More than 10 percent of British respondents, on the other hand, have been arrested for possessing, cultivating and/or trafficking cannabis; a similar proportion has been convicted of possessing cannabis (12.9%) and about half that amount have been convicted of cultivating/trafficking (6.7%). In fact, the only measure that fails to reach statistical significance is being arrested for cultivating and/or trafficking (0.9% vs. 12.9%, $X^2 = 5.50$, $p < .10$). This finding approaches significance ($p < .10$), but falls short because of a few ($n = 4$) Canadians that have been arrested, suggesting that a small group of medical users engage in riskier endeavors and, as a result, become an anomaly in the CJS. Finally, when CJS experience is aggregated to differentiate between those who have and have not had a negative encounter, the proportion of Britons is double that of Canadians (40.8% vs. 20.0%, $X^2 = 15.04$, $p < .001$), indicating, consistent with the individual measures, that residing in the United Kingdom will likely play a role in determining whether respondents face legal barriers.

Other individual-level measures, such as one's age, cannabis career, and patterns of use, provide some indication of the type of users likely to experience legal barriers. Specifically, older-medical users report at least one kind of negative encounter with the CJS more than the older-recreational and younger respondents (41.7% vs. 22.6% and 34.3%, respectively; $X^2 = 8.32$, $p < .05$). Of the individual measures, proportionally more older-medical users have been arrested (possession = $X^2 = 6.43$, $p < .05$; cultivation = $X^2 = 20.95$, $p < .001$) and convicted (possession = $X^2 = 8.59$, $p < .05$ cultivation: $X^2 = 7.77$, $p < .05$) of cannabis possession and cultivation/trafficking. Contrarily, the younger users have had at least one type of negative encounter (34.3% vs. 22.6%) and been stopped/had their cannabis confiscated (28.8% vs. 18.4%) more than the older-recreational users. Patterns of use suggest that the heaviest users encounter legal barriers more than the lighter users. For example, daily users report all negative encounters with the CJS more than weekly and monthly users, which amounts to a statistically significant difference for two: any experience ($X^2 = 6.02$, $p < .05$) and being arrested for trafficking/cultivation ($X^2 = 5.22$, $p < .05$). Additionally, the heaviest users, who consume more than seven grams a week, report all but one negative

encounter (arrested for possession) more than either of the lighter groups. Nearly half (41.1%) of the heaviest users report at least one type of encounter with the CJS, while only about one-third (34.0%) from the mid-category and one-fifth (20.8%) of the lightest users have had any of these encounters ($X^2 = 16.64$, $p < .001$). Nearly double the proportion of the two heaviest groups have been stopped and had their cannabis confiscated (7+g = 32.6% and 4-7g = 28.6% vs. 0-3g = 14.4%, $X^2 = 8.11$, $p < .05$) and been arrested for cannabis possession (7+g = 15.5% and 4-7g = 17.3% vs. 0-3g = 8.6%, $X^2 = 2.97$, $p > .05$), but more of the heaviest users are eventually convicted of this offense (7+g: 13.2% vs 4-7g = 4.9% and 0-3g = 4.6%, $X^2 = 6.36$, $p < .05$). More of the heaviest users are also arrested for cultivating/trafficking cannabis ($X^2 = 9.03$, $p < .01$).

In addition to their country of residence, it appears that the variables most associated with legal barriers after becoming a medical user stem from a risk-based model; that is, whether, and to what extent, respondents had similar encounters with the CJS prior to becoming medical users, whether they buy most of their supply from a dealer/friend/family member, whether they grow any amount of their supply, and whether they have used other illegal drugs. To determine the relevance of previous encounters, I cross-tabulated the measures before and after becoming a medical user and found that nearly all encounter types prior to becoming a medical user are significantly associated with being stopped and having cannabis confiscated, being arrested and convicted of possession, and being arrested for cultivation/trafficking. There are, however, a few discrepancies worth noting. For example, being stopped by the police and having cannabis confiscated before becoming a medical user was not significantly associated with being convicted of possession ($X^2 = 1.08$, $p > .05$) or being arrested and convicted of cultivation/trafficking (arrested = $X^2 = 0.31$, $p > .05$ and convicted = $X^2 = 0.58$, $p > .05$). Similarly, being arrested for possession before first medical use is not associated with being arrested and convicted of cultivation/trafficking afterwards (arrested = $X^2 = 1.74$, $p > .05$ and convicted = $X^2 = 1.44$, $p > .05$).

Two means of acquiring cannabis are included under the risk-based model because it is suspected that they increase the risk of encountering the CJS—albeit in different ways. These include whether respondents buy most of their supply from a dealer/friend/family member and whether they grow any amount of their own. Certainly, the arbitrary wording of the former can affect the results, because many users acquire their supply from trusted friends and acquaintances, and do not necessarily rely on

traditional “street” dealers, which should offer more protection from outside threats, such as law enforcement. However, it seems likely that interacting with other users and making purchases, especially if done frequently, would increase one’s chances of running into legal trouble more than, say, buying from a dispensary or receiving Health Canada’s supply. Additionally, those choosing to grow their own face increased risks of encountering the CJS in a different way; specifically, these users may reduce their chances of being stopped and/or arrested for possession because their supply is produced and consumed in a private setting, and they may not be spending as much time with other users in an effort to acquire a supply. The bivariate results support both possibilities. About two-fifths (39.1% vs. 25.6%, $X^2 = 4.63$, $p < .05$) of respondents that buy most of their supply from a dealer/friend/family member report some type of encounter with the CJS, but this is largely because of the nearly one-third (30.0% vs. 18.8%, $X^2 = 5.51$, $p < .05$) that have been stopped and had their cannabis confiscated; these respondents otherwise report similar (or lower) encounters with the CJS. Alternatively, those growing at least some of their supply report (any) encounter with the CJS at about the same rate as non-growers (39.1% vs. 30.7%, $X^2 = 2.31$, $p > .05$), but significantly more report having been arrested and convicted of cultivating/trafficking (arrested = 15.8% vs. 5.7%, $X^2 = 6.13$, $p < .01$ and convicted = 10.7% vs. 2.3%, $X^2 = 5.73$, $p < .01$), suggesting that growing may be a risk factor for more severe offences specifically.

The final risk-based measure is whether respondents used illegal drugs other than cannabis during the past six months. It appears that this group of users does, in fact, face greater risks of encountering the CJS in some form ($X^2 = 7.46$, $p < .01$) and being stopped and having their cannabis confiscated ($X^2 = 6.20$, $p < .05$). Roughly half of the respondents that used an illegal drug during the past six months have had some encounter with the CJS (51.6% vs. 30.3%), while slightly less than half (46.4% vs. 22.8%) have been stopped and had their cannabis confiscated. Using illegal drugs is otherwise unrelated to possession and cultivation/trafficking-related offenses.

The resource-based model does not appear to be associated with experience legal barriers as I have defined them. Initially, I hypothesized that having a physician supportive of one’s *medical* cannabis use would be associated with fewer barriers generally because it implies a culture of acceptance; however, the bivariate results do not support this supposition. An initial review of the results shows that a comparable

proportion of respondents with and without a supportive physician will report at least one type of negative encounter with the CJS (37.3% vs. 29.4%, $X^2 = 1.29$, $p > .05$), be stopped and have their cannabis confiscated (37.0% vs. 43.7%, $X^2 = 1.03$, $p > .05$), and be arrested for possession (37.8% vs. 42.5%, $X^2 = 0.34$, $p > .05$). Moreover, it is important to note that the proportion of respondents with a supportive physician that report negative encounters with the CJS is fairly consistent across all measures; just over one-third report any experience, being stopped and having cannabis confiscated, and being arrested for possession, while about one-fourth have been convicted of possession and been arrested and convicted of cultivation/trafficking, suggesting that the same group of respondents account for all negative encounters. An additional possibility that I explore is whether this finding is accounted for by participants residing in the United Kingdom specifically. To confirm this possibility, I cross-tabulated respondents' country of residence with each type of CJS encounter for the subsample that has a supportive physician ($n = 110$) and found that, of the subgroup, proportionally more British respondents report all CJS encounters. The proportion of British that have been stopped and had their cannabis confiscated is nearly three-times as high (38.9% vs. 14.0%, $X^2 = 8.23$, $p < .05$), while only one Canadian with a supportive physician has been arrested for possession (2.0% vs. 29.6% for Britons, $X^2 = 16.33$, $p < .001$) and two have been arrested for trafficking/cultivation (4.0% vs. 18.5% for Britons, $X^2 = 6.41$, $p < .05$). None of the Canadians have been convicted for possession (0.0% vs. 20.4%, $X^2 = 11.30$, $p < .001$) or trafficking/cultivation (0.0% vs. 11.1%, $X^2 = 6.58$, $p < .05$) and more than four-fifths (84.0%) have not had a single encounter with the CJS since becoming medical users (vs. 38.9% for Britons, $X^2 = 22.28$, $p < .001$), suggesting that there is a strong association between having a supportive physician and encountering the CJS when one's residence is taken into consideration. The same, however, is not true for most of the other resource-based measures.

When compared by country of residence, the only other resource-based measure that is associated with lower CJS involvement is affiliation with a pro-cannabis organization. Respondents that are affiliated with a pro-cannabis organization and residing in Canada do not report being arrested or convicted of possession and cultivation/trafficking (vs. for Britons = arrested, possession = 22.1%, $X^2 = 12.53$, $p < .01$; convicted, possession = 15.9%, $X^2 = 9.98$, $p < .01$; arrested, cultivation/trafficking = 12.4%, $X^2 = 6.22$, $p < .05$; convicted, cultivation/trafficking = 8.0%, $X^2 = 4.04$, $p > .05$).

Contrarily, about one-fourth of Canadians and British that are affiliated with a pro-cannabis organization have been stopped and had their cannabis confiscated (Canada = 26.1%, British = 28.3%, $X^2 = 1.59$, $p > .05$). Finally, of those affiliated with a pro-cannabis organization, nearly three-fourths of Canadians (73.9%) and just over half (55.8%) of British respondents have had some contact with the CJS ($X^2 = 6.03$, $p < .05$), suggesting, like having a supportive physician, that affiliation with a pro-cannabis organization is most relevant when we take into consideration where the respondents reside.

The other measures of resourcefulness, which are not tied to institutions but instead stem from personal relationships and sociability, do not differ significantly between countries. Only two of the remaining resource-based variables reach statistical significance for some CJS measures. For example, acquiring any amount of cannabis for free from a friend, family member, or dealer is associated with higher rates of encountering the CJS in some way (40.4% vs. 11.7%, $X^2 = 6.00$, $p < .05$), being stopped and having cannabis confiscated (34.0% vs. 22.0%, $X^2 = 4.10$, $p < .05$), being arrested for possession (21.2% vs. 10.5%, $X^2 = 4.07$, $p < .05$), and being convicted of cultivation/trafficking (8.5% vs. 2.5%, $X^2 = 5.25$, $p < .05$). Teaching and being taught about medical cannabis by the five closest acquaintances/friends/family members varies significantly between any contact with the CJS ($M = 4.40$, $SD = 1.28$ vs. $M = 3.77$, $SD = 1.52$; $t_{(171)} = -2.67$, $p < .01$), being stopped and having cannabis confiscated ($M = 4.39$, $SD = 1.33$ vs. $M = 3.84$, $SD = 1.50$; $t_{(171)} = -2.22$, $p < .05$), and being convicted of cultivation/trafficking ($M = 4.63$, $SD = 0.52$ vs. $M = 3.95$, $SD = 1.50$; $t_{(13.74)} = -3.10$, $p < .001$), although this latter finding violates Levene's test of homogeneity of variance and should be interpreted with immense caution. Regardless of whether they differ significantly or not, however, it is noteworthy that all cannabis-related network measures are higher for respondents reporting negative encounters with the CJS. It seems somewhat misleading to describe these as "resource-based" measures in the legal barrier context, as being well-connected and resourceful ostensibly amplifies one's chances of having a negative encounter with the CJS—something I explore in the multivariate analyses below.

Multivariate binary logistic regression models

Table 15. Multivariate binary logistic regression models predicting "experience with the CJS" (n = 333)

Variable	Model 1 OR (CI)	Model 2 OR (CI)	Model 3 OR (CI)	Model 4 OR (CI)	Model 5 OR (CI)
Covariates					
Gender (male=1)	2.61 (1.21-5.63)*	2.58 (1.19-5.56)*	2.59 (1.17-5.70)*	1.54 (0.67-3.53)	1.03 (0.38-2.76)
Income	1.09 (0.86-1.39)	1.12 (0.88-1.44)	1.09 (0.84-1.40)	1.10 (0.84-1.44)	1.19 (0.82-1.74)
Country (UK=1)	2.64 (1.51-4.63)***	2.57 (1.46-4.51)***	3.17 (1.75-5.74)***	2.50 (1.30-4.81)**	4.41 (1.86-10.47)***
Experience (Younger=1)					
Older-recreational		1.58 (0.93-2.67)			
Older-medical		1.05 (0.63-1.77)[a]			
Needs-based					
Frequency of use (Daily=1)					
Monthly			0.81 (0.29-2.23)		
Weekly			1.70 (0.83-3.48)		
Weekly amount used (7+g=1)					
0-3g			3.24 (1.42-7.39)**		
4-7g			1.67 (0.84-3.29)		
Monthly amount spent			0.92 (0.64-1.32)		
Risk-based					
Prior CJS experience (any=1)				4.76 (2.79-8.13)***	
Bought most from dealers				1.44 (0.60-3.46)	
Grown any amount				1.86 (0.98-4.05)	
Used other illegal drugs				2.04 (0.55-7.54)	

Variable	Model 1 OR (CI)	Model 2 OR (CI)	Model 3 OR (CI)	Model 4 OR (CI)	Model 5 OR (CI)
Resource-based (*n* = 173)					
Have supportive physician					1.35 (0.60-3.05)
Obtained any amount free					2.14 (0.99-4.63)
Affiliated with pro-cannabis					0.59 (0.27-1.32)
Taught/Been taught					1.32 (0.97-1.80)
Used with (0-5)					0.95 (0.70-1.28)
Sold to (0-5)					1.24 (0.95-1.64)
Sociability scale					0.78 (0.43-1.41)
Intercept	0.11 (0.05-025)***	0.08 (0.03-0.20)***	0.06 (0.02-0.20)***	0.06 (0.02-0.17)***	0.09 (0.01-0.54)**
Model fit					[b]
Omnibus X^2 -2LL (R^2)	397.88 (9.4%)	388.65* (12.9%)	382.93* (15.1%)	354.52 (25.2%)	185.63* (19.5%)
H & L X^2, p-value	1.08, p = 1.00	6.24, p = 0.62	8.66, p = 0.37	4.82, p = 0.78	14.52, p = 0.07

Note: None = Intercept presented as beta coefficient and all others as exponentiated beta.

[a]Odds ratio between older-medical and older-recreational user is significant (older-medical = 3.10, 1.46-6.56).

[b]Base line model for subpopulation (*n* = 166) = -2LL 197.98 (10.2%), H&L = 3.07, p = 0.93.

***$p < .001$; **$p < .01$; *$p < .05$.

The first multivariate model uses covariates only; that is, gender, income, and country of residence. Like the bivariate analyses, I find that males (OR = 2.61, CI = 1.21-5.63, $p < .05$) and the British (OR = 1.64, CI = 1.51-4.63, $p < .001$) are the most likely to encounter legal barriers, while increases in income enhance the odds, but not to a statistically significant degree (Table 15).

Age and experience (Model 2), measured by career typologies, are significantly associated at the bivariate level, but appear to lose their significance once we account for covariates in the multivariate model. Younger users have the greatest odds of reporting legal barriers (vs. older-recreational users = OR = 1.58, CI = 0.93-2.67 and older-medical users = OR = 1.05, CI = 0.63-1.77), followed by older-medical users, who have an odds ratio of 3.10 (CI = 1.46-6.56) higher than the older-recreational users. Males (OR = 2.58, CI = 1.19-5.56) and Britons (OR = 2.57, CI = 1.46-4.51) are still more likely than females and Canadians to face legal barriers, and a higher income is again associated with increased odds, but not to a significant degree.

The third model incorporates respondents' consumption habits. Regarding their frequency of use, the bivariate analysis showed that the proportion of daily and monthly users that encountered legal barriers was similar, but that daily users were slightly higher (35.9% vs. 31.3%); in the multivariate model, however, monthly users are found to have greater odds (OR = 0.81, CI = 0.29-2.23), although this did not amount to a significant difference. As alluded to in the bivariate model, daily users have much higher odds of encountering legal barriers when compared to weekly users, but, again, this was not a significantly different probability (OR = 1.70, CI = 0.83-3.48)—likely because of how many respondents use daily (68.0%). The weekly amount consumed is perhaps a better indication of the probability of encountering legal barriers. The heaviest users (7+g/week) have much higher odds of encountering the CJS than either of the lighter-user groups, but only the comparison between the lightest (0-3g/week) and heaviest users amounted to a statistically significant difference (OR = 3.24, CI = 1.42-7.39). Finally, monthly spending, measured in Canadian dollars, did not affect the odds of facing legal barriers much, although it is worth noting that increased spending is associated with decreased odds (OR = 0.92, I = 0.64-1.32).

Once the risk-based measures (Model 4) are taken into consideration, the gender effect loses its significance and the odds ratio declines. Both income and

country of residence (i.e., the United Kingdom) are still associated with higher odds of encountering legal barriers, but now the country of residence is significant at the $p < .01$ level (rather than $p < .001$) for the first time. This is possible because the best predictor of encountering legal barriers after becoming a medical user is having similar encounters before being a medical user (OR = 4.76, CI = 2.79-8.13). Indeed, this was by far the strongest predictor, although growing any amount of one's supply did increase the odds at the $p < .10$ level as well. Regardless of significance, each of the risk-based measures is associated with increased odds of facing legal barriers.

The fifth model uses a subsample of respondents that answered questions about their network composition, resourcefulness, and sociability. This makes drawing uniform comparisons with the earlier multivariate models difficult; however, it is helpful to note that the resource-based variables improved the model fit when compared to the subsample's baseline model (baseline = -2LL = 197.98 and resource-based = -2LL = 185.63, $p < .05$). Only two variables (obtaining some cannabis for free and teaching/being taught about medical cannabis) approach significance at the $p < .10$ level, which is consistent with the bivariate findings, and all but three (affiliation with a pro-cannabis organization, the number of other users consumed with, and the sociability scale) increase the odds of facing legal barriers. More importantly, however, is the major increase in the odds of facing legal barriers if respondents reside in the United Kingdom. The odds ratio is now 4.41 (CI = 1.86-10.47). This is likely accounted for in part by the smaller sample size, which now has even higher proportional representation among “younger” United Kingdom respondents, but it is also important to pull from the country-specific bivariate results to explain this finding. For example, the multivariate results suggest that having a supportive physician increases the odds of facing legal barriers; yet, by focusing on Canadians specifically (in the bivariate model), we saw that this finding is particular to respondents from the United Kingdom. The same is also true for affiliation with a pro-cannabis organization, which increases the odds of facing legal barriers for the British respondents.

The final analysis (Model 6) includes all significant variables from the previous five models (Table 16). The model fit indexes suggest it is the best-fitted model, with a significant reduction in the loglikelihood (from 208.85 to 160.12, $p < .001$) and increase in explained variance (9.2% to 41.0%). Regression coefficients for the indicators are mostly consistent with the previous models, but others changed considerably, including

two (male vs. female and older-medical vs. younger typology) that switched directions. Gender lost significance in Models 4 and 5, but still showed that males are more likely than females to encounter legal barriers; in the final model, however, females are found to have greater odds of facing legal barriers (OR = 0.65, CI = 0.22-1.92), although this finding is not significant and likely affected, at least in part, by the lower sample size. Residing in the United Kingdom is still one of the most powerful predictors in the model with an odds ratio of 5.28 (CI = 2.07-13.52) times higher than Canada.

Table 16. Best fitting model predicting "experience with the CJS" (n = 173)

Variable	Model 6 OR (CI)
Covariates	
Gender (male=1)	0.65 (0.22-1.92)
Income	1.18 (0.77-1.82)
Country (UK=1)	5.28 (2.07-13.52)***
Cannabis experience (Younger = 1)	
Older-recreational	2.18 (0.83-5.72)
Older-medical	0.63 (0.25-1.62)[a]
Needs-based	
Weekly amount used (7+g=1)	
0-3g	2.78 (0.99-7.84)
4-7g	2.04 (0.82-5.06)
Risk-based	
Prior CJS experience (any=1)	5.28 (2.32-11.98)***
Grown any amount	1.07 (0.43-2.64)
Resource-based	
Obtained any amount free	2.06 (0.91-4.67)
Taught/Been taught	1.52 (1.12-2.05)**
Intercept	0.01 (0.00-0.08)***
Model fit	
Omnibus X^2 -2LL (R^2)	160.12*** (41.0%)
Hosmer & Lemenshow X^2, p-value	8.57, p = 0.38

Base line = 208.85 (9.2%), H&L = 1.56, p = 0.99.
[a]Odds ratio between older-medical and older-recreational user is significant (older-medical = 7.07, 1.90-26.29).
***p < .001; **p < .01; *p < .05.

Unlike the second model, the older-medical user typology now has the highest odds of reporting legal barriers, but this too is not a significant difference. The comparison between older-recreational and younger users still shows that the latter is the second most likely to report legal barriers, but this finding is no longer significant at the $p < .10$ level. The only comparison that reaches statistical significance (at $p < .05$) is, like the second model, between the older-recreational and older-medical users, which shows that the latter face by far the greatest odds of experiencing legal barriers since becoming a medical user (older-medical = OR = 7.07, CI = 1.90-26.29).

Several measures from the remaining models (needs-based, risk-based, and resource-based) are significant in the final analysis. The needs-based measure, weekly amount consumed, is consistent with the third model, in that the regression coefficients remain positive and the comparison between lightest and heaviest users is still significant, although now only at the $p < .05$ level (OR = 2.78, CI = 0.99-7.84). Having had any experience with the CJS prior to becoming a medical user, like country of residence, remains one of the most powerful predictors, with an odds ratio of 5.28 (CI = 2.32-11.98), suggesting that factors external to the individual are playing the greatest role in determining whether respondents face legal barriers. Finally, two resource-based measure—the number of closest acquaintances/friends/family members that respondents discuss medical cannabis with and whether they obtain any of their cannabis for free—are still associated with greater odds of facing legal barriers. The odds of facing legal barriers increases by an odds ratio of 1.45 (CI = 1.10-1.92) for every additional person that respondents teach and/or are taught by, and receiving cannabis for free is found to increase the odds of facing legal barriers by an odds ratio of 2.06 (CI = 0.91-4.67), suggesting further that the most resourceful and sociable are the ones facing increased odds of running into the CJS.

7.3. Reasons for stopping and biggest concerns

Respondents are asked a series of questions about their reason for ceasing medical use (if ever) and their biggest concern about using medical cannabis. Recall that the former is a list of separate (non-mutually exclusive) questions, while the latter is a single question with several mutually exclusive response options. Only responses that are relevant measures of *barriers* are included. Regarding the former, this includes whether respondents have ever stopped because they "could not find a supply," "could

not afford to buy it," "family and friends did not support it," and "were concerned about the possibility of arrest." The latter was dummy coded and only two options were retained: "the possibility of arrest" and "cost of cannabis" being the biggest concern. Descriptive and bivariate results for each are listed in Table 17 and discussed below.

Much like in the previous section (looking at the CJS as a barrier), we see that residing in the United Kingdom is associated with nearly every measure, excluding social stigmatization (i.e., stopping because family and friends were unsupportive) and cost being the biggest concern, although the latter finding is likely overshadowed by the high proportion of Britons (55.4%) concerned about the possibility of arrest. Nearly double the proportion of Britons and Canadians who stopped in the past out of fear of arrest feel this is the biggest concern currently, thus suggesting that about half of those who share this concern are deterred enough to cease use at some point while the other half share the concern without feeling the need to stop. Moreover, the fact that the opposite is true for cost (53.6% of British and 40.2% of Canadians have stopped because they could not afford it and 26.8% and 19.8%, respectively, report this as their biggest concern) again suggests that monetary barriers, which could be as much an individual restriction as an external one, may be a deterrent for practical reasons, but not as a threat. Inaccessibility of (affordable) supply sources is enough of an impediment to cause more than half of Britons and just under half of Canadians to desist at some point, while social stigmatization and, to a lesser degree, possible legal repercussions are ostensibly less concerning. Collectively, then, it is apparent that the supply-side regulation is having a greater deterrent effect than either the legal or social threat of condemnation.

Income is associated with three of the four reasons for stopping, but neither of the biggest concerns. In each case respondents that report ceasing use make significantly less. For example, respondents that stopped because they could not afford it make on average $6,000 less (*M* = $19,920, *SD* = $16,330 vs. *M* = $26,170, *SD* = $20,800), while those with unsupportive family and friends make $12,000 less (*M* = $11,750, *SD* = $12,880 vs. *M* = $24,140, *SD* = $19,200), and those concerned about the possibility of arrest make $6,500 less (*M* = $18,240, *SD* = $19,430 vs. *M* = $24,820, *SD* = $18,740).

Table 17. Reasons for stopping and biggest concerns about medical cannabis use (n = 284)

	Reasons for stopping (if ever)				Biggest concern	
Variable	**Could not find a supply**	**Could not afford it**	**Family/Friends unsupportive**	**Possibility of arrest**	**Possibility of arrest**	**Cost of cannabis**
Total	51.1	46.5	7.0	23.6	50.4	23.7
Covariates						
Gender	-	-	-	-	-	-
Male	52.1	48.3	8.0	25.2	50.6	23.2
Female	45.7	37.0	2.2	15.2	47.8	26.1
Country	**	**	-	*	-	-
United Kingdom	57.1	53.6	7.7	28.0	55.4	26.8
Canada	46.4	40.2	5.2	19.6	41.7	19.8
Income (Canadian)	$22.36 (18.11)	$19.92 (16.33) **[a]	$11.75 (12.88)**	$18.24 (19.43)*	$23.01 (18.94)	$21.28 (17.77)
Cannabis experience	-	-	-	**	-	-
Older-recreational	43.7	41.1	4.8	23.7	48.2	24.2
Older-medical	61.3	46.1	1.0	6.2	57.1	18.5
Younger	51.2	48.9	9.9	28.7	49.0	24.9
Needs-based						
Frequency of use	-	-	-	-	-	-
Monthly	36.4	39.6	6.5	22.7	49.4	9.7
Weekly	47.0	48.8	8.8	31.8	52.3	23.0
Daily	54.5	46.9	6.6	21.4	49.7	26.1

	Reasons for stopping (if ever)				Biggest concern	
Variable	**Could not find a supply**	**Could not afford it**	**Family/Friends unsupportive**	**Possibility of arrest**	**Possibility of arrest**	**Cost of cannabis**
Weekly amount used	*	**	-	-	*	***
0-3g	39.6	32.5	6.0	22.8	59.3	7.7
4-7g	56.1	48.9	10.3	27.6	52.9	22.6
7+g	56.6	56.1	5.4	21.2	40.7	37.6
Monthly amount spent	$351.08 (64.92)	$408.79 (72.10)	$379.29 (98.07)	$441.17 (133.77)	$332.11 (70.06)	$541.44 (99.69)*
Risk-based						
Previous encounter, CJS	58.2	53.1	8.2	32.7**	52.4	21.6
Most supply from a dealer	60.5***	55.5***	8.1	25.9	49.5	32.5***
Grow any amount	51.4	40.8	5.6	18.2	50.1	20.1
Used illicit drug(s)	59.4	59.4	9.4	26.4	33.0	35.9
Resource-based						
Supportive physician	54.4	47.4	6.2	24.4	48.8	27.4
Some obtained for free	55.0	54.4	11.2	29.2	52.6	24.0
Pro-cannabis organization	52.8	48.6	7.1	22.0	49.4	25.0
Taught about cannabis	3.93 (0.16)	4.06 (0.14)	4.06 (0.35)	4.02 (0.23)	3.99 (0.16)	4.00 (0.23)
Used cannabis with	2.54 (0.17)	2.73 (0.17)	3.00 (0.35)	2.83 (0.24)	2.64 (0.19)	2.71 (0.24)
Supplied/Gifted	56.5	50.6	14.1*	22.4	42.4	31.8*
Sociability scale	2.56 (0.10)	2.53 (0.11)	2.53 (0.18)	2.54 (0.13)	2.42 (0.11)	2.49 (0.13)

***$p < .001$; **$p < .01$; *$p < .05$.

Regarding their age and experience, the younger users more than the older-recreational and older-medical users are concerned about barriers. About half of younger users have stopped at some point because of access barriers, whether because of inaccessibility (51.2%) or affordability (48.9%). More than double the proportion of older-recreational and ten times the proportion of older-medical users are concerned about social stigmatization (9.9% vs. 4.8% and 1.0%, respectively), although this still represents only one-tenth of the (sub)sample. A similar proportion of older-recreational and younger users are concerned about the cost of their medical cannabis (older-recreational = 24.2% and younger = 24.9%) and have stopped out of fear of arrest (older-recreational = 43.7% and younger = 51.2%).

Older-medical users, on the other hand, are seemingly less concerned about cost, but proportionally more have stopped in the past because they could not find a supply. This is an interesting finding that becomes clearer in the following section when we consider the growers specifically. For now, suffice it to say that this disconnect is the result of the high number of older-medical users that grow their own. The argument, then, would be that more of these (older-medical) users stopped previously because of supply-side impediments and started to grow their own to enhance autonomy and reduce reliance on others for an affordable supply. Finally, the proportional difference in older-medical users that have stopped out of fear or arrest and see the possibility of arrest as their biggest concern needs elaboration. The fact that so few have stopped for this reason, while more than half report it as a major concern, suggests that their concerns are low and, as a result, they selected the most egregious option, one that had nothing to do with drug specifically (e.g., being an ineffective analgesic) or the process of acquiring it (again, because they are more autonomous than the other two typologies).

The needs-based variables are most associated with supply-side barriers. The heaviest users report more concerns about accessibility and cost, while the lighter users express concerns about possible legal encounters and, to a lesser extent, social disapproval. A similar proportion of the most (daily) and least (monthly) frequent users share concerns about social stigmatization (6.6% and 6.5%) and arrest (stopped, because of “possibility of arrest” = 21.4% and 22.7%; biggest concern, “possibility of arrest” = 49.7% and 49.4%), while more of the two most frequent user-groups (daily and weekly) report concerns about cost and availability, suggesting that frequent users have overcome the barrier posed by law enforcement but not, necessarily, supply-side

impediments. The amount used is similarly associated with all measures except stopping because of social stigmatization and the possibility of arrest. The two heaviest user-groups report all supply-side measures more than the lightest user group, therefore showing consistency with their frequency of use results. Although proportionally the same have stopped out of fear of arrest (21.2% and 27.6%), there is a clear decrease in the proportion reporting this as their biggest concern ($X^2_{(2)} = 6.54$, $p < .05$); indeed, a lower proportion of the heaviest users (40.7%) and a greater proportion of the lightest users (59.3%) report this concern.

Two risk-based measures are significantly related to the "reasons for stopping" and "biggest concern." Respondents that encountered the CJS before self-identifying as a medical user report having stopped because they feared the possibility of arrest since becoming a medical user significantly more than those who did not (32.7% vs. 18.8%; $X^2_{(1)} = 6.82$, $p < .01$). Alternatively, respondents that buy most of their supply from a dealer, friend, or family member report all supply-side barriers proportionally more than those acquiring most of their supply through other means. Accordingly, we find that more than half of those buying most of their supply (from these outlets) have stopped because they could not find a supply (60.5% vs. 36.2%; $X^2_{(1)} = 15.54$, $p < .001$) and/or because they could not afford it (55.5% vs. 32.2%; $X^2_{(1)} = 13.65$, $p < .001$), while, similarly, one-third (32.5% vs. 9.7%; $X^2_{(1)} = 18.10$, $p < .001$) continue to feel that cost is their biggest concern. Having grown any amount of their own, on the other hand, was not associated with any of these barriers, suggesting a degree of autonomy not shared by non-growers.

The only resource-based measures significantly associated with these barriers are "obtaining any amount for free" and "supplying or gifting to/with at least one of the five closest contacts." Obtaining any amount for free is only slightly associated ($p < .10$) with two of the reasons for stopping ("could not afford it" and "family/friends did not support it"), while selling/gifting with at least one other person is associated with stopping because family/friends did not support it (14.1% vs. 4.9%; $X^2_{(1)} = 04.01$, $p < .05$) and cost being the biggest concern (31.8% vs. 18.5%; $X^2_{(1)} = 3.85$, $p = .05$). The important point to highlight here is that, while uncommon for the entire sample, both measures of supply/gifting are associated with social stigmatization specifically, suggesting, perhaps, that the supply-side of cannabis use, more than use itself, is condemned in social circles with non-users, and/or that recipients of gifted cannabis have only limited ties to the

"cannabis scene" and therefore feel the effects of stigmatization by non-users more than users do.

In the final results section, the focus shifts to "means of availability" generally and the (sub)population of respondents that choose to grow their own. The section begins by discussing how respondents acquire their cannabis before turning to the separate group that "do it themselves."

7.4. Supply sources and accessibility barriers

Descriptive and bivariate statistics

Buying cannabis from a dealer, friend, or family member is the most popular option (58.2%; Table 18). One-third buy cannabis grown for medical use (17.7%) or grow it themselves (14.9%) and about five percent obtain it for free (4.3%) or equally from two different sources (5.0%). Canadians buy cannabis grown for medical use more than the British (38.3% vs. 1.2%) and the British, correspondingly, buy more from a dealer/friend/family member than Canadians (74.4% vs. 38.3%; $X^2_{(8)} = 89.98$, $p < .001$); the two populations otherwise acquire cannabis in much the same way, including the proportion that grow their own (12.8% vs. 16.1%).

Age and experience, as measured by career typologies, are significantly associated with the primary sources of availability ($X^2_{(8)} = 16.65$, $p < .05$). Younger users rely on dealers more than the older typologies (64.5%) and have the lowest representation among growers (9.7%), while older-medical users have the most (24.8%). Alternatively, less than half of the older-recreational users rely on dealers/friends/family members (46.1%); instead, they are split between buying medical cannabis (22.6%) and growing their own (19.8%).

Table 18. Descriptive and bivariate statistics for "primary sources of availability" and "supplemental growers" (n = 282)

	Primary sources of availability						
Variable	% grown for medical use	% grown myself	% bought, dealer	% free, dealer	50-50% split	Grown anyt	Total
Total	17.7	14.9	58.2	4.3	5.0	25.5	
Gender							
Male	16.4	15.5	59.7	3.4	5.0	26.1	84.4
Female	25.0	11.4	50.0	9.1	4.5	22.7	15.6
Country							
Canada	38.3***	12.8	38.3	4.3	6.4	25.5	33.3
United Kingdom	1.2	16.1	74.4	4.2	4.2	25.6	59.6
Income (Canadian)	$23.17 (20.73)	$26.12 (18.13)	$22.17 (18.41)	$13.16 (8.75)	$20.09 (18.30)	$23.66 (18.42)	$22.45 (18.55)
Cannabis careers							
Older-recreational	22.6*	19.8	46.1	8.1	3.4	33.8*	25.4
Older-medical	13.4	24.8	54.9	3.3	3.7	34.6	17.5
Younger	16.9	9.7	64.5	2.9	6.1	19.1	57.1
Needs-based							
Frequency of use							
Monthly	11.5	14.4	56.1	3.6	14.4	18.0	9.9
Weekly	14.4	5.3	69.7	7.0	3.5	12.3	20.1
Daily	19.6	17.7	55.1	3.5	4.1	30.3*	70.0
Weekly amount used							
0-3 grams	19.8	8.4	56.3	7.3	8.2	13.2***	31.1

Variable	Primary sources of availability						
	% grown for medical use	% grown myself	% bought, dealer	% free, dealer	50-50% split	Grown anyt	Total
4-7 grams	19.6	13.5	62.8	1.5	2.7	19.8	29.4
7g+	14.7	21.0	56.2	4.0	4.1	39.5	39.5
Monthly amount spent	$514.32 (179.99)	$259.90 (108.61)	$356.25 (31.11)	$674.29 (511.73)	$208.24 (46.69)	$460.48 (105.11)	$376.11 (44.63)
Stopped, could not find a supply	9.2	14.2	70.3	2.1	4.2	25.5	50.1
Stopped, could not afford it	10.8	12.2	72.4	2.3	2.3	22.1	46.5
Biggest concern, cost of cannabis I use	10.4	4.5	80.7	1.5	3.0	20.8	23.8
Resource-based							
Supportive physician	25.6	23.0	46.3	2.6	2.6	37.8	41.6
Pro-cannabis organization	13.6	16.3	61.3	4.7	4.1	28.7	60.0
Network composition (*n* = 166)							
Recent users	3.09 (1.61)	2.31 (1.44)	2.76 (1.53)	3.29 (1.98)	2.60 (2.22)	2.65 (1.54)	2.78 (1.60)
Recently used with	2.74 (1.59)**	1.65 (1.57)	2.74 (1.46)	3.50 (1.87)	2.00 (2.06)	2.26 (1.77)	2.57 (1.61)
Taught/Been taught about cannabis	4.00 (1.30)	4.12 (1.45)	3.89 (1.51)	4.43 (1.14)	3.90 (2.08)	4.30 (1.39)	3.97 (1.48)
Supplied/Gifted cannabis	17.9	15.5	61.9	1.2	3.6	29.8	50.9
Sociability scale	2.47 (0.89)	2.47 (0.80)	2.53 (0.81)	2.49 (0.86)	2.41 (1.04)	2.57 (0.81)	2.49 (0.86)

Note: Figures presented as frequency distributions, mean averages, and standard deviations, although standard errors, rather than deviations, are reported for "monthly spending," because the data are imputed.
*** $p < .001$; ** $p < .01$; * $p < .05$.

The needs-based variables suggest that the heaviest users are the most autonomous. About one-fifth of heavy users (21.0%) grow their own, while proportionally fewer buy medical cannabis (14.7%) or cannabis from dealers/friends/family members (56.2%). One-fifth (19.6%) of daily users buy medical cannabis and slightly fewer grow it themselves (17.7%). Alternatively, light and infrequent users depend more on dealers/friends/family. Growers spend less monthly, but this is not well-captured by the average since a few spend substantially more (median = $72.20; 36.1% spend $0). Finally, buying cannabis grown for medical use (median = $220; 2.1% spend $0) or from a dealer/friend/family member (median = $255.20; 26% spend $0) are, of course, associated with higher spending habits than growing.

The two reasons for stopping (cost [$X^2_{(4)} = 21.01$, $p < .001$] and inaccessibility [$X^2_{(4)} = 21.13$, $p < .001$]) and cost being the biggest concerns ($X^2_{(4)} = 18.01$, $p < .001$) are significantly related. Respondents that stopped for either reason grow their own proportionally more than respondents reporting cost as their biggest concern (14.2% and 12.2% vs. 4.5%, respectively). Fittingly, nearly all the respondents that select cost as their biggest concern report buying cannabis from a dealer/friend/family member (80.7%) and cannabis grown for medical use (10.4%).

The only resource-based variables that are significantly associated are the number of closest acquaintances/friends/family members that respondents use cannabis with ($F_{(162,4)} = 3.51$, $p < .01$) and whether they have a physician that supports their use of medical cannabis ($X^2_{(4)} = 22.21$, $p < .001$). Collectively, however, even the insignificant variables paint an informative picture. Perhaps most telling is the limited emphasis growers place on sociability; they score below average on the scale ($M = 2.47$, $SD = 0.80$), have fewer recent users in their cannabis network ($M = 2.31$, $SD = 1.44$), and use with fewer of them ($M = 1.65$, $SD = 1.57$). Excluding respondents that acquire cannabis for free (1.2%) or evenly from two sources (3.6%), fewer of the growers sell/gift their supply (15.5%), although they do discuss cannabis matters with more of their closest contacts ($M = 4.12$, $SD = 1.45$).

After widening the parameters to include respondents that grow any amount, the profile changes in several ways. For example, the country comparison now loses significance ($X^2_{(2)} = 0.00$, $p > .05$), suggesting that one's residence will determine

whether they buy from an illicit (i.e., dealer/friend/family member) or a pseudo-legal outlet (e.g., dispensaries and Compassion Clubs) without doing much to deter the proportion growing their own. The proportion of Britons that grow increases by about 10 percent while doubling among Canadians, suggesting that slightly more Britons cultivate as a primary method and Canadians are evenly split between growing as a primary and supplementary method. Both reasons for ceasing use (cost [$X^2_{(1)} = 1.32$, $p > .05$] and inaccessibility [$X^2_{(1)} = 0.94$, $p > .05$]) and cost being the biggest concerns ($X^2_{(4)} = 0.94$, $p > .05$) also lose their significance. Indeed, the population of growers most concerned about cost quadruples from 4.5 to 20.8 percent once the supplemental growers are included. Finally, many resource-based measures increase among the grower-population, which suggest that supplementary growers place more importance on the social aspect than the primary growers.

The younger typology still has the lowest representation among growers (19.1%) and the older-medical users still have the most (34.6%). Yet, the proportion that reports growing any amount increases by about 10 percent for all typologies, suggesting that older-medical and older-recreational user-growers cultivate most of their supply and younger users typically do so as a supplementary option.

Daily users still have the greatest representation among growers, while monthly and weekly users are still second and third, respectively. The proportion of daily (17.7% to 30.3%) and weekly (5.3% to 12.3%) users that grow any of their own increases considerably but only slightly for monthly users (14.4% to 18.0%). The weekly amount used is now statistically significant ($X^2_{(2)} = 18.63$, $p < .001$) and still shows a paralleling rise in the proportion of users at each level that grows their own.

Like the “primary” growers, all growers discuss medical cannabis with more of their close acquaintances/friends/family members ($M = 4.12$, $SD = 1.45$ to $M = 4.30$, $SD = 1.39$), excluding those that acquire cannabis for free ($M = 4.43$, $SD = 1.13$). All growers also have fewer recent users in their cannabis network ($M = 2.65$, $SD = 1.54$ vs $M = 2.83$, $SD = 1.62$) and report using with fewer of them ($M = 2.26$, $SD = 1.77$ vs $M = 2.67$, $SD = 1.54$). The proportion that sell/gift medical cannabis to at least one person nearly doubles (to 29.8%)—likely because we are now capturing users that buy most of their cannabis from a dealer/friend/family member and supplement by growing,

suggesting that supplemental growers, who may also be part of cannabis networks with dealers embedded, engage in social supply more than primary growers.

7.5. The case for "doing it yourself"

Multivariate binary logistic regression models

Results for the multivariate models are presented in Table 19. According to the baseline model, the covariates do not adequately explain the variance between growers and non-growers; in fact, all regression coefficients are insignificant and the explained variance is low (-2LL = 319.80 [R^2 = 4.4%]). Adding the career typologies does not improve model fit much (Model 2: -2LL = 311.86, $p > .05$ [R^2 = 4.4%]), but the regression coefficients are consistent with the bivariate findings and statistically significant; accordingly, we find that younger users are less likely than older-recreational (OR = 0.45, CI = 0.23-0.90) and older-medical (OR = 0.44, CI = 0.20-0.96) users to grow.

The need-based measures yield the best results of the first four models, suggesting that respondents' consumption habits play the greatest role in determining whether they grow (Model 3: -2LL = 289.31, $p < .01$, [R^2 = 15.4%]). While not amounting to statistical significance, it is notable that the coefficient for country of residence now moves closer to the sample from the United Kingdom, suggesting that when respondents' needs are taken into consideration, the British have higher odds of growing than Canadians (OR = 0.71, CI = 0.37-1.36). The weekly amount used is by far the strongest predictor in the model. Compared to the two lighter-user groups, the heaviest users' odds of growing are about 5.90 (CI = 2.24-15.54) and 3.42 (CI = 1.61-7.25) times higher, respectively. Stopping because of (in)accessibility increases the odds of being a grower (OR = 1.19, CI = 0.60-2.36), while the two measures of cost (i.e., the reason for stopping and biggest concern) decreased the odds, implying that growers have fewer financial concerns about their use.

Table 19. Binary logistic regression models for growing "any amount" (n = 282)

Variable	Model 1 OR (CI)	Model 2 OR (CI)	Model 3 OR (CI)	Model 4 (*n* = 166) OR (CI)	Model 5 (*n*=166) OR (CI)
Covariates					
Gender (male = 1)	1.19 (0.55-2.57)	1.24 (0.56-2.74)	1.25 (0.54-2.90)	1.34 (0.41-4.36)	1.77 (0.53-5.92)
Income (Canadian)	1.09 (0.83-1.43)	1.01 (0.77-1.34)	1.02 (0.76-1.36)	1.09 (0.72-1.66)	1.12 (0.73-1.73)
Country (Canada = 1)	0.99 (0.54-1.79)	0.94 (0.51-1.72)	0.71 (0.37-1.36)	0.53 (0.22-1.28)	0.42 (0.17-1.06)
Cannabis careers ("young" = 1)					
Older-recreational		0.45 (0.23-0.90)*			0.76 (0.28-2.09)
Older-medical		0.44 (0.20-0.96)*			0.52 (0.14-1.88)
Needs-based					
Frequency of use ("daily" = 1)					
Weekly			1.94 (0.77-4.90)		
Monthly			0.89 (0.26-3.03)		
Weekly amount used (7+g = 1)					
0-3g			5.90 (2.24-15.54)***		6.03 (1.66-21.99)**
4-7g			3.42 (1.61-7.25)***		2.36 (0.90-6.20)
Monthly amount spent			0.96 (0.70-1.30)		
Stopped, could not find supply			1.19 (0.60-2.36)		
Stopped, could not afford it			0.54 (0.26-1.12)		
Biggest concern is cost			0.49 (0.23-1.02)		0.44 (0.16-1.18)
Resource-based					
Supportive physician				3.30 (1.42-7.65)**	2.79 (1.17-6.66)*

Variable	Model 1 OR (CI)	Model 2 OR (CI)	Model 3 OR (CI)	Model 4 (*n* = 166) OR (CI)	Model 5 (*n*=166) OR (CI)
Pro-cannabis organization				0.99 (0.42-2.32)	
Taught/Been taught				1.36 (0.96-1.92)	1.26 (0.91-1.73)
Number of user-alters				0.94 (0.69-1.28)	
Number used with				0.67 (0.47-0.95)*	0.83 (0.63-1.09)
Sold/Gifted				2.16 (0.87-5.40)	
Sociability scale				1.48 (0.82-2.67)	
Model fit				A	a
Omnibus X^2 -2LL (R^2)	319.80 (0.3%)	311.86 (4.4%)	289.31** (15.4%)	162.02* (18.9%)	159.47** (23.2%)
H & L $X^2_{(df)}$, p-value	4.37 p = 0.82	2.98, p = 0.94	11.59, p = 0.17	4.17, p = 0.84	3.42, p = 0.91

Note: Model fit indexes reported for worst fitting imputed model;
OR = 'odds ratio' and CI = 'confidence intervals.'
Income and monthly amount spent on cannabis (in Canadian) both standardized.
[a]Base line model for subsample (*n* = 166): -2LL 183.01 (1.3%).
H&L 12.28, p = 0.14.
*** $p < .001$; ** $p < .01$; * $p < .05$.

The resource-based model is not directly comparable because of the lower sample size. To draw comparisons, albeit separate from the first three models, I ran the baseline model for the subpopulation of respondents that answered questions about their cannabis network and sociability (n = 166; -2LL = 183.01 [R^2 = 1.3%]). The model fit indexes show that the resource-based measures are better explanatory variables than the covariates (Model 4: -2LL = 162.02, $p < .05$, [R^2 = 18.9%]). Regression coefficients are, however, significant for only two variables: whether respondents have a supportive physician (OR = 3.30, CI = 1.42-7.65) and the number of close friends/family/acquaintances that they use with (OR = 0.67, CI = 0.47-0.95). Having a supportive physician and discussing cannabis with close acquaintances/friends/family members both increase the odds of being a grower, while consuming with more users decreases the odds.

The final model (Model 5) uses only significant variables from the previous four analyses. Like the last model, a reduced sample size is used because of missing data on the resource-based measures. The model fit indexes demonstrate the greatest improvement from baseline (-2LL = 159.47, $p < .01$, [R^2 = 23.2%]). However, the only variables that remain significant are weekly amount consumed and having a supportive physician. The odds ratio comparing the lightest and heaviest users increases (OR = 6.03, CI = 1.66-21.99), therefore buttressing the earlier finding. The country comparison remains insignificant; however, the odds ratio moves closer to the United Kingdom sample and reaches significance at the $p < .10$ level (OR = 0.42, CI = 0.17-1.06), suggesting that British respondents are by far the most likely to be growers when needs and sociability are taken into consideration.[8] The fact that older-recreational and older-medical users still have increased odds of being growers suggests that age and experience are key features of the growing population, and likely indicative of the emphasis users place on autonomy as they age and acquire experience.

[8]It is difficult to surmise the degree to which this is affected by the reduced sample size.

Chapter 8.

Discussion and conclusions

People have been using drugs for millennia. While the history of cannabis use as an intoxicant is difficult to trace definitively because of poor documentation, its use as an analgesic is thought to have begun sometime in the 2700s BC (Abel, 1980; Booth, 2003; Earleywine, 2002). Yet, it did not really enter mainstream social consciousnesses until the early-1900s when its use as an intoxicant was associated with minority and deviant social groups (Booth, 2003). A slew of moral panics in popular media (e.g., *Reefer Madness*) and politics at the time created a strong culture of prohibition that framed cannabis users as deviant dope fiends existing on the margins of society (Becker, 1963).

Despite the exaggerated propaganda, however, cannabis use proliferated in many societies throughout the mid-to-late-1900s—including North America and Europe—and eventually transcended disenfranchised social groups to become a familiar part of adolescent life for all classes of people. This became most evident during the 1960s when college-aged students, increasingly from middle-class backgrounds, began experimenting with cannabis in unprecedented numbers. Cannabis's ties to the hippie counter-culture movement and popular music made it an attractive past-time, which served as the "battle flag" of social opposition that so many people sympathized with at the time (Booth, 2003, p. 257).

Paralleling its rise in popularity among younger generations was a movement among policymakers and other moral entrepreneurs (Becker, 1963)—most notably in the United States—to criminalize cannabis at both the national and international level. Certainly, it is no coincidence that cannabis entered the international stage just as it was beginning to spread to mainstream society. The recent growth in prevalence rates and its ties to a hedonistic lifestyle fueled prohibitionists, who saw little value, including as a medicine, in leaving the drug unregulated. What came out of this era, then, were two paralleling social trends inherently at odds with one another. On the one hand, a growing population of users were learning to use and derive pleasure from cannabis and, through that process, discovering that the drug's stated harms were dramatized for effect. Alternatively, from an enforcement perspective, cannabis was seen as a social ill

that needed to be eradicated. Consequently, cannabis became both a potent cultural and political marker of North American and European society, palpably manifested in the cultural contours of adolescent life and the (inter)national policies set forth by the 1961 Single Convention on Narcotic Drugs and ensuing domestic policies (e.g., 1970 Controlled Substance Act in the United States and 1971 Misuse of Drugs Act in the United Kingdom).

A major turning point that came out of the mid-1900s, and especially the 1961 Convention, was a commitment to eradicate and deter the production, distribution, and use of cannabis domestically. Seventy-three countries, including the United States, Canada, and Great Britain, became signatories to the Convention and began implementing policies back home to regulate the production and use of cannabis for non-research and non-medical purposes. With rare exception (e.g., Holland's decriminalization of cannabis in 1976), signatories to the Convention remain committed to the agreed-upon parameters; however, in recent years there has been a notable shift away from prohibition in favor of various alternative regulatory approaches, including marked caveats in law for medical use specifically (Room et al., 2010).

There is a deep-rooted history of cannabis being used as an analgesic for a variety of afflictions, many of which are more mundane and trivial than is warranted by current governing bodies or advocated for by medical communities. Yet, until the 1960s very little was known about cannabis botany and, by extension, pharmacology. Following the second World War, two organic chemists from Israel (Mechoulam and Gaoni) pioneered an ambitious research agenda that continues to this day. Their initial discovery and isolation of THC—the most popular cannabinoid, which is also responsible for producing the intoxicating effects espoused by recreational users—in 1964 sparked a turning point in research that lead to the discovery of more than 100 cannabinoids and an impressive list of possible health benefits (Booth, 2003). Scientific inquiry grew both in sophistication and popularity during the latter half of the 20th-century, which fueled the contention between professionals from the scientific and medical fields and policymakers concerned about regulating its recreational use. Scientists advocated vehemently for the liberalization of cannabis policy so further research could be conducted without being impeded by the drug's illegality and suffering patients could benefit from its many known medical benefits. Policy makers, who felt its seemingly limited medical benefits did not justify a reduction in law, leaned heavily on

sociopolitical arguments to belittle findings made by the scientific community, arguing instead that more potent strains and cannabis's role as a "gateway" drug would have profound public health effects on younger users.

Several expert committees were assembled toward the end of the century to review the evidence-based literature buttressing claims of cannabis's medicinal efficacy and the anticipated health and social ramifications of continued prohibition (e.g., House of Lords, 1998; Mack & Joy, 1999. Senate Committee, 2002). Their results and commentary were indicative of the disconnect between medical and policy professionals. As Mack and Joy (1999) noted, scientists who study cannabis pharmacodynamics largely agree on its harms and benefits, which are not in harmony with the discourse perpetuated in circles of policymakers.

Alternative regulatory approaches gained public support in several countries as a result of the prohibition's failed attempt to impede growing prevalence rates and illicit markets. For example, Canada became the first country to legalize medical cannabis use across the nation in 2001. In 2012, Uruguay went a step further and legalized cannabis entirely, therefore trivializing the distinction between medicinal and recreational use. The United States has fully legalized cannabis in 8 states and either legalized, decriminalized, or depenalized for medical purposes in 29 states and the District of Columbia since the mid-1990s. Clearly, there is a political shift transpiring as we speak, but not all countries are on board with the social movement.

Most signatories to the Convention remain, to varying degrees, committed to the principles of prohibition both in spirit and in practice. The United Kingdom is one such country. Unlike in Canada, where a medical card is used to shield medical users from possible legal ramifications for possessing small amounts of their medicine, British continue to face the possibility of being apprehended or fined for possessing and growing cannabis. Despite the disparate policies in place, however, several countries have noted a shift in acceptance for cannabis, which is facilitated in large part by growing prevalence rates, acceptance (of one's decision to use cannabis) by abstainers, and scientific discoveries buttressing the therapeutic efficacy of cannabinoid-based medicines (e.g., Duff et al., 2012; Duff & Erickson, 2014; Frank et al., 2011; Hathaway, 1997; Hathaway et al., 2011; Parker et al., 1998, 2002; Stebbins, 1996). In practice, then, it appears there is a clear disconnect between the way the law is intended to work

and how it is implemented and perceived by users (Brochu et al., 2011; Room et al., 2010).

A major argument for this disconnect in policy on paper and in practice rests on the realization that cannabis prohibition does not achieve its stated goals and, instead, results in more harms than benefits. Advocates of prohibition assert that relaxed laws and enforcement practices belittle the harms associated with a given drug and render principles of deterrence essentially ineffective. Competing evidence, especially from cross-national comparisons, suggests that cannabis users are undeterred by the policies in place; the trend in prevalence rates and user-practices has been largely unresponsive to (changes in) policy and enforcement practices (Kisley, 2008; Reinarman, 2009; Reinarman et al., 2004). Thus, the differences between user populations—regardless of where they reside—have more to do with the way the drug is treated/controlled externally than any innate characteristic of the user. Certainly, cannabis itself is a drug unlike many others; it is by far the most widely used illicit drug globally, it is used for multiple reasons (e.g., as an intoxicant, therapeutic, and hemp), it is a versatile and durable plant capable of being grown in any location with the right growing equipment and conditions, and its users appear to be knowledgeable consumers who rarely report serious health complications (Booth, 2003; Decorte et al., 2011; Pudney, 2010).

Whether cannabis prohibition is the best regulatory option remains a highly contentious and hotly debated topic; however, we do know that its unintended consequences continue to manifest in (illicit) market dynamics and the punitive treatment of users. Undoubtedly, the way cannabis is produced, distributed, and used is at least partly reflective of the overarching policies in place. This is not to suggest that consumption habits are shaped by policy, but rather the way users are socialized and present themselves for others to see likely mirrors the current climate (e.g., see O'Brien, 2013). For example, countries with a medical exception in place, such as Canada and the United States, are liable to be exploited by recreational users who falsely present themselves as "medical" users to benefit from a socially acceptable identity. Moreover, constraints on supply and distribution—perhaps the most important goal of a prohibitionist approach—continue to shape market dynamics by facilitating the growth of an illicit market, where producers are not subject to quality control, taxation, or any other constraints typically associated with regulated markets. Instead, the current scenario (for cannabis specifically) is that users rely on one another for protection from agents of

control and learn to become autonomous in their dealings (Belackova & Vaccaro, 2013; Caulkins & Pacula, 2006; Coomber & Turnbull, 2007; Chatwin & Potter, 2014; Kirby & Peal, 2015; Lenton et al., 2015). Indeed, some users even make the decision to grow their own to avoid illicit markets, enhance autonomy, and avoid potential run-ins with law enforcement (Belackova et al., 2015).

The current climate surrounding cannabis and its regulation is rife with sociological inquiry. Cannabis users are a highly heterogeneous and complex population that can tell us a great deal about the effects of policy in practice. As I outlined in the second chapter and elaborated on extensively throughout this dissertation, cannabis use is a unique practice liable to change with age and experience. This explains why younger users emphasize the importance of solidarity and social use, while older users downplay the significance of using cannabis as a social lubricant. Older users have difficulty maintaining patterns of use like they did during adolescence and young adulthood because features of the social clock push them to use the drug alone and for health reasons. Whether users learn to (re)construct recreational use as medicinal because it is a better narrative or truly begin to self-identify health benefits later in life is certainly an important consideration; yet, it is foreseeable that both are true.

The first wave of contemporary recreational users (i.e., Baby Boomers) are now well into adulthood and suffering from a myriad of afflictions that accompany the aging process (Pedersen, 2015). Chronic aches and pains, work and injury-related stresses, and other mental discomforts are, according to many users, effectively combatted by smoking a joint at the end of the day, right before bed, or “as needed.” However, it would be disingenuous to say that these ailments are only experienced by older users, or that older users do not have more “serious” afflictions that they combat with cannabis. Both are certainly true. Young and recreational users (of all ages) report reasons for use that overlap with the reasons illuminated by self-described medical users, therefore drawing a blurry distinction between the two (Bostwick, 2012). Furthermore, cannabis is a multifarious intoxicant; its users often report desired effects that are context-specific, ranging from medicinal to recreational or some combination of the two. Certainly, many people report using cannabis for seemingly recreational purposes like “relaxing,” “enjoying music,” “watching television,” and “having sex,” while at other times their use is a therapeutic means of relieving stress and anxiety, coping with depression and pain, or reducing inflammation and enhancing appetite.

Taken collectively, then, we can surmise a profile of the typical person that self-identifies as a "medical" user. On the one hand, there is a class of recreational users who describe their consumption as medicinal because it offers a better narrative, more social and legal protection, and easier access to regulated supply sources. Alternatively, there is most certainly a population of users that fit our general understanding of what a medical user *should* look like; that is, one who genuinely suffers from an assortment of serious—perhaps even life threating—and ongoing medical conditions that benefit objectively from cannabis treatment. Nevertheless, it is noteworthy that the lion's share of the population uses cannabis for both medical and recreational purposes, exists across a wide range of demographics (including age), and is largely unresponsive to the policies in place. This description certainly encapsulates many of the major findings uncovered in this study.

8.1. Differences and similarities between users

A strength of the data collection method is that it generated an international sample of respondents from a wide age range residing primarily in Canada and the United Kingdom, where the regulatory approaches to cannabis are disparate. Fittingly, the respondents typically reside in Canada (34.5%) or the United Kingdom (58.5%), are male (82.7%), in their early-30s (32.1 years old on average), and make less than $25,000 (CAN) annually. They use cannabis to cope with stress (71.6%) and/or chronic pain (60.5%), although about half also suffer from insomnia (50.8%) and depression (50.5%). The typical respondent consumes cannabis almost daily (5.94 days/week; 62.9% use 28-31 days/month), used about seven grams during the most recent week of use, and smokes—whether as a joint, in a pipe, or in a bong—as the primary method of intake.

Nearly four-fifths (79.2%) first used cannabis for recreational purposes. Their "cannabis careers" began during adolescence (16.5 years old) and remained recreational/non-medical for a decade or more until reaching their mid-20s when they began self-identifying as medical users. Consistent with their age, respondents have now been using cannabis therapeutically for about eight years (median = 5.9 years). Most began using cannabis because their current treatment plan is ineffective (62.3%) and/or because they knew about its medical benefits from previous experience (i.e., anecdotes, 42.2%).

This profile is consistent with the larger body of research that considers medical cannabis users specifically; that is, one of an adult male with (typically extensive) prior recreational experience, who is older than the average recreational users, and is now using cannabis to cope with ongoing pain and/or mental discomfort (e.g., stress, anxiety, or depression). However, as we learned in Chapter 5, this "typical" profile does an inadequate job of capturing the heterogeneity that exists within the user population.

8.1.1. Country-specific attributes

The British and Canadian samples are quite different in several important ways, but, with few exceptions (i.e., PTSD, nausea, and migraines), report similar reasons for using cannabis therapeutically. For example, while the entire sample of respondents is mostly male (which is true of both the Canadian and British samples independently), there is more female representation in the Canadian sample. The British sample is also much younger and makes slightly less annually, suggesting that they are more likely to be young males from a lower socio-economic class, while Canadians are older, of slightly higher economic means, and have slightly more gender diversity.

Both samples began their cannabis careers during adolescence; yet, Canadians began earlier than British respondents and proportionally more were recreational users first (i.e., before the onset of medical use). Fittingly, Canadians also have much more experience using cannabis for recreational/non-medical purposes, but the two samples report a comparable number of years using cannabis for medical purposes. Despite their younger age of onset, Canadians did not self-identify as medical users until four years later than Britons (age 27 vs. 23).

Canadians are also heavier users than their British counterparts. Although the majority of respondents from Canada and the United Kingdom use cannabis daily, Canadians report consuming on more days per week (6.29 vs. 5.83 days/week). Smoking is the most popular method of ingestion regardless of where respondents reside; however, it is noteworthy that Canadians report "vaping" more than British respondents, thus signifying a potential difference in the way cannabis is consumed when other options are available.

8.1.2. Individual-level attributes

There is growing evidence that the profile of cannabis users changes with age and experience (e.g., Ellickson et al., 2004; Kandel & Chen, 2000; Korf et al., 2007; Schulenberg et al., 2005; Windle & Weisner, 2004), but to my knowledge this has not been well-established with samples of self-proclaimed medical users. To explore whether the profile of medical users is marked by similar levels of heterogeneity in their cannabis careers, I used a k-means cluster analysis to partition respondents by their age, age of onset for medical use, previous recreational experience, and experience as a medical user. The results suggest the presence of three types of user-experience that mirror closely the profile of users described above; namely, one group of older users with extensive recreational/non-medical careers before first medical use (i.e., the older-recreational typology), a second population of older users with limited-to-no experience using cannabis prior to first experiencing symptoms (i.e., the older-medical typology), and younger users with limited experience using cannabis for medical and non-medical reasons (i.e., the younger typology). The latter group was by far the largest, representing more than half the sample, and could very well fall into either of the other two categories at a later date—something that is difficult to determine with a cross-sectional design.

The sample of older-recreational users is the second largest (n = 64), mostly male (81%), ranges in age from 25 to 64 years old (mean = 44.5 years), and comprises more Canadians than British (31.4% vs. 19.5%). Older-recreational users have the most experience using cannabis, reporting an average of 22.3 years (range = 0-41.5 years) of recreational/non-medical experience before first using cannabis medically, and nearly all were recreational users before medical users (96.9%). However, they report much shorter "medical careers," equating to about five-and-a-half years of experience. Consistent with having lengthy recreational/non-medical careers, proportionally more older-recreational users report knowing about cannabis's medical benefits before first experiencing their affliction(s), suggesting that prior recreational use may help users transition to medical use after discovering the drug's medicinal qualities in the context of pleasurable use.

Three-fourths of older-recreational users are "daily" users and more than half (57.1%) consumed seven or more grams during the most recent week of use. Of the

three typologies, proportionally fewer older-recreational users report increasing the amount they consume since their first month of medical use (85%), while nearly all the older-medical (97.5%) and younger (95.1%) users have increased the amount they consume.

The sample of older-medical users is the smallest (*n* = 44) and has more British than Canadian representation, but has the same gender (81% are male) and age profile (mean = 44.4 years, range = 32 to 64 years old) as the older-recreational users. The older-medical users have shorter recreational/non-medical careers (mean = 3.7 years, range = 0 to 16 years) than the older-recreational users and more than half began their cannabis careers as recreational/non-medical users (59.1%), but they have significantly longer medical cannabis careers than either the older-recreational or younger user typologies (mean = 22 years).

More than four-fifths of the older-medical users consume cannabis daily (82.5%) and just under half used seven or more grams during the most recent week of use (43.9%); an additional 36.6 percent consumed between three and seven grams and fewer than one-fifth (19.5%) used three grams or less, suggesting that the older-medical users may have the heaviest use patterns of the three typologies.

Finally, the younger user typology is by far the largest (*n* = 156) and youngest (mean = 24.4 years old, range = 15 to 40 years). Like the other two typologies, the gender representation is still almost entirely male (87%). The younger users are more likely to reside in the United Kingdom than Canada (64.7% vs. 30.1%). Younger and older-medical users have a similar amount of recreational/non-medical experience (3.62 and 3.70 years), while younger and older-recreational users have similar experiences using cannabis for medical purposes (4.98 and 5.37 years), suggesting that the younger users have the shortest recreational and medical cannabis careers when compared to the older typologies. Despite having shorter careers, however, more than three-fourths (77.6%) of younger users still report knowing about the medical benefits of cannabis before experiencing their medical symptoms.

The younger users surprisingly report the most moderate patterns of use (see Korf et al., 2007 for contrasting results). Fewer than two-thirds (65.0%) use cannabis daily and more than one-tenth (12.4%) consume monthly. The younger users are also

evenly distributed across the three categories of “recent amount used;” that is, during the most recent week of use, about one-third used three grams or less (31.1%), three to seven grams (36.1%), or more than seven grams (32.6%). However, of the three typologies, only the younger users reported using other illegal drugs during the past six months (14.0% vs. 1.7% and 0.0%), suggesting that their drug use is problematic in other ways (not necessarily by the magnitude of cannabis use).

The medical conditions and symptoms reported by respondents did not vary significantly between user typologies for the most part; however, it is worth noting that both the older-recreational and older-medical users suffer from arthritis, PTSD, and spasticity more than the younger users. Alternatively, more of the younger users report suffering from insomnia, stress, and chronic pain, which may be an indication that they either (1) identify symptoms that are difficult to verify objectively and/or (2) that their reasons for use are more general than geared toward specific medical conditions such as cancer, HIV/AIDS, and multiple sclerosis. Both possibilities seem plausible since the conditions reported by younger users are also popular reasons reported by the older-medical users.

The discrepancy in consumption habits reported by the three types of users also warrants recognition, as the profile that emerged here contrasts that of other studies. Working from both the cannabis career and life-course of drug use research, we should have expected to find the heaviest patterns of use among the younger typology and more moderation in use by the older users, who, because of their social clock, risk facing more stigmatization and have fewer opportunities to use cannabis because it is no longer “age appropriate” behavior (Hathaway, 2004; Korf et al., 2007; Shukla, 2006). The fact that the older typologies report heavier use patterns may, however, be an indication that people using cannabis for symptom relief—as opposed to leisure or hedonism—consume more, more often, to remain comfortable as opposed to chasing a “good time,” which may require consuming less and on a more infrequent basis. It is also very likely that the cultural shift in acceptance for (medical) cannabis use has assuaged many older users’ concerns about social stigmatization, therefore rendering barriers of deterrence ineffective. Moreover, the fact that most of the “younger” users are British could help explain the difference in consumption habits. From this perspective, the lack of formal acceptance for cannabis in the United Kingdom may have deterred younger users from developing heavier patterns of use. If they lived in Canada,

where medical users have fewer concerns about legal repercussion, they may use, possess, and even grow cannabis without the looming fear of arrest. Yet, as Reinarman et al. (2004) found in their comparative analysis of Dutch and American cannabis smokers, differences in regulation may not be as important as cultural forces in shaping patterns of use.

8.2. The importance of being sociable

Users residing in jurisdictions governed by prohibition risk negative encounters with law enforcement and being labeled "deviants" or "criminals." Possible ostracism from unsupportive others and the need to establish reliable ties to (typically social) suppliers makes being sociable in the context of cannabis use all the more salient. Sociable cannabis use is certainly a potent marker among adolescents and experimental users who value cannabis as a "social lubricant" (Chatwin & Porteous, 2013; Frank et al., 2011; Hathaway, 1997); yet, the reasons for remaining well-connected to the "cannabis scene" are not as obvious for medical users who may regard their use as strictly medicinal (not recreational) and/or older users that have pro-social responsibilities pulling them away from the recreational lifestyle.

The fact that the sections of the survey inquiring about respondents' social networks and commitment to cannabis culture/sociability was completed primarily by people from the younger typology is a strong indication that this feature of cannabis use is more important to them. It is, therefore, unsurprising that the typical network described by respondents is a friendship network between males from the United Kingdom. By comparison, the younger user typology reports the highest average number of people in their cannabis network, the most gender homogeneity, the fewest average number of family members, and the highest average number of friends. Fittingly, they also report more recent users in their network and using cannabis with more of them during the past six months (see Table 9); in fact, one of the only statistically significant differences between the three typologies is that the younger users report consuming medical cannabis with more of the recent users positioned in their immediate network. Moreover, younger users report teaching about, selling/gifting, and being sold/gifted medical cannabis by their closest contacts, although these did not amount to a statistically significant difference in the bivariate analysis. Collectively, the results from the network section suggest that the younger users, who also happen to be

primarily from the United Kingdom, are more deeply embedded in cannabis networks, where they actively participate in social use, conversation, and supply with their closest friends, family members, and acquaintances (typically friends).

The cannabis culture/sociability scale provides further evidence that the younger users are, in fact, deeply embedded in the "cannabis scene." I initially constructed a scale using variables loosely indicative of "cannabis culture," including elements of sociability, secrecy, trust, solidarity, and group identity. EFA was used to analyze the data and determine whether the cultural contours characteristics of recreational cannabis use are also particular to medical users. If this were a sample of young recreational users, we should have expected to find a high level of agreement between the measures and higher scores on the scale; however, the fact that we likely have a mix of recreational users identifying as "medical" users and, for lack of a better word, "legitimate" medical users seems to have complicated the results. Results from the "cannabis culture" scale suggest that trust and secrecy are not important elements of the scale—perhaps because cannabis is no longer regarded as a particularly deviant drug—and the fact that nearly all the respondents self-identify as "medical" users (i.e., group identification) ostensibly neutralized the effect of group identification in the model (due to a lack of variability). However, what did come out of the initial analysis was a finding of consistency between measures of sociability.

After running the analysis again with only the sociability variables, the results became much more meaningful. I took this to mean that "cannabis culture," as it is usually described by younger recreational users, is not reflective of the way medical users regard their use of cannabis. Instead, I surmised from these findings that being sociable and engaging in social cannabis use is more important than the other cultural elements described above. This seems fitting given that this user-population is older and has fewer ties to the "cannabis scene" than populations of younger recreational users. Moreover, the fact that the younger user typology is the only one with above-average scores on the sociability scale seems to support the notion that social cannabis use is a unique characteristic of younger user-populations and, consistent with the life-course and cannabis career literature, that older users place less value on being social. Certainly, for these older users, sociable cannabis use may only matter because it, either directly or indirectly, links the user to suppliers; however, as I discuss below, the older-medical users (who are, again, mostly from the United Kingdom) exhibit higher

levels of supply-side autonomy and older-recreational users (who are mostly Canadian) need not rely on other users, because they can procure their cannabis from regulated storefronts (e.g., dispensaries and compassion clubs). Consequently, then, it seems that the younger users are more deeply embedded in the cannabis scene both because of their younger age and reliance on other users for access to a social supply.

8.2.1. Network dynamics and cannabis use, conversation, and supply

In addition to describing their network composition and commitment to sociability, the dissertation explores the network dynamics associated with social cannabis use, conversation, and supply. Specifically, respondents were asked about the five people they feel closest to emotionally in the context of their medical cannabis use. Respondents report the type of relationship they share (i.e., whether a friend, family member, or acquaintance), the frequency of their interaction (i.e., daily, weekly, or monthly), how close they are emotionally (on a 1 to 10 scale), and how long they have had a relationship (i.e., "years known"). The results suggest some important network dynamics that are associated with one's patterns of use.

Respondents do not report the presence of many family members in their network, but those that do also report the strongest and most well-established (in terms of "years known") relationships. Acquaintanceships, on the other hand, are the weakest and shortest in duration. The frequency of interaction with family members is daily for almost half of respondents while only about one-third report daily interaction with friends. Family ties are thus more likely to be associated with daily interaction, while friendships are associated with at least weekly interaction.

Respondents count about three (of a possible five) recent users among their closest relationships—most of whom they have used cannabis with during the past six months. It is common for respondents to teach their closest contacts about medical cannabis; however, far fewer report being taught by others. Yet, there is more reciprocity when it comes to the exchange of cannabis itself: on average, respondents report selling/gifting and being sold/gifted medical cannabis by a similar number of their closest contacts, but when dichotomized, proportionally more respondents buy or receive cannabis as a gift than sell or gift it, suggesting that they tend to disseminate information but receive cannabis.

The frequency of interaction with other users is split between daily (38.5%), weekly (35.0%), and monthly (26.5%); however, when they use together, almost half (43%) interact daily and many others do so on a weekly basis (37%, totaling 80% that interact on at least a weekly basis). The same is true when respondents teach alters about the medical benefits of cannabis, but when they supply/gift cannabis the proportion that reports "daily" interaction increases considerably, suggesting that social supply, more than teaching or consuming cannabis together, is a unique feature of friendships that meet on a regular basis. Interestingly, however, when the question is reversed, neither receiving information about medical cannabis nor receiving medical cannabis itself are associated with more frequent interaction, suggesting, perhaps, that these respondents are more inclined to offer advice and cannabis to people they interact with regularly, but may not require the same level of rapport to be the recipient of either.

Relationships between respondents and user-alters are not stronger or longer lasting than relationships between respondent and alters that do not use cannabis. However, when respondents and alters use cannabis together, the relationships tend to be emotionally stronger but not as well-established (in terms of "years known"). Similarly, teaching about and supplying medical cannabis are associated with a stronger emotional connection and shorter relationship duration, suggesting the presence of stronger, albeit shorter-lived, bonds of attachment between users sharing information and cannabis itself. Relationship longevity, on the other hand, is not associated with teaching others, but may be associated with receiving information, selling/gifting, and being sold/gifted, with all three occurring between shorter lived relationships.

Each of the cannabis-related network variables is significantly associated with one exception (being taught about medical cannabis and selling/gifting medical cannabis). Moreover, the sociability scale is negatively and significantly correlated with the number of family members, but highly and positively correlated with the number of friendships, gender homogeneity, and each of the cannabis-related variables (i.e., the number of user-alters that used cannabis with the respondent, that sold/gifted cannabis to the respondent, and that respondents sold/gifted cannabis to), suggesting a high level of correlation between the sociability scale and composition of cannabis networks. Taken together, then, the network and sociability variables provide compelling evidence that when respondents report belonging to cannabis networks, they are likely to report high levels of sociability and, as measured by social supply, resourcefulness.

8.3. Who encounters barriers?

8.3.1. Legal barriers

About 30 years ago Erickson (1989) argued, based on findings derived from more than 100 interviews, that adult cannabis users learned to live under a system of prohibition in Canada. Legal repercussions were a looming possibility at the time, but many of the users she interviewed were largely unaware of the possible ramifications they would face if found in possession of cannabis and undeterred by the possibility of formal sanctions. Relative to many other countries, cannabis has not been a major priority to Canadian law enforcement over the last several decades. Still, in 2015-2016, just over half of the 96,000 drug offenses reported in Canada were for cannabis possession. In the United Kingdom, the number of cannabis possession offenses reported by law enforcement (114,640) is more than the number of drug offenses in Canada. Given what we know about the two countries' commitment to cannabis prohibition, this finding is telling of the differential risk users face.

Results obtained from this study are certainly consistent with the larger trend in cannabis prohibition and its enforcement depicted by these figures. British respondents report each of the negative encounters with law enforcement proportionally more than Canadians and all but one (arrested for trafficking/cultivation) reaches statistical significance. About one-third (32.7%) of respondents have had a negative encounter with law enforcement since becoming medical cannabis users. This finding is double for British (20.0% vs. 40.8%) and typically reflective of users that have been stopped by law enforcement and had their cannabis confiscated (17.3% in Canada and 30.8% in the United Kingdom), although about half of British respondents reporting a negative encounter were also arrested for possession at some point (19.5%). Very few Canadians report being arrested for possession (3.5%) or trafficking/cultivation (3.6%) and less than one percent were convicted of possession (0.9%) and trafficking/cultivation (0.0%).

The bivariate and multivariate models suggest that respondents' nationality will have the greatest effect on their probability of reporting a negative encounter with law enforcement, but that there are several other possible risk factors that must be taken into consideration. Accordingly, we find that males and heavy uses—both in terms of

frequency and recent amount used—are more likely than females and lighter users to have a negative encounter with law enforcement. The older-medical users report higher odds of an encounter with law enforcement and being arrested for possession and cultivation/trafficking. Younger users, while still lower than the older-medical users, report greater odds of an encounter with law enforcement and being stopped and having their cannabis confiscated than the older-recreational users. Each of these findings is due in larger part to the fact that more older-medical and younger users reside in the United Kingdom, while more of the older-recreational users reside in Canada. Yet, this may not be the only explanation. The greater odds reported by older-medical users is also likely the result of having longer medical cannabis careers and the fact that proportionally more grow a personal supply, which would explain their disproportionate representation among the subsample of respondents that have been arrested for trafficking/cultivation. Younger users, on the other hand, may face greater risks of legal repercussion, especially when residing in the United Kingdom, because they are deeply embedded in the "cannabis scene" (as measured by network composition and sociability scores) and viewed externally as recreational users attempting to camouflage their use as medicinal. Certainly, this would help explain why respondents from the younger typology typically report being stopped by law enforcement and having their cannabis confiscated and, to a lesser degree, being arrested for possession, but not much else.

Respondents also report encountering legal barriers more often when they had a negative encounter with the CJS prior to self-identifying as a medical user; when they buy most of their supply from a dealer, friend, or family member; when they grow any amount of their own supply; and when they report using illicit drugs during the previous six months. Collectively, these risk-based variables demonstrate the salient role risk-taking plays in encountering legal barriers. Certainly, caution and reservation are imperative to avoiding legal barriers under a system of prohibition. People that use cannabis at home and by themselves risk fewer encounters with law enforcement because the act is principally a private one, while people that use cannabis in public settings, supply to peers, and/or grow their own face greater risks because their behavior draws more attention. However, not all risk-factors have the same effect. For example, 30 percent of respondents that buy most of their supply from a dealer, friend or family member have been stopped and had their cannabis confiscated and less than 10 percent have been arrested and convicted of trafficking or cultivation. Alternatively, a

similar proportion of respondents that grow any of their own have been stopped and had their cannabis confiscated, but now more than 10 percent report having been arrested and convicted of trafficking/cultivating (which is significantly higher in the comparative model). This suggests that the way in which users acquire medical cannabis may not determine whether they face legal barriers generally, but being a grower certainly appears to increase the likelihood of being arrested/convicted of more egregious offenses. Using illicit drugs other than cannabis is associated with legal barriers generally, but not the more egregious offenses. In fact, while more than half of illicit drug users have had some encounter with the CJS since becoming medical users (51.6%), the large majority have only been stopped and had their cannabis confiscated (46.4%), while less than five percent have been arrested for trafficking/cultivation and convicted of either possession or trafficking/cultivation. However, this finding is likely accredited to the low representation of illicit drug use (not including cannabis) in the sample and the fact that illicit drug users do not typically report cultivating their own supply.

The significance of legal barriers is further evinced by respondents' biggest concerns and reasons for stopping medical cannabis use. Half (50.4%) feel that the possibility of arrest is currently their biggest concern (which is the most common concern reported by Canadians and Britons); yet, only about half of that population (in both countries) has ever stopped because they feared the possibility of arrest (28.0/55.4% in the United Kingdom and 19.6%/41.7% in Canada). Taken at face value, this suggests that slightly less than half of Britons and slightly more than half of Canadians remain at least marginally concerned about looming legal threats, but that only half of these users are deterred enough to cease use at some point. We cannot extrapolate from these findings how long they stopped using cannabis therapeutically or whether their consumption habits were affected by the possibility of arrest, but we can infer that legal threats are the most pressing concern medical users face in both countries.

8.3.2. Healthcare as a barrier

In addition to investigating the possible legal barriers faced by medical users, the dissertation explored whether respondents benefit from a healthcare system empowering of medical cannabis use. While it appears that this sample of medical users does take their healthcare quite seriously, as evinced by the fact that nearly all (87.1%) have a medical doctor and more than half (57.9%) have informed their doctor

about their use of medical cannabis, the fact that less than half (42.1%) have a doctor willing to support their use of cannabis is a concerning finding that likely points to a potential barrier stemming from policy. The results obtained from a country comparison hint that this may be true. More than half (53.7%) of Canadians feel their physician is supportive of their medical cannabis use, while the same is true for only one-third of Britons (35.6%). Moreover, the fact that a similar proportion of older-medical and older-recreational users report having a supportive physician (ranging from 53 to 55%) is a promising sign that experienced medical users, even under a system of prohibition, are receiving support from their physician. Additionally, the fact that a similar proportion of older-recreational users have a supportive physician is a telling sign of how socially acceptable medical cannabis has become in Canada.

8.3.3. Medical cannabis availability as a barrier and the case for "doing it yourself"

A major objective of cannabis prohibition is to restrict (or eliminate) access to supply sources. Under an alternative regulatory system (e.g., decriminalization, depenalization, medical exception, or full legalization), one of the primary concerns is how to create avenues for some people to access the restricted commodity while reducing spillover to other populations of potential users (e.g., recreational and underage users). Typically, supply sources are artificially restricted by increasing the retail price, therefore making it unaffordable, and reducing (or eliminating) the number of options available to procure the banned commodity. Both appear to affect the medical users canvased in this study. Indeed, just under half (46.5%) have stopped using medical cannabis previously because they could not afford to buy it and just over half (51.6%) stopped because they could not find a supplier. Unsurprisingly, both findings are higher in the United Kingdom than in Canada. More interesting, however, is the proportion of Canadians and British that report the cost of cannabis being their biggest concern currently. Unlike the reasons for stopping, concerns about cost did not differ significantly between the two countries. This is likely due at least in part to the fact that "reasons for stopping" are not mutually exclusive, while the "biggest concern" is; however, it could also be an indication that when users are impeded by access barriers, they develop means of autonomy, such as joining the "cannabis scene" (so they can benefit from "social suppliers") and/or growing their own.

Comparing respondents by their "primary" means of availability shows us that dealers, friends, and family members remain the most popular supply sources, but this is contrasted by the high proportion of Canadians that acquire cannabis intended for medical users specifically. Indeed, this amounted to a corresponding difference in the proportion of Canadians that turn to the medical model and British relying on dealers (presumably "social suppliers") without unduly affecting the proportion that grows its own. This, seemingly, is the most objective manifestation of policy in practice. If a comparable proportion of users choose to grow their own regardless of the policies in place, while the majority continue to buy from illegal (e.g., dealers) or pseudo-legal (e.g., dispensaries) outlets, it seems reasonable to conclude that a government regulated medical model which takes a patient-oriented approach, as is the case in Canada, would serve to displace the number of users that grow their own or turn to the illicit market by redirecting them to regulated storefronts—similar to the distribution of alcohol and tobacco.

The fact that a comparable proportion of respondents from Canada and the United Kingdom grow both as a primary and supplementary method is evidence that policy may not be deterring users that want to grow their own. Instead, policy could help determine which users are likely to grow most (or all) of their supply. I found that nearly two-thirds of growers from the United Kingdom (62.8%) and half from Canada (50%) produce most of their supply while the remainder grows as a supplement. This implies that more users will grow most-to-all of what they consume when other legal options are unavailable. While it is likely that both British and Canadian respondents are motivated by autonomy, this is certainly a greater concern for Britons, who do not benefit from the same options as their Canadian counterparts. Moreover, the fact that one-fourth of medical users grow at least some of their own in both countries is an indication that the proportion of users willing to grow their own is consistent across jurisdictions, regardless of the policies in place. I now turn to a separate discussion of the growers to glean further information about the subpopulation that is arguably the most autonomous group of users.

Growers are older and more experienced than the sample average. Many have lengthy cannabis careers as recreational users before first experiencing their ailments, while others have lengthy careers as medical users and only a few years of recreational experience. Despite representing the lion's share of the sample, the younger and relatively inexperienced users are, likely for these reasons, not well-represented among the population of growers. Additionally, growers are among the heaviest and most frequent users. Weekly consumption was significantly

associated with growing as a primary and supplementary method in the bivariate analyses and the only needs-based measure to predict the odds of being a grower beyond statistical significance in the multivariate models. While the primary growers spend much less on cannabis monthly, they do not appear to be the most resourceful or sociable. This is especially apparent when focusing on the subpopulation that grows most of its supply. These growers score lower on the sociability scale, have fewer close relationships with other users and, similarly, do not use cannabis with as many others; however, they do report talking about medical cannabis with more of their closest acquaintances, friends, and family members than respondents acquiring most of their cannabis by other means.

The entire grower population, by juxtaposition, places more emphasis on sociability than the subgroup that grows most of its supply. The proportion that reports selling or gifting to at least one of their closest acquaintances, friends, or family members doubles from 15.5 to 30.0 percent. Collectively, then, these discrepancies imply that users growing most of their supply see cannabis use and cultivation as solitary, rather than social, activities, while the larger growing population ostensibly places more values on the social aspect. This, it would appear, is an important distinction between user-grower typologies.

It is most likely the case that "primary" growers are older-medical users. People with a long history of using cannabis for medical, rather than recreational, purposes who see both (use and cultivation) as personal, rather than social, matters. This would help explain why proportionally more older-medical users grow most of their supply and fewer rely on dealers, friends, and family members to buy or gift them a supply. By extension, the greater representation of social use and supply by the larger growing population may reasonably be explained by the inclusion of older-recreational and younger users, many of whom value the social aspect of cannabis culture, including "social supply," typically espoused by younger and recreational users.

8.4. Study limitations

There are several limitations of the study that must be acknowledged. These can be categorized as data collection limitations, variable construction and coding, and the changing nature of cannabis use and policy.

The data collection method used for this study has its strengths and weaknesses. Indeed, while I was able to diversify the sample through the use of an online methodology, this appears to have resulted in the targeting of, primarily, younger respondents that use cannabis on a daily basis. This fact makes generalizing the findings to less frequent users speculative at best, because there are clear differences between the type of user that consume on a daily basis and those that consume on a weekly or monthly basis. An online survey design also raises questions about repeat responses (i.e., those who complete the survey multiple times). In theory, respondents could have completed the survey as many times as they want; however, in an effort to deter this practice, we constructed a fairly long survey and did not incentivize participation monetarily or otherwise. The first author examined survey responses for all participants completing the survey in the same month to ensure the demographic and more substantive questions did not have a near identical response pattern, which suggests that repeat responses were not a major concern in this data. Moreover, while we intentionally targeted Canadian and British respondents in the recruitment process, the online survey design ultimately resulted in about seven percent of the sample hailing from a medley of other countries (e.g., the United States and South America). To be sure, we did not take deliberate steps to prevent self-identified medical cannabis users outside of Canada and the United Kingdom from completing the survey; yet, because of their low representation in the final sample, we could do little more than include them under an "other" category in the analysis. Finally, the online survey design has the inevitable limitation of missing data. The final sample size dropped significantly after removing participants with more responses missing than present; yet, even after dropping the sample size, there were still fluctuations in the number of responses to each survey question. I attempted to correct this by using multiple imputations to fill in missing values and by finding creative ways to combine measures (e.g., career typologies and the sociability scale); however, some variables had non-random missingness and could not be imputed (e.g., the network and sociability variables).

The language used in the survey and the way in which some variables were coded should also be acknowledged for their limitations. For example, the survey questionnaire was designed to be country-specific, referring specifically to the unique features of Canada and the United Kingdom. British respondents were asked to report their income and the amount they spent on medical cannabis in pounds, while

Canadians were asked to report a dollar amount. Canadian respondents also had the option to report being a registered user with Health Canada (reflecting the legal status of medical cannabis in that country) and obtaining their cannabis from dispensaries and/or Health Canada, which were not options for British respondents (largely because these are not options in the United Kingdom). This limitation becomes more salient if we consider the seven percent of respondents that did not reside in Canada or the United Kingdom. In these cases, it was necessary to identify an alternative currency and then compute the currency exchange manually, although this was a necessary step to compare British respondents as well. Ultimately, the country-specific language served as limitation in the data coding. Drawing comparisons between respondents' economic standing and spending habits are difficult with different currencies.

Variable coding of the sociability scale, network composition, and needs-based model were also limited. First, the sociability scale did not meet our initial expectation, which was to construct a *cultural* scale. This is largely because the indicators used for the scale were not well-grounded in theory, especially given the population considered here (i.e., a cultural scale may be germane to a sample of young recreational users, but not as relevant to a sample of "medical" users). Second, the network composition is limited in a couple important ways. For one, the network section of the survey was completed by a very specific subgroup of young British respondents, which ultimately required dropping the sample considerably for some analyses and made drawing inferences about network composition of older and Canadian respondents less applicable. Secondly, a proper analysis of network composition requires social structure; that is, analyzing the relationship between respondents and their alters. Due to time constraints, this was not possible; consequently, the analysis of respondents' networks was limited to a descriptive account of "composition," absent any "structural" features. Thirdly, it was difficult to draw accurate comparisons for several needs-based variables because of coding limitations. This is perhaps most evident for the amount consumed and the amount spent on cannabis. As aforementioned, the amount spent on medical cannabis is difficult to compare because "per gram" prices were reported in two different currencies. Determining the amount consumed is also difficult to infer because of dissimilarities in the way cannabis is consumed. Although we did ask about methods of consumption (e.g., in a vaporizer, eating, in tea, or smoking), this amounted to an approximation of consumption. Certainly, people that eat cannabis may have difficulty

recounting the number of grams they consumed, as would people that smoke cannabis in vaporized form. Similarly, it is often difficult to determine the amount of cannabis used in a single joint. There are, for example, cultural differences in the way cannabis is consumed. More Europeans report using *spliffs*, where they combine tobacco and cannabis, while more North Americans report *pure* joints with limited-to-no tobacco mixed with cannabis. Ultimately, we attempted to overcome this limitation by creating an ordinal scale for "amount consumed," but we must acknowledge that this is an approximation that is limited by measurement error.

The last set of limitations concern the changing nature of cannabis use and policy. Cannabis is currently in a state of flux, where domestic approaches to cannabis regulation and tolerance vary from complete prohibition to complete normalization. Many countries fall somewhere in between, with a degree of cultural acceptance of cannabis use, but not necessarily legal acceptance. Certainly, this is the case in Canada, the United States, Uruguay, and many other countries, and less so in places like the United Kingdom. Because the laws and opinions about cannabis use are constantly changing, it is difficult to draw definitive conclusions about the implications of this research. What it does provide is a snapshot of the differences in (medical) cannabis use at a specific time (~January-May 2012). The strength of this approach is the "comparative" design, which made it possible to draw conclusions about similarities in user-profiles and country-specific differences, but it would be a stretch to say that the country-specific comparisons hold as much weight today (compared to when the data was collected in 2012) and in the future. In summary, because of the recruitment and data collection procedures used, generalizations about medical users and policies must be interpreted with caution. Instead of making grandiose claims about the changing nature of (medical) cannabis use and policy, the study is intended as a modest, albeit highly comprehensive, contribution to an ongoing debate about medical cannabis regulation and users.

8.5. Conclusions

In conclusion, there are several important "take home messages" and points for future inquiry that should be acknowledged. Specifically, these include:

Policy issues: Policy is ostensibly "out of sync" with the way many users feel medical cannabis should be regulated, although the Canadian system resembles an approach these respondents would support. Differences in the implication of policy are, moreover, the primary means of distinguishing between the profile of medical cannabis users in this study. Notably, in the United Kingdom, where (medical) cannabis policy is relatively punitive, more users report negative encounters with law enforcement, less acceptance by the medical community, and more supply-side barriers. Given that restricted supply is a purposive goal of prohibition, this may be an encouraging finding; however, it is worth noting that the major distinction in availability is accounted for by Canadians relying on (pseudo-) regulated distribution outlets and the proportion of Britons relying on dealers. Based on the findings reported here, there is little reason to believe that differences in policy are associated with the decision to grow a personal supply, although it could be that prohibition incentivizes some users to grow as a primary (or sole) means of availability. A better approach may be to implement caveats in law that grant patients access to affordable and highly regulated supply sources, therefore reducing barriers to affordable and safe suppliers while also discouraging people from growing most-to-all of their own. A liberalization of cannabis policy would likely reduce the stigmatization of people that already suffer from "layered vulnerabilities" (Hathaway, 2015) and improve their social integration.

Advances in medical cannabis research: Knowledge of cannabis's many medical benefits is hindered by the plant's legal status. This is unfortunate because the list of ailments and medical conditions users report treating with cannabis is burgeoning, typically without being buttressed by the medical community. To be sure, many of the most commonly reported symptoms are ostensibly unverifiable (e.g., pain and stress) and several are not supported by the medical community, while the list of severe—even life-threatening—conditions that the medical community has publicly recognized as benefiting from cannabis treatment is infrequently reported by self-described medical users. By lowering the impediments to research, we would likely improve our understanding of these largely "unaccepted" medical uses and the extent to which cannabis is a better (or worse) alternative to the plethora of medications currently available.

Cannabis careers and the maturation process: A growing body of empirical evidence demonstrates the way drug users change with time and experience. User

typologies can be distinguished by their “reasons” or “motivations” for use and consumption habits. Experimental users represent the lion’s share of user-populations. This group often ceases drug use after a short career, or restricts use to the rare times when it is opportune (e.g., when the drug is made available in social settings). The smaller, albeit more concerning, group of long-term users typically develops heavier patterns of use initially (although not the case here), but then begins a process of tapering off as they age and become more “mature” consumers. This appears to be at least partly the result of changing motivations for use, which shift from recreational and social to isolated and health-promoting. Still, others report drug use while they are young, but then extensive periods of abstinence before returning to the drug later in life. The results from this study suggest three cannabis career trajectories characteristic of medical users, each with unique characteristics. Indeed, the older cannabis users in this study demonstrate more autonomy by growing their own supply, while younger users rely on resourceful “cannabis networks.” Policymakers and social scientists would benefit from learning more about the careers of cannabis users and the role policy plays in shaping their profile. As more countries decriminalize cannabis for medical and/or recreational purposes, understanding the heterogeneity characteristic of cannabis-using populations and the unique features of the maturation process will be even more salient. Certainly, a blanketed approach that treats all users the same led to the current scenario, where medical use is equated with recreational use and the entire cannabis-using population is treated as “criminals” rather than “suffering” patients.

A changing construction of reality: This raises questions about the external construction of drug use. Drug use is a personal decision; however, the nature of drug use is largely shaped by external social forces. People learn about drugs and the proper way to use them from other, more experienced, users (Becker, 193); indeed, it is through their social interactions that users learn about the drug’s standing in the larger social system and the possible barriers they can expect to encounter after being labeled a “deviant drug user.” Athey et al. (2017) and O’Brien (2013) have articulated alternative socialization processes that medical cannabis users undergo, where they learn to use cannabis as a medicine and internalize a new, more socially acceptable, identity as a “patient.” This “medicalization of deviance” (Conrad & Schneider, 1992) is characteristic of the social transformation of cannabis, as evinced by the prototypical way cannabis has been legalized in several of the United States; namely, a transition from

criminalization to legalization of recreational use with the depenalization or decriminalization of medical use serving as the medium. The changing construction of cannabis use is, therefore, both a social and political one. As the science buttressing medical cannabis evolves further and more jurisdictions create caveats in law for medical use, we should expect the discourse surrounding cannabis to change as well.

Further research is needed to understand how the social and political discourses parallel one another and their implications. Foreseeably, if the conversation in political circles centers principally on the harms of recreational use to justify the continued prohibition of cannabis without adequately acknowledging the plant's many medical benefits, governing bodies risk continuing the status quo, where the laws on the books are disconnected from the views of users and, increasingly, the general population. This, of course, would likely cause more people to question the merit of laws currently in place—therefore belittling their deterrent value—and the motivation of policymakers who continue advocating for policies that lack public support and ostensibly contradict the available evidence. A better alternative requires that we listen to people directly affected by these policies and the experts that propose sets of "best practices" so that policy, science, and public opinion begin to mirror one another.

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Appendix.

Survey Questionnaire

Medical Marijuana in British Columbia:

A Survey of Current Users

Your voluntary participation in this survey will make an important contribution to our knowledge of medical marijuana use and its potential benefits. There are no foreseeable risks in participating in this survey. Please be assured that all information collected in the course of this research is completely confidential, and that your identity will remain anonymous. Please do not identify yourself in your answers. By filling out this survey you are consenting to participate in this study.

Dana Larsen, Society Manager and Director of the Vancouver Dispensary Society, has indicated that his organization is willing to participate in this survey. Your refusal to participate, or withdrawal after agreeing to participate, will have no adverse effects on your involvement or membership in the Vancouver Dispensary Society.

All email responses will be exchanged solely through encrypted email, Hushmail (https://www.hushmail.com.)

Hushmail is a secure email service that allows users to transmit emails between each other using a powerful encryption. These emails will be deleted after being sent and received. At the conclusion of the study, the email account at Hushmail will be discontinued – erasing any trace of contact between the researcher and participant.

This survey is undertaken in compliance with the research ethics guidelines as established by Simon Fraser University. All research materials, data, survey data, communications, interview notes, or any other data will be held in confidence by the principal investigator, Neil Boyd, Professor, School of Criminology. Data will be

downloaded and stored in a locked cabinet in the School of Criminology until January 1, 2014. Please note that confidentiality is guaranteed to the full extent permitted by law. The Research Ethics Board of Simon Fraser University also requires that the following statement be added to all research with this guarantee of confidentiality, “Information with respect to child abuse or the threat of physical harm has to be reported to the relevant authorities”.

Medical Marijuana in British Columbia:

A Survey of Current Users

1. What is your gender?

☐	Male	☐	Female

2. What is your current age?

3. What is your ethnicity?

4. What is your annual income?

5. What state or province do you currently live in?

6. When was the first and last time that you used marijuana for recreational or non-medical purposes? Please write down the month and year.

	Year	Month
First time		
Last time		

7. Please select the option that <u>best</u> expresses your opinion on how we should approach cannabis control in Canada.

☐	Status quo - Possession of cannabis should be criminalized
☐	Possession of cannabis should be a civil offence, punishable by fine—not a criminal offense.
☐	Adult possession and cultivation of small amounts of cannabis for personal use should not be penalized in any way
☐	Possession of cannabis should be regulated in a manner similar to alcohol and tobacco, with age and place restrictions
☐	Possession and cultivation of cannabis should be fully legalized and subject to no restrictions (i.e., free market)

8. Have you experienced any of the following <u>prior to</u> becoming a medical user of marijuana? Please check all that apply.

☐	Stopped by the police and marijuana confiscated
☐	Arrested for possession of marijuana
☐	Arrested for cultivation or trafficking in marijuana

☐	Convicted of possession of marijuana
☐	Convicted of cultivation or trafficking in marijuana

9. Have you ever experienced any of the following <u>since you started</u> to use medical marijuana? Please check all that apply.

☐	Stopped by the police and marijuana confiscated
☐	Arrested for possession of marijuana
☐	Arrested for cultivation or trafficking in marijuana
☐	Convicted of possession of marijuana
☐	Convicted of cultivation or trafficking in marijuana

10. When was the first and last time that you used marijuana for medicinal purposes? Please write down the month and year.

	Year	Month
First time		
Last time		

11. When did you hear (not necessarily try) about the possible therapeutic benefits of marijuana as something that could relieve some of the symptoms associated to your health issues ?

Month and Year:	

12. In what form do you most often use cannabis?

☐	Smoked, through a vaporizer	
☐	Smoked, in a joint	
☐	Eaten	
☐	In a tea	
☐	Other means (Please Specify:)	

13. Did you know of the medicinal benefits of marijuana prior to the onset of your medical condition/ symptoms?

☐	Yes	☐	No

14. How did you hear about the therapeutic benefits of marijuana? Please check all the appropriate response or responses.

☐	Physician
☐	Homeopath
☐	Read in Books
☐	Read in Magazines
☐	Friend (user)
☐	Friend (not a user)
☐	Family member (user)

☐	Family member (not a user)	
☐	Other(s) (Please Specify:)	

15. What was your main motivation for incorporating medicinal marijuana into your treatment regime? Please check all the appropriate response or responses.

☐	Ineffectiveness of current prescribed treatments/medications	
☐	Anecdotal accounts of effectiveness of cannabis in treating your ailments/symptoms?	
☐	Cost effective	
☐	Exhausted all other treatment options	
☐	Other(s) (Please Specify:)	

16. Do you have a medical doctor?

☐	Yes	☐	No

17. Have you informed your doctor of your medical use of cannabis?

☐	Yes	☐	No

18. Is your doctor supportive of your medical use of cannabis?

☐	Yes	☐	No

19. For what diseases are you using cannabis as a medicine? If they have been confirmed by a medical professional, check "Yes, diagnosis is confirmed." Please check all that apply.

		Using cannabis for:	Yes, diagnosis is confirmed
Multiple Sclerosis		☐	☐
Arthritis		☐	☐
Depression		☐	☐
Cancer		☐	☐
AIDS		☐	☐
Asthma		☐	☐
Fibromyalgia		☐	☐
Glaucoma		☐	☐
Post Traumatic Stress Disorder		☐	☐
Migraines		☐	☐
Epilepsy		☐	☐
Chronic Fatigue		☐	☐
Insomnia		☐	☐
Other (Please specify:)		☐	☐

20. For what symptoms are you using cannabis as a medicine? Please check all that apply.

☐	Chronic Pain	
☐	Reduced Appetite	
☐	Spasticity	
☐	Nausea	
☐	Stress	
☐	Other (Please Specify:)	

21. How effective do you find cannabis as a medicine, on a five point scale?

Not at all effective **Very Effective**

1	2	3	4	5
☐	☐	☐	☐	☐

22. How many days each week (or month if you are more comfortable answering it that way) do you use cannabis for medical purposes?

Per week	
Or Per month	

23. Think about the first month of your medical marijuana use, how many grams of cannabis did you use, on average, per week?

24. How many grams of medical marijuana did you use last week (or month if you are more comfortable answering it that way)?

Last week	
Or Last month	

25. How much money do you spend per week (or month if you are more comfortable answering it that way) on cannabis?

Last week	
Or Last month	

26. In the past six months, what percentage of the medical cannabis that you have used comes from the following sources?

%	Source:
	A Compassion Club
	I grow my own cannabis
	Bought from dealer(s), friend(s), or family member(s)
	Obtained for free from dealer(s), friend(s), or family member(s)
	Health Canada program

27. If you have ever stopped using marijuana for medical purposes, why did you do so? Please check the appropriate response or responses.

☐	Could not find a supply	
☐	Could not afford to buy it	
☐	I did not like the effects	
☐	I wanted to try an alternative medication or drug	
☐	My friends and family did not support it	
☐	I did not need to use it	
☐	I was concerned that I might be arrested	
☐	Other (Please Specify:)	

28. What is the most important concern that you have about your medical use of cannabis?

☐	None at all	
☐	Medical concerns/health effects	
☐	The possibility of being arrested	
☐	The cost of the cannabis I use	
☐	Other (Please Specify):	

29. Have you applied to Health Canada to become a medical marijuana user through the Medical Marijuana Access Regulations?

☐	Yes	☐	No

30. Are you affiliated with any pro-cannabis organizations?

☐	Yes	☐	No

31. I have tried prescription and/or over the counter drugs as an alternative to medical use of cannabis.

☐	Yes	☐	No

If yes, which prescription drugs have you tried as an alternative to cannabis?

32. I have found cannabis to be:

Much less effective than prescription or over the counter drugs				**Much more effective than prescription or other over the counter drugs**
1	**2**	**3**	**4**	**5**
☐	☐	☐	☐	☐

33. The undesirable side effects of cannabis are:

Much worse than those of other medicines				Much less significant than those of other medicines
1	**2**	**3**	**4**	**5**
☐	☐	☐	☐	☐

34. Have you used any illegal drugs, other than cannabis, in the past month? If yes, please specify which ones.

☐	Yes	☐	No

If yes, which drugs have you used?

35. Please think of the five closest persons that you associate with your use of medical marijuana. In the following section please record each of their initials, or create a fake name that will help you remember who they are, and rank them so "Person 1" is the friend, acquaintance, or family member that is closest to you emotionally (i.e., who you feel the strongest connection to) and "Person 5" is the person furthest from you emotionally.

	Initials (or fake name)
Person 1	
Person 2	
Person 3	
Person 4	
Person 5	

	Is this person a relative, friend, or acquaintance?	Is this person a male or female?	How many years have you known this person?	On a 1-10 scale, how close are you?
Person 1				
Person 2				
Person 3				
Person 4				
Person 5				

	How often do you see or interact with this person? (daily, weekly, monthly?)	Has this person ever taught you about medical marijuana? (Yes/No)	Have you ever taught this person about medical marijuana? (Yes/No)	Has this person used marijuana for medical purposes in the past 6 months? (Yes/No)
Person 1				
Person 2				
Person 3				

Person 4				
Person 5				

	Does this person have a legal right to sell medical marijuana? (Yes/No)	Has this person sold (or given) you medical marijuana in the past 6 months? (Yes/No)	Have you sold (or given) this person medical marijuana in the past 6 months? (Yes/No)	Have you used medical marijuana with this person in the past 6 month? (Yes/No)
Person 1				
Person 2				
Person 3				
Person 4				
Person 5				

36. Indicate whether your friends/acquaintances/family members know one another. Use the following options to respond:

S	Their emotional connection is strong
W	Their emotional connection is weak
DK	They do not know each other
UK	I don't know if they know each other

	Person 2	Person 3	Person 4	Person 5
Person 1 knows:				

	Person 1	Person 3	Person 4	Person 5
Person 2 knows:				

	Person 1	Person 2	Person 4	Person 5
Person 3 knows:				

	Person 1	Person 2	Person 3	Person 5
Person 4 knows:				

	Person 1	Person 2	Person 3	Person 4
Person 5 knows:				

37. How many other medical marijuana users do you know? Please provide a number.

38. How many (exclusively) recreational marijuana users do you know? Please provide a number.

39. Indicate your level of agreement with the following statements:

If you do not hang out with other medicinal marijuana users, select "Does not apply" (DNA).

	Disagree Strongly	Disagree	Not Sure	Agree	Agree Strongly	DNA
1. I usually interact with other medical marijuana users.	☐	☐	☐	☐	☐	☐
2. I usually consume marijuana when interacting with other medicinal users.	☐	☐	☐	☐	☐	☐
3. When consuming marijuana with other medicinal users, I treat the process as a social activity.	☐	☐	☐	☐	☐	☐
4. I feel closer to someone after we consume medical marijuana together.	☐	☐	☐	☐	☐	☐
5. I prefer to talk about my use of medical marijuana with other medicinal users, rather than nonusers.	☐	☐	☐	☐	☐	☐
6. I usually do not consume medical marijuana with other medicinal users unless I trust them.	☐	☐	☐	☐	☐	☐
7. I identify myself as a medical marijuana user.	☐	☐	☐	☐	☐	☐