Cannabis Use and the Effect of a Drug Tolerant Social Environment on
Use Maintenance and Relapse

by

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Dedication

I dedicate this thesis to all those individuals who have been affected by substance use disorders.
Abstract

This study evaluated to what extent five separate factors influenced and possibly triggered a relapse among chronic cannabis users. Eight participants, age 24 to 60, were assessed individually by an interview and questionnaire that measured how they perceived the following factors influenced their latest relapse: a drug tolerant social environment, feelings of anxiety or depression the inability to cope with everyday life stress, understimulation, or aversive symptoms of cannabis withdrawal. The results yielded that most respondents believed that their inability to cope with life stress was a primary influence of their relapse. The study’s outcomes, multilevel challenges, contributions to the field of behavioural psychology, and areas for future research are discussed.
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Chapter I: Introduction

The stages of change model was developed in 1992 by Prochaska and DiClemente to treat individuals living with persistent problem behaviours that they wish to overcome, but experience a lack of motivation to do so. The stages of change involved assigning individuals to the characterized stage that best reflect their readiness to overcome their problem behaviour while providing them with the level of therapy specifically tailored to motivate them towards making positive change. The five stages introduced by Prochaska and DiClemente are precontemplation, contemplation, preparation, action, and maintenance, with an emphasis upon relapse prevention. Due to the proven effectiveness of the approach and its support among empirical reviews, the stages of change model is widely used to treat those living with motivational issues due to a substance use disorders (Miller & Tonigan, 1996). Since, it has become a common approach within the field of addictions treatment for assessing a client’s readiness to change their behaviour (Miller & Rollnick, 2002).

Cannabis is the most commonly-used illicit drug consumed by first-world nations (Maldonado, Berrendero, Ozaita, & Robledo, 2011). This drug is a proven addictive substance due to the unique effect it has on the cannabinoid receptors within the human body’s neural system (Maldonado et al.). Fortunately, North American individuals living with cannabis addiction have become more inclined to seek treatment in recent years (Vandrey & Haney, 2009), which suggests that people are viewing prolonged use of marijuana more seriously than in the past. This new trend of treatment seekers has not only increased the likelihood that those living with cannabis-dependence will overcome their addiction, but has also provided counsellors and researchers with the opportunity to observe, record, and analyze which variables influence an individual’s ability to remain abstinent during and following addictions treatment.

A recent study has indicated that peer involvement has a significant influence in regard to an adolescent’s initial use of cannabis (Mayet, Legleye, Chau, & Falissard, 2010). The authors of this study further stipulated that peers may influence initial cannabis use more so than the use of both alcohol and tobacco. As Health Canada (2010) identified that 25.1% of Canadians age 15 to 24 have consumed marijuana in the past year, it is understood this drug is being used by a significantly large portion of this population. As cannabis use among individuals within this age range has been almost 15% more prevalent than among the average Canadian (Health Canada), it can be postulated that areas populated mainly by young adults (i.e. apartments, student houses, college or university residences) may develop into drug tolerant environments. In such locations, cannabis may be readily available and its use may be often modeled.

As mentioned above, the final stage of change introduces an approach called relapse prevention. Relapse prevention involves therapists providing their clients with the necessary skills and knowledge that will help them remain physically abstinent from the substance they were previously dependent upon (Miller & Rollnick, 2002; Prochaska & DiClemente, 1992). Due to the relatively high prevalence of cannabis use, especially within specific age ranges, it is hypothesized that one’s social environment may be the primary variable influencing cannabis use maintenance and relapse. Provided the hypothesis is verified, these findings would advocate on behalf of a stronger therapeutic focus upon a cannabis user’s social setting and the need for users to establish a positive, drug-free social environment.

In this report, the literature relating to cannabis prevalence, cannabis dependence, the stages of change model, and the variables influencing relapse will be reviewed and analyzed in chapter two. The studies assessed were used to justify this research study as well as to provide guidance as to how to properly identify which variable of relapse are most prevalent among
cannabis users. Chapter three will provide a detailed description of how the study was conducted. The results of this study, including a statistical analysis of the collected data, will be reported in chapter four and an examination of the research study, its hypothesis, and any strength and limitations it may have presented are discussed in chapter five.
Chapter II: Literature Review

Cannabis Prevalence

Cannabis has been identified as the most widely-used illegal drug consumed by individuals throughout the world (Copersino et al., 2010). Additionally, this drug contains medicinal properties that have prompted the decriminalization of legally prescribed marijuana in 15 states in the U.S. (Crean, Crane, & Mason, 2011) as well as throughout all of Canada (Health Canada, 2011). As cited in Copersino et al. (2010), the United Nations Office on Drug and Crime (2008) predicts that as many as 144 million individuals world-wide are frequent or regular users of marijuana—a figure that is over four times the entire population of Canada (Statistics Canada, 2010). Furthermore, as cited in Crean at al. (2011), SAMSHA (2006) found that cannabis use accounted for 16% of admissions to addictions treatment services across the United States. The same study found that the only substance that accounted for a larger rate of admission was alcohol.

Cannabis Dependence

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) acknowledges that long-term, regular use of marijuana can lead to the development of a physical tolerance for this substance (American Psychiatric Association, 2000). Not only does this mean that some chronic users will require higher doses of the drug to attain the desired effect, but the American Psychiatric Association also recognizes that negative physical consequences can also occur if a long-time user decides to promptly discontinue using the substance. These symptoms provide evidence that the frequent use of marijuana can lead to the development of a tolerance for the substance and that quitting the drug could prove difficult for some individuals due to these possible negative side-effects. Cannabis withdrawal could include feelings of “irritability, anger, depression, restlessness, and craving” as well as problems with falling asleep, temperature fluctuation, shakiness, sweating, and outbursts of violence (Arendt, Rosenberg, Foldager, Sher, & Munk-Jorgenson, 2007, p. 461).

Crean at al. (2011) stated that the psychoactive component of cannabis, 9-tetrahydrocannabinol, not only alters feeling and perception but may also have an addictive potential. Whether or not cannabis is truly addictive is still contested within the clinical community (Budney, 2006). A 2007 study used archival research to identify whether a large variety of drugs, cannabis included, had addictive properties (Yucel, Lubman, Solowij, & Brewer). These researchers only reviewed neuropsychological data and the cognitive changes that were the result of prolonged drug-use. They found that cannabis indeed contained addictive potential and that its effects upon an individual could impair their inhibition, memory, and decision planning. These findings were similar to that of Crean at al., who identified cognitive impairment as a prevalent consequence of long-term cannabis use and also drew attention to the relationship between a learning and skill-retention deficit and the difficulty this may pose when an individual is attempting to discontinue drug use.

The Stages of Change Model

Prochaska and DiClemente (1992) developed an innovative approach that was used to categorize clients based on their readiness to make positive changes in their lives. Prochaska,
DiClemente, and Norcross (1992) stated that this method assesses an individual’s perception of their problem behaviour and gauges how likely it is that this individual will stop engaging in this problem behaviour. They further specified that there are five stages of change that represent a continuum ranging from a lack of interest in modifying one’s problem behaviour to a complete readiness to discontinue engaging in this particular behaviour.

Prochaska and DiClemente identified individuals within the first stage of change as ‘precontemplators’ (1992). According to the authors, these individuals do not regard their negative behaviour as problematic and have no intention of discontinuing to engage in this behaviour. Prochaska et al. (1992) stated that the people within the precontemplator’s social network, such as their family or friends, often recognize the problem behaviour prior to the individual. An efficient way of identifying a person as a precontemplator is to “…ask whether the individual is seriously intending to change the problem behaviour in the near future…” (Prochaska et al., p. 1103).

A ‘contemplator’ is an individual who has identified that their behaviour is problematic but who are not prepared or motivated enough to stop (Prochaska et al., 1992). The authors stated that an individual in this stage wishes to overcome of their own problem behaviour but can often remain unmotivated to do so for long periods of time. This differs from the ‘preparation’ stage, where the individual makes small, noticeable changes that directly relate to overcoming their problem behaviour (Prochaska & DiClemente, 1992). Prochaska et al. (1992), who focused their study upon what motivates substance users to become abstinent, identified intentionally decreasing one’s daily intake of a drug or systematically increasing the duration of time between drug using as indicators that an individual may be in the preparation stage of change.

Prochaska and DiClemente (1992) explain that individuals within the ‘action’ stage of change are making overt, positive changes and are effectively decreasing or outright abstaining from engaging in their problem behaviour. It is noted by Prochaska et al. (1992) that an individual is most likely to make progressive changes when in the action stage. These authors also warn that this stage is often mistakenly viewed by both clients and clinicians as the successful completion of having undergone behavioural modification. However, there is an additional stage that aims to ensure that an individual does not regress into former patterns of behaviours; this is known as ‘maintenance’ (Prochaska and DiClemente). Prochaska and DiClemente describe a regression into past behaviours as a ‘relapse’. Although it is the goal of the stages of change model to avoid a relapse, it is emphasized that relapse is a natural occurrence throughout the process of overcoming problematic behaviour and that it should be treated as a learning process among clients (Van Wormer & Davis, 2008).

Relapse Prevention and Symptoms of Withdrawal

According to Weinstein et al. (2010), the majority of treatment seeking individuals living with cannabis dependence found that their attempts to discontinue using cannabis were often extremely challenging. The authors of this study noted that the withdrawal symptoms that occur when a chronic marijuana user discontinues consuming the drug do so throughout the first week following their period of abstinence and diminish by the end of week two. Due to this finding, the authors believe that the first two weeks following abstinence is an especially difficult period for cannabis abstainers and that the likelihood of relapse is significantly elevated during this time.

Weinstein et al. (2010) sought to prolong relapse prevention among 26 long-term cannabis users by using cognitive-behaviour therapy (CBT) over a period of 12 months directly following abstinence. Firstly, the researchers initiated this study because relapse among cannabis
dependent individuals could occur because the users initially consumed the drug to lower the symptoms of anxiety or depression, and cognitive-behaviour therapy is proven to be an effective treatment for the symptoms of both disorders (Bieling, McCabe, & Antony, 2006). Secondly, the symptoms of cannabis withdrawal were noted by the authors to be very similar to the subclinical symptoms of depression and anxiety, such as feelings of nervousness, a pessimistic mood, a lack of appetite, and irritability. Budney, Vandrey, Hughes, Thostenson, and Bursac (2008), who also studied the symptoms of cannabis withdrawal, had similar discoveries but also included weight loss and sleep difficulties among their results. Weinstein et al. (2010) found that cognitive-behaviour therapy was an effective treatment for a number of cannabis users who remained in the study. The authors reported that 42% of participants who underwent the entire treatment of relapse prevention were proven by urinalysis to still be abstinent upon their six-month follow up. Unfortunately, the authors of the study also reported that half of their participants chose to discontinue attending the therapy sessions throughout the 12-week process. Budney et al. (2008) considered whether the symptoms caused by cannabis withdrawal increased the likelihood that an abstinent individual would relapse into use. The researchers compared severity and variety of withdrawal symptoms and the rate of relapse among cannabis and tobacco abstainers. Although they found that craving one’s substance of choice was slightly elevated among former tobacco users, the authors stated that both groups strongly believed that the withdrawal symptoms prompted their relapse into use. Although the findings of this research are substantial, the same study also reported that withdrawal symptoms among cannabis users began after 24 hours of not using and lasted a maximum of 2 weeks. This means that withdrawal symptoms can only be a factor relating to relapse for approximately the first two weeks of abstinence, thus suggesting that there are certainly additional variables that affect cannabis relapse following abstinence lasting longer than two weeks. Also, like feelings of anxiety and depression, there is still controversy of whether or not withdrawal symptoms negatively affect relapse among cannabis users at all. A study by Arendt, Rosenberg, Foldager, Sher, and Jorgensen (2007) found that former cannabis users did not feel that symptoms of cannabis withdrawal prompted continued use of the substance following abstinence.

Relapse Prevention and Depression/Anxiety

A study by Haney et al. (2010) conducted research where they administered doses of a GABA(B) receptor agonist, baclofen, or an antidepressant, mirtazapine, to participants who were also consuming marijuana. The authors randomized the administration of either the GABA receptor or the antidepressant as well as what dose of cannabis the participants would receive. Haney et al. (2010) also formed a placebo phase of the trial where the participants consumed simulated marijuana for a period of three days, which was directly followed by four days of active marijuana use. The researchers intended to use these phases to simulate quitting the use of marijuana and the relapse that could follow. The authors of this study found that those who had received the GABA receptor baclofen had a decrease in craving but were not affected in terms of their negative mood, such as feelings irritability or anxiousness, when not consuming active marijuana. The authors also found that the participants were no more likely to prevent relapse when administered baclofen. The authors further noted that the participants who received the antidepressant mirtazapine instead reported an increase in quality sleep and appetite. Unfortunately, the study found that this drug also had no effect upon a cannabis user’s likelihood to relapse.
Haney et al. (2010) concluded that both baclofen and mirtazapine were ineffective when used to prolong relapse prevention among cannabis users. The researchers also noted that the symptoms of withdrawal were not properly managed by either medication. As Weinstein et al. (2010) believed that cannabis withdrawal manifested in the form of subclinical symptoms of depression and anxiety such as feelings of irritability, anxiousness, and pessimism, it would be expected that either baclofen or mirtazapine would have a positive effect upon an individual undergoing cannabis withdrawal. This is due to the fact that both baclofen can be used to treat anxiety and mirtazapine is marketed as an antidepressant (Haney et al.).

As the researcher of this report hopes to do, a number of studies have sought to uncover which variables increase the likelihood that an individual will relapse into continued use of marijuana. As mentioned above, Weinstein et al. (2010) used cognitive-behaviour therapy (CBT) to treat the subclinical symptoms of depression and anxiety that they believed most long-term cannabis users lived with. Although this study showed that CBT could decrease the likelihood of relapse for slightly less than half of their participants, further studies analyzing this finding would be beneficial for two reasons. Firstly, this study had a large dropout rate which resulted in half of the participants not completing treatment and therefore excluding them from post-treatment follow-up. The second reason for including feelings of anxiety and depression as possible variables of relapse in further studies is due to the findings of Haney et al. (2010), who found no decrease in the rates of relapse among cannabis users who were given one of two medications, one to treat anxiety and the other to treat depression. The reason for the discrepancy in results between the two studies may be found in the method of the research. In other words, the decrease in relapse rates among those individuals who received CBT may be due to the possibility that medications alone have less of an effect upon feelings of anxiety or depression than a structured therapy. The varying results between the studies may also be explained by the lack of a role anxiety and depression may play when considering variables of cannabis relapse.

Relapse Prevention and Understimulation

Schaub, Fanghaenel, and Stohler (2008) measured whether an individuals with a history of illicit drug use were more likely to consume marijuana when they were feeling bored. The sample of the study consisted of individuals who were diagnosed with schizophrenia and a history of marijuana use. These participants were compared to a control group of individuals who were also former cannabis users but who had no mental diagnosis. The researchers found that all individuals were more likely to consume marijuana when feeling understimulated but found that a concurrent mental diagnosis such as schizophrenia increased the likelihood of drug use.

Research collected from a study published in 1980 was evaluated to determine whether distinctive personality traits existed among individuals who chose to consume marijuana (Eisenman, Grossman & Goldstein). The authors of this study conducted this research by assessing a large sample of college students who self-reported use of cannabis. The results of the study concluded that the majority of participants had an elevated internal motivation to seek unique, entertaining experiences. Although these findings do not directly pertain to continued marijuana use because of boredom, they do suggest that individuals who use marijuana have a low threshold for understimulating experiences. Furthermore, neither the research conducted by Schaub, Fanghaenel, and Stohler (2008) or Eisenman, Grossman and Goldstein (1980) evaluated how feelings of boredom affect cannabis relapse but instead assessed how this factor may influence continued marijuana use. As the authors suggested that understimulation could
influence an individual’s motivation to consume marijuana, this variable may also be a relevant factor affecting a user’s return to cannabis consumption following a period of abstinence.

**Relapse Prevention and Coping**

Willis, Sandy, Yaeger, Cleary, and Shinar (2001) asked a large sample of young adolescents to evaluate a correlation between substance use and behavioural coping. The authors initially assessed the sample population while they were in grade seven and found that only one percent of their participants engaged in substance use as a way to cope with life stress. After a two year follow-up while the sampled individuals were in grade nine, the authors found that this proportion of the population had risen from one to ten percent. They also noted that the areas of stress that most often prompted drug use as a coping mechanism were when the participants were experiencing feelings of anger, hopelessness, or peer pressure. Willis et al. further suggested that the feeling of relief experienced by participants who used drugs as a coping mechanism were more intense if the stress-provoking variable was also severe. Although the study only assessed young adolescents, the authors proposed that individuals may resort to drug use as a behavioural coping strategy and that this method is positively reinforced due to the greater feeling of relief drug use elicits if the stress-provoking variable is more intense. Furthermore, the authors suggest that this coping mechanism could be adopted at a young age and therefore could hinder the likelihood that these individuals would learn alternative strategies to cope with life stress. The substances evaluated in this study were tobacco, alcohol, and marijuana.

Schindler, Thomasius, Petersen, and Sack (2009) stated that cannabis naturally has “deactivating, relaxing, and sedating effects” (p. 312). These authors also report that the psychoactive effects of this drug cause a relief from dysphoria and a general feeling of contentment. Based on these findings, it can be suggested that marijuana could be deemed an ideal substance to relieve negative feelings caused by life stress and adverse emotions among populations more susceptible to substance use. Much like the results found by Willis et al. (2001), the substance use may also be positively reinforced due to its fast-acting and relatively simple remedy for negative feelings. The authors of another study has found that marijuana is perceived by regular users to be so effective in relieving uncomfortable and aversive emotions that it has even been adopted as a nonconventional and self-administered treatment for and by those living with post-traumatic stress disorder (Bonn-Miller, Vujanovic, Feldner, Bernstein, & Zvolensky, 2007).

**Relapse Prevention and the Social Environment**

A study performed by Stephens, Roffman, and Simpson (1994) sought to test the effectiveness of the relapse prevention model and its effectiveness with adult marijuana users specifically. They accomplished this by assigning their participants to one of two treatments: Relapse prevention or social support group. The researchers offered half of their participants a group intervention that emphasized avoiding relapse and taught skills that were meant to assist the former cannabis users with remaining abstinent. The other half of participants were assigned to group settings where the treatment was less structured and focused more upon widening one’s social network and increasing their feelings of social support (Stephens et al.).

The relapse prevention groups met for ten two-hour sessions over the course of twelve weeks and were facilitated by one PhD- and one Masters-level therapist. The researchers stated that the relapse prevention treatment was conducted with a cognitive-behavioural approach to
decrease the likelihood that the participants would relapse into cannabis use. The relapse prevention treatment included studying from a therapist manual having to do with skills to avoid relapse and rehearsing scenarios as a group to provide the clients with practice when faced with difficult situations that threaten their abstinence (Stephens et al., 1994).

The social support groups in this study consisted of a semi-structured approach that included a therapist manual with a focus upon expanding one’s social network and seeking social support from positive individuals (Stephens et al., 1994). The researchers emphasized that the therapists facilitating the social supports groups were not familiar with the relapse prevention approach and that no advice or training in either behavioural or cognitive techniques was imparted throughout any of the sessions. Upon the completion of both group therapies and following an analysis of the collected data, a significant decrease in cannabis use and relapse among both treatment groups was found. The authors of the study also found very little differences in treatment outcomes between the groups, thus implying that establishing positive, drug-free social supports and understanding the behavioural and cognitive strategies that often assist in the avoidance of relapse are all helpful when attempting to overcome cannabis dependence.

Sadava and Forsyth (1977) focused their research regarding cannabis relapse upon social factors such as a user’s personality, their level of social functioning, and their perceived social networks. The authors hypothesized that social factors were the primary variables affecting relapse among cannabis users. They defined a drug-tolerant social environment as something that includes, “social support for [cannabis] use (models, reinforcement), absence of social sanctions against [cannabis] use by significant individuals and groups, [and] availability of drugs…” (Sadava & Forsyth, p. 514). These researchers found that if a cannabis-using individual were to change these areas of their social environment to a less drug-tolerant setting with no models of substance use, there was significant evidence that their likelihood to relapse would decrease. Although this study measured a large number of variables and the research pertaining to relapse specifically was slightly diluted due to the authors’ attention to their three working hypotheses, the research suggests that social variables have a significant influence upon the relapse potential of a former cannabis user.

Sadava and Forsyth (1977) also related their research to the study of social learning theory. These researchers believed that their findings assisted their hypothesis that an absence of social sanctions against illicit drug use and the presence of cannabis-consuming models would increase the likelihood that an individual would not only initiate marijuana use, but that these factors could also instigate a former user to continue consuming this substance following an attempt to remain abstinent from it. The authors also noted that those in the continued presence of illicit drug-tolerant individuals, including those who were only exposed to such an environment in their mid- to late-twenties, would adopt a personal framework that was more accepting of the use of said drugs. Additionally, Sadava and Forsyth stated that, “the principle predictor of [a] shift [from marijuana user] to abstinence was that of social isolation from users” (p. 511).

**Summary**

Cannabis use, previously an area severely under-studied and with little empirical data measuring its addictive properties, has risen in awareness these past years (Vandrey & Haney, 2009). Vandrey and Haney (2009) focused on the medicinal properties used to counteract the negative effects of prolonged cannabis use, but had little success in concretely identifying a medication that could reduce the addictive concerns. Another study by Arendt, Rosenberg,
Foldager, Sher, and Munk-Jorgensen (2007) sought to find whether the symptoms of cannabis withdrawal would prompt the former user into their previous habits as this would serve as a method of escape from the undesirable effects of withdrawal. Their results indicated that withdrawal symptoms played a very minimal role, if any. The researchers also found that the majority of studies conducted to assess either substance use relapse or the stages of change model as it relates to addiction services have often focused on the variety of substance use disorders that do not include cannabis dependence.

The findings of Arendt et al. suggest a void in the literature where those living with cannabis-use disorders have had a disproportionately small amount of empirical research devoted to them. This is even more concerning when one considers that cannabis is the most often-used illicit drug in circulation throughout the industrialized world (Maldonado, Berrendero, Ozaita, & Robledo, 2011; Vandrey & Haney, 2009). A further rationale for additional research regarding cannabis use could be due to the possibility that extended and regular use of cannabis may lead to the inhibition of an individual’s cognitive reaction time (Cane, Sharma, & Albery, 2009) as well as the neurochemical influence that cannabis has upon behavioural responses (Maldonado et al., 2011).

The theory that social variables greatly influence cannabis and cannabis dependence is supported by Brown, Glaser, Waxer, and Geis (1974) when they state that the single most important variable relating to relapse prevention is the distancing of one’s self from the presence of drug users. This finding promotes the hypothetical link between a user’s social environment and their continued use of cannabis. Sadava and Forsyth completed a study in 1977 which assessed the connection between a cannabis user’s social variables and their ability to change their drug use. Although this study measured not only the user’s social environment but also their personality, level of risk taking behaviour, and ideology, it found a significant link between social support, drug-using models, and the user’s passage from former user to relapsed user. This information indeed supports the belief that a user’s social context is strongly related to their relapse history but, due to the published dates and focus of both studies, also reiterates a need for up-to-date research with a strong focus upon a smaller number of client variables.
Chapter III: Methodology

Participants

The focus of this research study was to identify which factors have the strongest influence upon a cannabis user’s relapse following an attempt to remain abstinent. A return to the use of a previously-consumed problematic substance while an individual is attempting to remain abstinent is known as a relapse. A total of eight participants who has previously experienced cannabis relapse were selected to take part in this study. These individuals were required to be at least age 18 and had to have attempted to discontinue use of cannabis within the past 12 months. The participants were regular users of marijuana prior to their period of attempted abstinence. This was defined by the researcher as having consumed cannabis at least three days per week for at least eight weeks, regardless of the dose or frequency of use per day. The terms cannabis and marijuana use were applied interchangeably throughout the study and were both classified as the smoking or ingesting of the cannabis sativa plant, hashish, or hash oil. Participant could also partake in the study if they were living with a concurrent mental or substance use disorder, but the focus of their therapy must have been on their use of cannabis at the time of their abstinence attempt.

Individuals were excluded from the study if their attempt to remain abstinent within the last year was also related to their use of substances other than cannabis. Excluding these individuals increased the likelihood that the participant data collected throughout the study was related to marijuana dependence and not another substance. Participants who could not attend the agency in order to sign the consent form or who were also receiving addictions treatment through another agency were also excluded from the study. Participants were also omitted from the study if the symptoms of their concurrent mental disorder were so severe that engaging in the study would negatively affect their therapeutic process.

Agency counsellors referred their clients to take part in this study if they met the inclusion criteria. During a general staff meeting, the researcher announced his intention to perform a research study regarding the variables that influence cannabis relapse. The researcher also provided staff with a verbal description of the study’s inclusion and exclusion criteria for participants. Furthermore, this information was sent to each counsellor’s individual email address. Counsellors would consult with the researcher and if the client matched the participant standards, the researcher would meet individually with him/her to complete the data collection procedure. If participants preferred, they could also have their individual counsellor present when meeting the researcher.

The researcher also introduced the study to selected therapy groups that took place at the agency. The researcher identified the purpose of the study, the participant criteria, and the risks and benefits as they applied to individuals attending these groups. Clients were free to approach the researcher at the end of the group counselling session to book an appointment.

Confidentiality and Informed Consent

This study was approved by the St. Lawrence Research Ethics Board. The researcher developed an informed consent form for the specific purpose of this study (Appendix A). Each participant read the consent form at the beginning of the interview. The information presented in writing was also reviewed verbally by the researcher so that he could guarantee that the participants fully understood the expectation of taking part in the study.
Confidentiality was promised to the participants and they understood that their data would only be accessible to agency staff, the researcher, and the researcher’s college supervisor. The participants were also informed that any personal information by which they could be identified, such as their real name, would be removed from any data collected. A code system was used that correlated a code designed by the researcher with the unique code number used by the agency for each of their clients. This made identifying participants by their research code impossible for any individual who did not have access to the agency computer database or archived files.

The three limits to confidentiality were all clearly specified within the consent form as well as any risks or benefits to taking place in the study. All consent forms were collected and kept within a locked cabinet, originally at the agency and then moved to St. Lawrence College following the completion of the research study. Copies of signed consent forms were placed within the clients’ file so that they could request to review it according to agency protocol.

Design

This study was based upon a nonexperimental and correlational research design. The researcher sought to identify a relationship between two variables by assessing whether cannabis users distinguished a drug tolerant social environment as a factor that caused their relapse into marijuana use. The researcher also included four other possible variables that could instigate relapse and assessed the influence of these factors throughout the study. The hypothesis of this study was that there would be a positive correlation between relapse among cannabis users and participants identifying their social setting as the primary factor that caused said relapse.

Statistical Analysis

Participants completed the Factors of Relapse Questionnaire (Appendix B) where their responses consisted of five numerical scores per respondent. These scores represented the five potential variables of relapse that were assessed via the research questionnaire and each fell between 0 and 12. The mean rating of each category per participant was calculated. Using these mean values, the collective averages of each category for the entire sample could be calculated. This allowed for a descriptive analysis of the data.

A nonparametric statistical analysis procedure was used to evaluate the data collected from the participants because of the small sample size and the fact that this study yielded ordinal data rather than figures measured on an interval or ratio scale. Another reason for the use of a nonparametric statistical method was due to the fact that the study assessed a very specific variable among a given population that could not ensure equal distribution.

The chi square test for goodness of fit was used to assess which potential variables of relapse were identified by the largest proportion of the participant sample as the most influential upon their relapse. For the purpose of this analysis, the highest-rated category for each participant was calculated. If participant rated more than one category equally, each category was recorded.

To perform the chi square equation, logical analysis of the available research pertaining to cannabis relapse was required to hypothetically identify what proportion of the population would classify each category as the primary factor that caused their relapse. These expected frequencies developed the hypothesis that the sample data would be compared to by statistical analysis.

Due to the hypothesis of this study and the prevalence within the research of the theory that one’s social environment triggers substance use, the category representing the social environment would have the highest expected frequency. The literature relating to cannabis
relapse was also widespread when related to the variables of cannabis withdrawal, coping with life stress, and relieving feelings of depression and anxiety. The variable of boredom was not as prevalent within the research and a number of studies evaluated how a feeling of boredom would motivate a frequent marijuana consumer to use this substance but did not measure how this variable affected relapse specifically. Due to logical analysis of the literature relating to cannabis use relapse, the variables of a drug tolerant social environment, withdrawal, coping, depression and anxiety, and understimulation were given the following expected frequencies, respectively: 30, 20, 20, 20, and 10 percent.

The value of this calculation was compared to a second score that represented the null hypothesis. This was also calculated using the chi square equation for goodness of fit but the expected frequencies of each category was equal to one another. The null hypothesis assumed that distribution was equal across all categories and therefore assumed that each variable would account for the relapse of 20% of the sampled participants. The equation that yielded the lower value for the chi square goodness of fit calculation was more statistically relevant in terms of how its expected frequencies related to the collected sample data.

Setting and Materials

Participants were seen at the main office of the community treatment agency for addictions. They met individually with the researcher or were accompanied by their personal counsellors as per the client’s discretion. Data were collected once all parties were seated within a small, lightly-decorated counselling office. Clients were seated in cushioned rocking chairs to ensure comfort and beverages were offered at the beginning of each meeting to develop rapport between the researcher and the participant. For reasons of security, the researcher and any agency staff were always seated in the chairs positioned closest to the office door.

The materials required to complete each interview consisted of a research consent form, the Factors of Relapse Questionnaire developed by the researcher, the separate coding sheet that accompanies the questionnaire (Appendix C), and a client information form (Appendix D). Writing utensils for both the participant and the researcher, as well as paper for note-taking, were also required.

Data Collection Procedure for Interview

The procedure for collecting data during an individual interview was often unstructured due to the personal variables of each individual. General topics discussed with all participants included their current use of marijuana, history of drug use, average consumption of cannabis when using, and perceived ability to overcome their substance dependence. The participant’s approximate stage of change was also recorded as it was perceived by the researcher. Those who participated were also expected to answer direct questions regarding their own perception of why they relapsed. Perceived triggers, life stressors, and the individual’s social context regarding marijuana use were also discussed. All relevant self-report data given by the participants were recorded by the researcher in writing. The information collected during an interview was compared with data collected by the Factors of Relapse Questionnaire to distinguish the consistency in participant responses across assessment procedures.

The researcher also completed a client information form for each participant. This document recorded the client’s code, age, gender, age at first use, and whether they were living with a concurrent mental or substance use disorder, besides cannabis dependence.
Measure and Data Collection Procedure

The researcher created the Factors of Relapse Questionnaire to assess the variables that may influence an individual’s relapse into cannabis use. This questionnaire consisted of fifteen statements that assessed five variables that could cause a relapse into cannabis use: Withdrawal symptoms, anxiety/depression, coping, social environment, and understimulation. These five variables were chosen as the categories to be assessed due to logical analysis of the literature relating to cannabis use relapse. Three questions per factor were randomized throughout the questionnaire. A separate coding sheet allowed the respondent’s data to be categorized into the five potential factors of relapse. The questionnaire also consisted of a sixteenth statement for the participant to indicate a factor relating to their relapse that was not covered by the other fifteen statements.

The questionnaire was the last stage of data collection that participants were expected to complete. The questionnaire could be administered either verbally or in writing in accordance with the participant’s preference. Respondents were asked to rate each of the 15 statements as per their perceived level of influence upon relapse using a 5-point Likert scale. This scale ranged from the statement having little or no relevance to the individual’s relapse (0) to the statement describing a primary variable relating to the individual’s relapse (4). This gave each category a maximum score of 12 and a minimum score of 0.

Elevated responses within the category of withdrawal would indicate that the physical and mental symptoms caused by discontinuing use of cannabis may have prompted the respondent to return to use. If answers were higher within the anxiety/depression classification, this would signify that a concurrent mental issue that manifests in the form of anxiety and/or depression may have caused the individual to use marijuana to relieve these negative feelings. Higher scores found within the coping section of the questionnaire implied that the respondent was using cannabis to alleviate stress from everyday obligations and responsibilities at the time of relapse. Participants who had little opportunity to occupy their time and who had difficulty coping with a lack of activity would likely have greater scores in the category of understimulation. Those individuals who believed that a drug tolerant social setting prompted their relapse would be expected to have had elevated scores within the social environment category.
Chapter IV: Results

A total of seven males and one female took part in this research study. The participant mean age was 44. Six participants reported that they lived with mood and/or anxiety disorders, two reported having no mental diagnoses, and four participants reported no other substance dependencies besides cannabis. The average age of first use of marijuana was 15.5 (age range: 15-24 years).

Table 1

Demographic Information of Participants Collected During Interview

<table>
<thead>
<tr>
<th>Participant (n=8)</th>
<th>Age at Time of Interview</th>
<th>Age at First Use</th>
<th>Stage of Change Perceived by Researcher</th>
<th>Diagnosis</th>
<th>Substances Used in Past Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30</td>
<td>15</td>
<td>Precontemplation</td>
<td>General anxiety disorder</td>
<td>Marijuana</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
<td>15</td>
<td>Contemplation</td>
<td>Bipolar disorder, PTSD</td>
<td>Marijuana</td>
</tr>
<tr>
<td>3</td>
<td>50</td>
<td>13</td>
<td>Action</td>
<td>MDD</td>
<td>Marijuana, Heroin, Amphetamines, Opiates</td>
</tr>
<tr>
<td>4</td>
<td>42</td>
<td>12</td>
<td>Contemplation</td>
<td>MDD, Social anxiety disorder</td>
<td>Marijuana, Methadone</td>
</tr>
<tr>
<td>5</td>
<td>24</td>
<td>14</td>
<td>Preparation</td>
<td>MDD, Generalized anxiety disorder</td>
<td>Marijuana</td>
</tr>
<tr>
<td>6</td>
<td>52</td>
<td>16</td>
<td>Maintenance</td>
<td>None</td>
<td>Marijuana</td>
</tr>
<tr>
<td>7</td>
<td>38</td>
<td>15</td>
<td>Action</td>
<td>None</td>
<td>Marijuana, Alcohol</td>
</tr>
<tr>
<td>8</td>
<td>54</td>
<td>24</td>
<td>Action</td>
<td>MDD</td>
<td>Marijuana</td>
</tr>
</tbody>
</table>

Participant one, male, age 30, consumed marijuana as his only psychoactive substance. He reported having a diagnosis of general anxiety disorder as well as living with symptoms of depression. Upon completion of the Factors of Relapse Questionnaire, this participant most elevated score was for the category that rated the coping with life stress factor. Due to his lack of motivation to change or decrease his current marijuana consumption, this individual was
classified as a precontemplator by the researcher. This participant reported smoking marijuana on a daily basis on an average amount of one gram per day.

Participant two, female, age 60, used cannabis as her only psychoactive substance. She reported having a diagnosis of bipolar disorder and post-traumatic stress disorder. This participant scored highest for the category measuring the coping with life stress factor. This participant was viewed as being in the stage of contemplation in terms of her willingness to lower her use of marijuana and developing a harm reduction strategy. This participant reported smoking an average of two grams of cannabis on a daily basis at the time of the interview.

Participant three, male, age 50, was also an occasional user of heroin, amphetamines, and prescription opiates, but identified cannabis as being the most reoccurring and problematic substance he consumed. He reported having a diagnosis of major depressive disorder and a history of criminal charges. This participant rated two categories as being both equal and primary factors influencing his relapse: an understimulating setting and drug tolerant social environment. He was viewed by the researcher as being in the action stage of change and was abstaining from drugs was a condition of his probation. The participant reported not smoking any marijuana within the last few months at the time of the interview, but stated that he had been use an average of one gram on a daily basis.

Participant four, male, age 42, reported having previous addictions to heroin and amphetamines and therefore was using methadone on a daily basis. He reported having a diagnosis of major depressive disorder and social anxiety disorder. This participant rated the category measuring the understimulating environment factor as the highest. However, the participant stated on a number of occasions throughout the interview that he used to lower his daily stress level and to decrease feelings of anxiety. Furthermore, the two categories that measured both of these areas were among the lowest scores he received. This participant was viewed by the researcher as being in the contemplative stage of change because he was still very uncertain if quitting marijuana use was something he wanted to do. He stated that he was consuming cannabis on average one gram per day on a daily basis.

Participant five, male, age 24, was using only marijuana and stated that he was diagnosed with general anxiety disorder and major depressive disorder. He also said that he used marijuana on a daily basis to lower the severity his symptoms.. The participant equally rated three categories as being the most influential upon his relapse: symptoms of withdrawal, symptoms of anxiety and / or depression, and coping with life stress. He was viewed by the researcher as being within the preparation stage of change as he was planning to slowly decrease his marijuana consumption over the future weeks for health purposes. He also reported having just received a prescription for antidepressant medication so that he could rely less upon cannabis to manage the symptoms of his mental disorders. At the time of the interview, this participant reported smoking marijuana on a daily basis in an amount of one gram.

Participant six, male, age 52, was using only marijuana and had no mental diagnosis. He received the minimal rating possible in all five categories measured by the Factors of Relapse Questionnaire as he felt that none of the five measured variables influenced his relapse. He stated that his reason for using marijuana after his period of abstinence was that he hoped to test his personal sense of control. He stated that he did this by trying a marijuana cigarette to see what effect it would have on him and that this had introduced an overwhelming sense of guilt. He was viewed by the researcher as being in the maintenance stage of change as he had effectively abstained from marijuana for a number of months with only a single lapse that further motivated him to make positive changes. He reported no marijuana use at the time of the interview but stated that he had been using less than half a gram on a daily basis.

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Participant seven, male, age 38, was a previous user of cannabis and alcohol. Although he reported that alcohol use was likely the most overtly destructive substance he consumed, he stated that marijuana use was more prevalent, more financially impacting, and led to more social withdrawal. The participant reported having symptoms of anxiety after long-term use of marijuana and that the feelings increased in intensity after using. He had no official diagnoses and his highest score was for the category measuring a drug tolerant social environment. He was considered by the researcher as being within the action stage of change because he had successfully abstained from alcohol and marijuana for over five months with only a single lapse. Like participant six, this individual’s lapse from abstinence served as a deterrent that motivated continued positive behaviour change. When consuming marijuana, participant seven reported smoking between one and two grams on a daily basis.

Participant eight, male, age 54, used only marijuana at the time of the interview. He reported having a diagnosis of major depressive disorder. This participant’s highest rated category represented an understimulating environment. He was perceived by the researcher as just entering the action stage of change as he had just begun to abstain from marijuana use recently. The participant reported smoking an average of four grams per day on a daily basis.

As perceived by the researcher, the sampled individuals consisted of three participants in the action stage of change, two participants who were contemplating a positive change to their drug using behaviour, and one participant in each of the precontemplating, preparing, and maintaining stages. Half of the sampled participants were perceived to be regular marijuana users at the time of their interview while the other half were effectively abstaining from cannabis use.

The average daily consumption of marijuana by the sampled participants was roughly one and a half grams per day. Interestingly, all participants reported that their preferred method of cannabis consumption was via marijuana cigarettes, with only one client mentioning occasional use of a water pipe as well. Of the six participants who reported living with a mood and / or anxiety disorder, only one individual reported via the Factors of Relapse Questionnaire that they continued to use marijuana as a significant way to cope with symptoms of these disorders.

In summary, the category representing the influence of coping with life stress as a factor that causes cannabis relapse was selected by three participants as being the most influential of the five categories. The category measuring an inability to cope with boredom was also deemed the most influential by three participants. A drug tolerant social environment was rated the highest by two individuals and the categories that gauged coping with anxiety or depression and relieving symptoms of cannabis withdrawal were given the highest rating by one participant each. A table representing the raw score that each participant gave for each question on the Factors of Relapse Questionnaire was compiled (Appendix E).

The Factors of Relapse Questionnaire asked respondents to rate each of the 15 statements as per their perceived level of influence upon relapse using a 5-point Likert scale. This scale ranged from the statement having little or no relevance to the individual’s relapse (0) to the statement describing a primary variable relating to the individual’s relapse (4). This gave each category a maximum score of 12 and a minimum score of 0.
Table 2

*Combined Total Scores for All Participant Responses on the Factors of Relapse Questionnaire*

<table>
<thead>
<tr>
<th>Participant (n=8)</th>
<th>Withdrawal</th>
<th>Anxiety/Depression</th>
<th>Understimulation</th>
<th>Social Environment</th>
<th>Coping</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>7</td>
<td>6</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

Another table was constructed to display the average scores given by all participants to each category and the overall mean scores as they relate to the five-point Likert scale used by the assessment tool.

Table 3

*Mean Scores for All Participant Responses on the Factors of Relapse Questionnaire*

<table>
<thead>
<tr>
<th>Participant (n=8)</th>
<th>Withdrawal</th>
<th>Anxiety/Depression</th>
<th>Understimulation</th>
<th>Social Environment</th>
<th>Coping</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.67</td>
<td>2.67</td>
<td>1.33</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2.33</td>
<td>2</td>
<td>2.67</td>
<td>3.67</td>
</tr>
<tr>
<td>3</td>
<td>2.67</td>
<td>2.67</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>1.67</td>
<td>1.67</td>
<td>3.33</td>
<td>2.33</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>2.67</td>
<td>2.67</td>
<td>0</td>
<td>0</td>
<td>2.67</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>1.67</td>
<td>0.67</td>
<td>2</td>
<td>1.33</td>
</tr>
<tr>
<td>8</td>
<td>2.67</td>
<td>2.67</td>
<td>3</td>
<td>2.67</td>
<td>2.33</td>
</tr>
</tbody>
</table>

Mean 1.79375 2.04375 1.66625 1.58375 2.25

A graph was designed for the purposes of visual analysis of client data and reflects the overall mean scores for each relapse-causing variable. The highest rated category by all participants was coping with life stress and had an average rating of 2.25. This category was also identified via this tool as being the most influential factor upon an individual’s relapse by three participants.
Figure 1: A graph of the combined mean scores of all participants, as displayed in Table 3. The category measuring relapse due to an inability to cope with stress is significantly more elevated than the remaining variables. Social environment, the category hypothesized to have the highest score, yields the lowest average score of all the measured variables.

The next leading category was contested based upon how the data were analyzed. The category that measured anxiety and depression had the second highest mean score, but two other categories had the highest scores based on the number of respondents who identified these factors as being the primary variables that caused their relapse: a drug tolerant social environment and an understimulating lifestyle. The differences in scores based on the method of data analysis occurred due to the questionnaire’s ability to yield equal scores for the measured categories; therefore making it possible for participants to have more than one factor deemed the most influential upon their relapse. More individuals identified drug tolerant social environments and understimulating lifestyles as causing their relapse by rating them the highest overall, but those items on the questionnaire that gauged the possibility that symptoms of anxiety and depression could cause cannabis relapse were given higher scores on average.

A chi square test for goodness of fit was calculated based on expected frequencies derived from logical analysis of the available research relating to cannabis use and relapse. Due to the prevalence of literature regarding cannabis relapse and the influence of social variables, the highest expected frequency was assigned to the category that measured a drug tolerant social environment (30 percent of participants were estimated to identify this category as the most influential factor causing their relapse into cannabis use). As the area of coping with life stress...
had a satisfactory amount of literature relating to cannabis use to include it in this study but had a disproportionately small amount of research in relation to cannabis relapse specifically, this category was assigned the lowest expected frequency (only 10 percent of participants were expected to identify this category as the most significant variable instigating a relapse to cannabis use). The other three categories were each given an expected frequency that fell between the highest expected category for responding and the lowest category (20 percent of participants were estimated to select each of the remaining categories). However, based on the expected frequencies and the respondent data, the chi square equation for goodness of fit yielded a score of 6.856. An ideal score when using a chi square equation is 1, which indicates that the expected frequencies used were exactly proportional to the sample data collected. Based on the expected frequencies derived from logical analysis of the available data, the equation yielded a score that was statistically insignificant. As the expected frequencies were based on the literature reviewed of empirical articles and the hypothesis, these data also refute the predicted outcome of the gathered research and thus the research hypothesis. Based on the findings of the chi square equation it can be stated that the expected frequencies were not proportional to the sample data collected.
Chapter V: Discussion

Study Outcomes

The hypothesis of this study was that a drug tolerant social environment would be selected by the majority of participants as the most primary factor that prompted their previous cannabis relapses. Analysis of the mean scores of all participants for each category refutes the hypothesis of this study as a drug tolerant social environment factor had the lowest overall average of all five measured variables. In addition, the visual analysis of the participant data showed that the highest amount of respondents identified the category with the lowest expected frequency as the most primary factor that instigated their relapse. All these findings strongly suggest that marijuana was most often used by the participants because it was a method of coping with life stress and not because they were simply exposed to the drug and its use within their direct social setting was often modelled.

In terms of the chi square equation for goodness of fit, an ideal score would be 1, which indicates that the expected frequencies used were exactly proportional to the sample data collected. Based on the expected frequencies derived from logical analysis of the available data, the equation yielded a score that was 6.856 and, with a p-value of .05, is therefore statistically insignificant. As the expected frequencies were derived due to the hypothesis and the literature reviewed to research the hypothesis, this data also refutes the predicted research outcome.

Research Outcomes in Context of the Current Literature

The five potential factors that were measured in this study were chosen because of their prevalence within current literature in regards to how they affect and possibly prompt cannabis relapse. Seven out of the eight participants stated that at least one of the five variables were a primary factor that caused their relapse while only one participant felt that none of the five variables explained why he used marijuana following a period of intended abstinence. Furthermore, none of the questions on the Factors of Relapse Questionnaire that measured to what extent the five variables affected participant relapse were given a rating of 0 by every participant, meaning that the definitions used to define the five variables, which were derived from the data presented in modern literature, were relevant to at least some cannabis users in terms of their relapse. In other terms, this study can substantiate the literature that supports that a drug tolerant social environment, withdrawal symptoms, feelings of anxiety/depression, understimulation, or an inability to cope with life stress can negatively influence a person’s likelihood to remain abstinent.

The hypothesis of this research was that a drug tolerant social environment would be the highest-rated of the five measured variables and therefore would be deemed by the participants to be the primary concern of those attempting to remain abstinent from cannabis use. This hypothesis was based upon the available literature regarding marijuana relapse and the compelling arguments made by Brown, Glaser, Wacker, and Geis (1974) and Sadava and Forsyth (1977) in favour of the impact this particular variable had upon cannabis relapse specifically. However, as mentioned above, the drug tolerant social environment did not receive the highest score of the five variables and instead was deemed by participants to be the least influencing of the possible factors. This contradicts the argument made by Brown et al. and Sadava and Forsyth, who stated that a drug tolerant social environment most often influenced an individual’s relapse.
The highest average score among all participants implied that those sampled relapsed more often due to everyday life stressors that they were unable to cope with while abstinent from marijuana. This was suspected to be the category that received the lowest score because, although there was literature available that supported the notion that people continue to use marijuana because of its ability to manage stress (Schindler, Thomasius, Petersen, & Sack, 2009), there was no direct connection made between this variable and marijuana relapse in particular. The remaining three variables—coping with anxiety/depression, inability to manage boredom, and relieving aversive symptoms of withdrawal—had all been correlated with marijuana relapse by previous studies (Weinstein et al., 2010; Schaub, Fanghaenel, & Stohler, 2008; Budney, Vandrey, Hughes, Thostenson, & Bursac, 2008). The results of this study partially supported the findings of these authors but did not reflect the prevalence of particular variables upon cannabis relapse that the combined literature would suggest.

**Strengths**

Having a population sample with diverse lifestyles, social settings, and drug use patterns was a strength of this study. The sample consisted of individuals who were of ages that ranged from 24 to 60 and consisted of both those who used no other substances besides marijuana and others that had previous substance use disorders. The sample also had at least one participant per each stage of change and had equal amounts of respondents who were current marijuana users and those who were former users. The openness of each participant to discuss any facet of their drug use or lifestyle surrounding cannabis consumption was also a benefit to this research as it allowed for findings to be made regarding a number of areas, such as drug using methods, age at first use, average amount of use per day, and perceived stage of change.

**Limitations**

Unfortunately, having such a diverse sample also limited the findings of the study as this provided a larger variety of variables that the research findings could be attributed to. The extent of the research was further limited because the sample only consisted of eight participants. Due to the limited amount of respondents, parametric statistical analyses were not used to evaluate the statistical significance of the collected data. This significantly lowered the extent to which the data could be statistically analyzed and generalized to a larger population.

A larger sample size may also have allowed the study to draw demographic inferences regarding people with cannabis dependence through external generalization of the data. This would have also allowed for a comparison of participant data based on their perceived stage of change so that similarities and differences could be documented. As the sample size was too small, the research only allows inferences to be made in regards to the sample specifically and not the greater population.

The measure used to evaluate which variables influenced participants’ relapse, the Factors of Relapse Questionnaire, also limited the conclusions that could been drawn from participant data because the validity and reliability of this tool still require further assessment. A Cronbach’s Alpha was conducted to measure the reliability of the tool across participants and yielded a score of .867, suggesting that the tool had internal consistency. Unfortunately, the sample was too small to yield a definitive finding. Furthermore, Pearson Correlations were calculated to establish if the categories meant to measure a specific type of relapse variable were consistently reflected in the three questions aimed at measuring each variable. All but two questions were found to have
statistically significant correlations. This implied that the tool lacked internal consistency across items and would benefit from revision and readministration.

**Multilevel Challenges to Service Implementation**

There are a number of challenges that can surface when working with individuals living with an addiction. These challenges increase when these individuals are struggling to abstain from further use of the substance they find addictive.

On the **client level**, many individuals who are attempting to avoid relapse are under an enormous amount of daily stress as they often have to overcome psychological cravings, avoid former associates, attend treatment, and cope with physical symptoms of withdrawal. By the time they enter treatment clients are often of poor health, have little financial security, and are lacking in social support because they have had to distance themselves from other substance users. Negative feelings from the stress caused by a cessation of substance use can cause individuals to relapse so as to relieve aversive emotions and symptoms and there is always a risk that these individuals will discontinue attending therapy if they feel they have inconvenienced their counsellor by not remaining abstinent. It is important to roll with resistance, provide clients with a supportive and non-judgemental atmosphere, and teach clients coping skills so that they can avoid relapse or feel comfortable to continue attending therapy in the case that they do use.

On the **program level**, large proportions of clients who attend the agency are often referred to as precontemplators because of their lack of interest to change their substance use patterns. Due to their opinion regarding substance use, they are often unsuccessful when attempting to discontinue use. It is difficult to convince a client that their marijuana use is negatively affecting them if they view cannabis as a means to relieve aversive feelings and / or as a way to enjoy recreational time. This issue can be challenged by providing knowledgeable psychoeducation regarding the short and long term effects of prolonged cannabis use as well as presenting clients with a clear summary of how their use of marijuana has affected their life to date. These techniques aim to move the client to the stage of change where they are willing to approach their substance use disorder in a constructive and motivated manner. Programs aimed at decreasing a cannabis dependent individual will be far more likely to succeed if the user is aware of the harm the substance is doing to their body and if they have begun the proves along the continuum of change, as per the stages of change model.

Unfortunately, on the **organizational level**, the area of addictions is often overshadowed by the needs of the physical and mental health care clients. As these services all fall under the same provincial ministry, the allocation of resources are split between them. Physical health concerns are often primary concern, mental health is secondary, and the treatment of those with an addiction often is lowest priority. As a result, there are few agencies that offer effective programing for precontemplating individuals regarding their marijuana dependence. With few organizations offering programs to individuals in every stage of change, the likelihood that a person will successfully abstain from marijuana use likely decreases. This issue could benefit from larger degree of public funding as well as increased education among the physical and mental health professionals to effectively recognize clients who are living with substance use disorders and refer them to the proper organization for program treatment planning.

On the **societal level**, the discussion of addictions is still ‘taboo’ among a number of populations. The struggles faced by those with an addiction are often minimized by the public because the initial use of the substance was based on a personal choice. Understanding of psychological and physical dependency is also quite sparse among the general population. It is
possibly due to these views that treatment for an addiction is often only made available after a significant aversive reaction has affected the individual living with a substance use disorder. Relapse is also hard to understand for many individuals who have not been exposed to the field of addictions because many people deem that if an individual wants to cease the use of a substance than all he/she must do is exercise free will and stop using. Clients of addictions agencies would benefit from society being better educated as to how difficult it is to discontinue using a substance that one is mentally and/or physically addicted to.

**Contribution to the Field of Behavioural Psychology**

This study sought to discover if a single, measurable, and observable factor could account for the largest degree of relapses among former cannabis users than any other overt or covert variable. The researcher assessed the literature pertaining to cannabis use, use maintenance, and relapse and isolated five factors that had been identified by previous research as being influential upon the relapse of individuals living with cannabis dependence. Although the research hypothesis was incorrect, this study did imply that the five factors assessed were, at least in part, relevant to continued cannabis use and relapse. This study could be used as the framework for a larger scale research investigation into how these five factors influence relapse and whether one or more of the assessed variables is more likely to prompt relapse among cannabis users than the others.

**Recommendations for Future Research**

Future research should collect data from a larger sample of participants. Also suggested is the use of a ranking system that would force the participants to give a definitive answer as to which factor that triggered their relapse the most.

Performing further validity and reliability tests to evaluate how well and to what extent the Factors of Relapse Questionnaire measured what it intended to would also benefit future research. This would provide credibility to the data collection method used to obtain the majority of participant data that the statistical findings this research is based on. This would provide more accurate conclusions do be drawn from the sampled data.

An area to explore further would be the evaluate the factors measured by this study as if they were less independent of one another and likely influenced or otherwise related to other contending variables. For example, there could be a number of similarities between feelings of anxiety and/or depression and having to deal with everyday life stressors that would influence how an individual living with either depression or anxiety may respond. An alternative direction for future research would be to evaluate how the five factors assessed in this study may influence one another based on the personal variables of the participants.

Another area of this study that would benefit from further research would be to evaluate if the stage of change the participant is in at the time of the interview would influence how they would respond to the questions on the Factors of Relapse Questionnaire. As the stage of change an individual is in strongly influences how they view their substance disorder, this factor may also relate to what they view as a contributing factor of their cannabis relapse. This may be due to differing loci of control and whether the person attributed their relapse to external or internal factors.
References


Schindler, A., Thomasius, R., Petersen, K., & Sack, P. M. (2009). Heroin as an attachment substitute? Differences in attachment representations between opioid, ecstasy, and


Appendix A: Sample Consent Form

CONSENT FORM

TITLE: CANNABIS USE AND THE EFFECT OF A DRUG TOLERANT SOCIAL ENVIRONMENT ON USE MAINTENANCE AND RELAPSE

STUDENT: TYLER HAMIL

COLLEGE SUPERVISOR: MARIE-LINE JOBIN

INVITATION

I am a student in my 4th year in the Behavioural Psychology at St. Lawrence College and I am currently on placement at the [BLANK]. As a part of this placement, I am completing a special project called an applied thesis and am asking for your assistance to complete this project. The information in this form is intended to help you understand my project so that you can decide whether or not you want to participate. Please read the information below carefully and ask all the questions you might have before deciding whether or not to participate.

WHAT IS THE PURPOSE OF THE STUDY?

The purpose of the study is to determine which are the most important factors related to drug-use relapse for cannabis users. The researcher intends to uncover what influences most former cannabis users to begin using again after they have indicated an intention to remain abstinent.

WHAT WILL YOU NEED TO DO IF YOU TAKE PART?

I will meet you for an individual session at the [BLANK] office. The meeting will take approximately 30 minutes. During the meeting, we will discuss your most recent relapse and you will be asked to identify which factors you believed influenced your relapse. You will also be asked to complete a 16-item questionnaire developed by the researcher. Each item on the questionnaire is a statement that outlines a variable that may have influenced your relapse. You will be asked to use a 5-point rating scale to indicate, in your opinion, to what extent the variable being described has affected your relapse. Basic information such as age, gender, and additional substance use disorders or mental illnesses will also be recorded. You are welcome to have your individual counsellor present during this meeting if you wish.
WHAT ARE THE POTENTIAL BENEFITS TO ME OF TAKING PART?

The personal gains of taking part in this study are minimal. A small advantage to participating is the opportunity to explore the variables that effect cannabis relapse in your life. This session may assist you in identifying important triggers for relapse in your environment.

WHAT ARE THE POTENTIAL BENEFITS TO OTHERS OF TAKING PART? (IF APPLICABLE)

This study intends to draw a connection between cannabis relapse and the particular factors that influence it the most. The data collected by participating in this study may, with the assistance of future research, create further insight into the variables guiding marijuana relapse.

WHAT ARE THE POSSIBLE DISADVANTAGES AND RISKS OF TAKING PART?

Disadvantages for agreeing to participate in this study may include feelings of discomfort or anxiety when recalling past relapses.

WHAT HAPPENS IF SOMETHING GOES WRONG?

If throughout the study you feel uncomfortable, you are free to discontinue participating at any time. If recalling a relapse triggers negative feelings and you wish to see someone to discuss these emotions, I will ensure that we schedule you an appointment with one of the agency counsellors.

WILL MY TAKING PART IN THIS PROJECT BE KEPT PRIVATE?

Your personal information will be kept confidential and any information with identifying material will be kept within a locked cabinet for no less than ten years. None of the client’s personal information will be attached to any data that their participation may produce. Files will only be accessible to the researcher and counsellors who work within the agency.

DO YOU HAVE TO TAKE PART?

It is up to you to decide whether or not to take part. If you do decide to take part, you will be asked to sign this consent form. If you do decide to take part, you are still free to withdraw at any time, without giving any reason, and without affecting the services to receive from **********.
CONTACT FOR FURTHER INFORMATION.

This project has been approved by the Research Ethics Board at St. Lawrence College. The project will be developed under the supervision of Marie-Line Jobin, my supervisor from St. Lawrence College, and [name], my agency supervisor at [agency]. I really appreciate your cooperation. If you have any additional questions or concerns, feel free to ask me, Tyler Hamil, or you can contact my College Supervisor, Marie-Line, at mjobin@sl.on.ca, or you may also contact the Research Ethics Board at reb@sl.on.ca.

CONSENT

If you agree to participate in the project, please complete the following form and return it to me as soon as possible. A copy of this signed document will be given to you for your own records. An additional copy of your consent will be retained at the agency and in a secure location with the Behavioural Psychology program at St. Lawrence College.
CONSENT

By signing this form, I agree that:

- The research project has been explained to me.
- All my questions were answered.
- Possible harm and discomforts and possible benefits (if any) of this project have been explained to me.
- I understand that I have the right not to participate and the right to stop at any time.
- I am free now, and in the future, to ask any questions about the research project.
- I have been told that my personal information will be kept confidential.
- I understand that the results of this project may be published or presented in a professional forum.
- I understand that no information that would identify me will be released or printed without asking me first.
- I understand that I will receive a signed copy of this consent form.

Participant/Parent/Guardian Printed Name: ____________________________
Age of Participant (If Under 18): ________________
Signature: _______________________________ Date: ________

SLC Student Signature: ____________________ Date: ________
Printed Name: ____________________________

Witness: ________________________________ Date: ________
Printed Name: ____________________________
Appendix B: Factors of Relapse Questionnaire

This questionnaire seeks to identify which factors have the most influence upon whether a person will relapse into the use of marijuana after making an effort to remain abstinent. Listed below are a number of sentences that each characterizes a single variable that may be a factor relating to relapse for some individuals. Using the 5-point scale provided, please rate each statement as it relates to you. For the sake of this scale, an influence upon your relapse can also be known as a ‘trigger’ for your relapse.

<table>
<thead>
<tr>
<th></th>
<th>0 - This did not have any influence upon my relapse</th>
<th>1 - This may have influenced my relapse</th>
<th>2 - This had a small influence upon my relapse</th>
<th>3 - This had a clear influence upon my relapse</th>
<th>4 - This is one of the most significant influences upon my relapse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. I wanted to relieve the physical symptoms of withdrawal (i.e. loss of appetite, irritability, nausea, etc.).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. I thought it would relieve anxiety I was feeling.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. I was bored.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Seeing others use prompted me to use.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. I needed something to occupy my time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. There was some available where I was living.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. It would help motivate me to complete things I needed to get done.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. I thought I had nothing better to do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. I wanted to relieve feelings of irritability I had since stopping.</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. I thought it would relieve feelings of depression.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11. It would help me deal with everyday problems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12. I needed help sleeping since quitting.

13. I was use to using it to help me cope with stress, and this prompted to me use.

14. Having people in my house/apartment using prompted me to use.

15. I wanted to feel more confident in myself.

16. Other. If so, please describe:

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
Appendix C: Factors of Relapse Questionnaire Coding Sheet

<table>
<thead>
<tr>
<th>Withdrawal</th>
<th>Anxiety/Depression</th>
<th>Understimulation</th>
<th>Social Environment</th>
<th>Coping</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:__</td>
<td>2:__</td>
<td>3.__</td>
<td>4.__</td>
<td>7.__</td>
</tr>
<tr>
<td>9.__</td>
<td>10:__</td>
<td>5.__</td>
<td>6.__</td>
<td>11.__</td>
</tr>
<tr>
<td>12.__</td>
<td>15.__</td>
<td>8.__</td>
<td>14.__</td>
<td>13.__</td>
</tr>
</tbody>
</table>

Withdrawal

High scores for questions 1, 9, and 12 likely signify that the physical symptoms developed by withdrawal from cannabis use were a significant trigger for the participant’s relapse.

Anxiety/Depression

High scores for questions 2, 10, and 15 might indicate the participant’s use of marijuana as a way to decrease symptoms of anxiety or depression.

Understimulation

High scores for questions 3, 5, and 8 suggest that an understimulating environment following abstinence was the potential cause of the participant’s relapse.

Social Environment

High scores for questions 4, 6, and 14 imply that the participant’s social environment was a major factor relating to their relapse.

Coping

High scores for questions 7, 11, and 13 may indicate that a major variable that triggered relapse was likely the respondent’s inability to cope with everyday stress.
Appendix D: Client Information Form

This form contains questions regarding demographic and personal information regarding the client. One of these forms is to be filled out for each client for the purpose of further analysis of the research sample. Please do not include client name or other client-identifying information.

To be filled out by the researcher. Data is to be collected during a one-on-one interview.

<table>
<thead>
<tr>
<th>Client Code: _______________</th>
<th>Age: _____</th>
<th>Gender: _____</th>
<th>Age at First Use: _____</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Diagnosis? Yes / No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Mental Illness? Yes / No</td>
<td>If yes, expand:______________________________</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii) Other Substance Use? Yes / No</td>
<td>If yes, expand:______________________________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E: Table of Participant Raw Scores on the Factors of Relapse Questionnaire

<table>
<thead>
<tr>
<th>Participant (n=8)</th>
<th>Withdrawal</th>
<th>Anxiety/Depression</th>
<th>Understimulation</th>
<th>Social Environment</th>
<th>Coping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question #</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>0</td>
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<tr>
<td>2</td>
<td>0</td>
<td>3</td>
<td>0</td>
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<td>3</td>
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<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
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<tr>
<td>5</td>
<td>1</td>
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<tr>
<td>6</td>
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<tr>
<td>7</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
