CANNABIS USE THROUGH A DEVELOPMENTAL LENS:
PERCEPTIONS OF CANNABIS USE IN EMERGING ADULTHOOD

by

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for the degree of Doctorate of Philosophy
Applied Psychology and Human Development
Ontario Institute for Studies in Education
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Abstract

Rates of cannabis use are highest during emerging adulthood (EA) relative to other age groups, and researchers have found that involvement with substances influences EAs’ perceptions of this time of life. However, there is limited empirical research on how the experience of EA influences perceptions of cannabis use. Using a mixed methods approach, this research examined perceptions of cannabis use in EA and the relationship between cannabis use and critical tasks associated with this developmental period.

In Study One, 182 EAs completed an online survey that examined relationships between the developmental context and cannabis use. Results of multivariate analyses indicated that certain core features of EA were associated with cannabis use problems, but not frequency of cannabis use. Specifically, viewing EA as a time of instability and cannabis use as related to this instability was associated with greater cannabis problems. Non-daily to daily use of cannabis was associated with viewing EA as a time to focus on others – a feature not typically associated with EA.
In **Study Two**, 20 semi-structured interviews were completed in which EAs with current, lived experience using cannabis were interviewed about their conceptualizations of cannabis use and connections between their cannabis use and EA. Cannabis use was described according to whether problems were experienced, reasons for using cannabis, social context, frequency and quantity, and use in combination with other substances. The majority of the sample related their cannabis use to the developmental features of EA; however, they spoke about Arnett’s (2005) features in overlapping ways, rather than as mutually exclusive categories. Participants believed the conditions of EA were conducive to cannabis use, and used cannabis to regulate their EA experience and facilitate self-reflective practices. They also recognized ways in which cannabis use could interfere with their development.

**Conclusions.** In this research, EAs described a breadth of cannabis use experiences, and most viewed their cannabis use as connected in some way to the developmental period of EA. The theoretical implications of these current findings for Arnett’s framework and the clinical implications for assessment, referral, and treatment of cannabis use are discussed.
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# Table of Contents

**Introduction** .......................................................................................................................... 1  
An Introduction to Cannabis Use ......................................................................................... 1  
Position of the Researcher .................................................................................................... 1  
The Politicization of Cannabis Use ....................................................................................... 2  
Cannabis Use During Emerging Adulthood .......................................................................... 4  
What is Emerging Adulthood? ............................................................................................... 6  
The Importance of the Developmental Context for Understanding Substance Use .......... 8  

**Literature Review** .................................................................................................................. 15  
Empirical Research Examining Substance Use in Emerging Adulthood ............................ 15  
Conceptualizing Cannabis Use in Emerging Adulthood .................................................... 20  
Summary and Limitations of the Research to Date ............................................................ 22  

**The Current Research** ........................................................................................................... 26  
Purpose ..................................................................................................................................... 26  
Study One .................................................................................................................................. 26  
Study Two ................................................................................................................................... 27  

**STUDY ONE** ........................................................................................................................... 28  

**Methods** ................................................................................................................................. 28  
Participants ............................................................................................................................... 28  
Demographics .......................................................................................................................... 28  
Procedure ................................................................................................................................. 29  
Measures .................................................................................................................................... 31  
Demographic information ...................................................................................................... 31  
Cannabis use ............................................................................................................................ 31  
Cannabis problems .................................................................................................................. 32  
Views of emerging adulthood ............................................................................................... 32  
Cannabis use and emerging adulthood .................................................................................. 34  

**Results** .................................................................................................................................... 35  
Preliminary Descriptive Analyses ............................................................................................ 35  
Views of emerging adulthood ............................................................................................... 35  
Cannabis-specific views of emerging adulthood ................................................................. 37  
Cannabis use and related problems ....................................................................................... 37  
Missing Data ............................................................................................................................. 38  
Multiple Imputation .................................................................................................................. 40  
Bivariate Analyses – Relationships Between Key Variables of Interest .............................. 40  
Demographics and views of emerging adulthood ............................................................... 40  
Views of emerging adulthood ............................................................................................... 41  
Views of emerging adulthood and cannabis-specific views of emerging adulthood .......... 42
Limitations and Future Directions .................................................... 97
Conclusions .................................................................................................. 98

**Research Summary** ............................................................................. 99
Not all Cannabis Use is the Same ........................................................... 100
Cannabis Use in Emerging Adulthood ................................................... 102
Theoretical and Clinical Implications .................................................. 103
  Theoretical considerations ................................................................. 104
  Clinical considerations .......................................................................... 108
    Access to services and openness to discussing cannabis use ................. 108
    Prevention ........................................................................................... 110
    When cannabis use problems are experienced ..................................... 111
  Conclusion ............................................................................................ 113

**Tables and Figures** ............................................................................. 115 - 127

**References** .......................................................................................... 128 - 143

**Appendices** ......................................................................................... 144 - 218
List of Tables

**STUDY ONE** .................................................................................................................. 115

Tables 1 - 8  Descriptive Statistics for Participants’ Demographic Information of Study One ................................................................. 115 - 118

Table 9  Comparisons of Average Scores Across the IDEA Subscales using the Incomplete Dataset \((n = 142)\) .................. 118

Table 10  Comparisons of Average Scores Across the Specific Views of EA using the Incomplete Dataset ........................................... 119

Table 11  Average Scores Across the IDEA Subscales for Current Study using the Incomplete Dataset, Smith et al. (2014) and Reifman et al. (2007) Sample .................................................. 119

Table 12  Descriptive Statistics for Past Month Cannabis Use .......... 120

Table 13  Frequencies of Different Methods of Administration and Strains of Cannabis Used, and Mixing Cannabis with Tobacco, in the Past Month ................................................................. 121

Table 14  Missing Values Analysis for Key Variables of Interest \((N = 182)\) .......................................................................................................................... 122

Table 15  Bivariate Correlations Between Age, Gender, Frequency and Problem Cannabis Use (Imputed and Transformed Variables), IDEA Subscales, Specific Views of EA, and Cannabis-specific Views of EA using the Imputed – Pooled Data \((N = 182)\) ................................................................. 123

Table 16  Variable Table of the Binary Logistic Regression Analysis Examining the Predictive Ability of the IDEA Subscales, Specific Views of EA, and Cannabis-specific Views of EA on Frequency of Cannabis Use Group using the Imputed – Pooled Data \((N = 182)\) .......................................................................................................................... 124

Table 17  Model Summary Table of the Binary Logistic Regression Analysis Examining the Predictive Ability of the IDEA Subscales, Specific Views of EA, and Cannabis-specific Views of EA on Frequency of Cannabis Use Group, using the Incomplete \((n = 142)\) and Imputed - Pooled \((N = 182)\) Data .......................................................................................................................... 124
List of Figures

STUDY ONE ................................................................................................................. 118

Figure 1  Percent of participants who agreed that they were an EA ($n = 148$) .. 118

Figure 2  Frequency of cannabis use in the past month ($n = 157$) ....................... 120

Figure 3  Portion of the day spent using cannabis in the past month
($n = 154$) ............................................................................................................ 120
List of Appendices

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Study One – Recruitment Advertisement</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Study One – Recruitment Advertisement</td>
<td>144</td>
</tr>
<tr>
<td>B</td>
<td>Study One – Study Information Sheet and Informed Consent</td>
<td>145</td>
</tr>
<tr>
<td>C</td>
<td>Study One – Online Survey</td>
<td>150</td>
</tr>
<tr>
<td>D</td>
<td>Study One – Optional Email Entry</td>
<td>187</td>
</tr>
<tr>
<td>E</td>
<td>Study One – Share, Resource Sheet and Clear History</td>
<td>188</td>
</tr>
<tr>
<td>F</td>
<td>Correlation Matrices</td>
<td>191</td>
</tr>
<tr>
<td>G</td>
<td>Statistics for Checking the Assumption of Normality in Frequency of Cannabis Use</td>
<td>194</td>
</tr>
<tr>
<td>H</td>
<td>Descriptive Statistics and Past Month Cannabis Use According to Frequency of Cannabis Use Group Split using the Incomplete Dataset of Study One</td>
<td>197</td>
</tr>
<tr>
<td>I</td>
<td>Statistics for Checking the Assumption of Normality in Cannabis Use Problems</td>
<td>201</td>
</tr>
<tr>
<td>J</td>
<td>Study Two – Recruitment Advertisement</td>
<td>204</td>
</tr>
<tr>
<td>K</td>
<td>Study Two – Telephone Screen</td>
<td>205</td>
</tr>
<tr>
<td>L</td>
<td>Study Two – Study Information Sheet, Informed Consent and Resource Sheet</td>
<td>207</td>
</tr>
<tr>
<td>M</td>
<td>Study Two – Semi-structured Interview</td>
<td>214</td>
</tr>
</tbody>
</table>
Introduction

An Introduction to Cannabis Use

Cannabis has been at the centre of a politically charged debate for several decades, long before it became a divisive issue in the 2015 federal election. Since the majority Liberal party announced their support for the legalization of cannabis, there has been increasing urgency to better understand the potential risks and benefits of cannabis use. A number of researchers and members of the public, in particular individuals with lived experience, pointed out significant discrepancies between the past classification of cannabis as an illicit substance and the perception that cannabis use is ‘safe’ for most people. Now that recreational cannabis use has been legalized, the public continues to have questions about the impact of its use. Researchers have an important opportunity to aid in the development of safe use guidelines, as well as prevention and intervention programs and policy guidelines that reduce cannabis-related harms. An overarching aim of the current research is to assist with these endeavours by contributing to the empirical research in this area. Specifically, this research focuses on perceptions of cannabis use and cannabis problems among emerging adults (EAs; i.e., individuals ages 18-29), who are more likely to use cannabis than any other age group. This research considers the developmental context as critical to understanding cannabis use during this period of life and explored ways in which this transitional period – which bridges adolescence and adulthood – shapes perceptions and patterns of cannabis use.

Position of the Researcher

Following the lead of the Centre for Addiction and Mental Health’s (CAMH) proposed Cannabis Policy Framework (2014), Canada’s largest hospital for research and
practice in mental health and substance use, this researcher would like to clarify that she
had no vested interest in the legalization of cannabis. In this research, the researcher did
not take a position to promote legalization nor encourage or discourage cannabis use.
Rather, the researcher’s aim was to explore cannabis use within the developmental
context and consider implications on theory in psychology and clinical practice.
Nonetheless, it is not possible (or necessary) for the researcher to be wholly neutral on
this matter. It is important to acknowledge the sociopolitical context in which this
research was conducted. Indeed, the researcher was an EA over the course of much of
this work and a member of Canadian society during a time when more liberal voices are
encouraging critical, balanced thinking about cannabis use.

The Politicization of Cannabis Use

At the time this research began, cannabis was still legally classified as an illicit
substance in Canada and was the most commonly used illicit substance among Canadians
(CAMH, 2014; Rotermann & Langlois, 2015; Statistics Canada, 2015). However, the
evidence supporting the prohibition of cannabis in Canada and abroad was unclear, and
arguably based on a “historical accident” and political motivations (Room, Fischer, Hall,
Lenton, & Reuter, 2010; Schwartz, 2014). Some researchers argued that ideology and
moralization had taken precedence over scientific inquiry in shaping our knowledge of
cannabis (Temple, 2015). The politicization of cannabis appears to have obscured our
knowledge of its use, properties, effects and consequences (Temple, 2015). Indeed,
prohibition created barriers in health care and undermined research efforts to understand
cannabis use and its consequences (positive or negative) in order to adequately inform
prevention and intervention strategies (CAMH, 2014).
As the Canadian government and general public prepared for the legalization of cannabis in 2018, researchers sought to contribute the scientific literature to help inform decision-makers. As the proposed date of legalization approached, members of the Canadian public voiced concerns that the country and infrastructure were not yet prepared, and unsuccessfully advocated for a delay (Poshnjari, 2018). Recreational cannabis use was, nonetheless, legalized in Canada as of October 17, 2018. Researchers and policy makers continue to work together to inform the public about safe and responsible use.

To date, a general consensus has been reached in Clinical Psychology on certain aspects of cannabis use. First, it is generally accepted that earlier onset and higher frequency cannabis use, especially cannabis use before age 16 and frequent cannabis use during adolescence, is associated with negative health consequences (CAMH, 2014; George & Vaccarino, 2015; Health Canada, 2015; Volkow, Baler, Compton, & Weiss, 2014). The adolescent brain is particularly vulnerable to consequences associated with cannabis use due to the extensive structural and neurochemical changes that occur during this stage of development (George & Vaccarino, 2015; Volkow et al., 2014). This appears especially true for higher-order cognitive processes, such as memory, impulse control, motivation and emotion regulation, for which the rapidly maturing adolescent pre-frontal cortex is responsible (George & Vaccarino, 2015; Volkow et al., 2014). In addition, cannabis use during adolescence has been associated with increased risk of psychiatric concerns, such as earlier onset and more severe psychoses (for review see George & Vaccarino, 2015; Volkow et al., 2014), and possibly depression (Lev-Ran et
al., 2013; Silins et al., 2014) among those with a genetic predisposition or personal history.

Fewer consequences associated with cannabis use have been noted among adults, compared to adolescents and across substances (CAMH, 2014; Nutt et al., 2010). In fact, there is evidence that certain negative consequences experienced while using cannabis regularly (e.g., cognitive problems) remit after a period of abstinence (Porath-Waller, 2009). This reversibility of negative consequences has not been observed among adolescent cannabis users (CAMH, 2014), and appears less likely for those engaging in heavy cannabis use during adolescence (George & Vaccarino, 2015; Meier et al., 2012; Porath-Waller, 2009). Far less is known about the impact of occasional and regular cannabis use on individuals during other stages of development, including EA – the stage of development that spans 18 – 29 years of age and is defined by the transition out of adolescence, but not yet full adulthood. Empirical research examining the nature of cannabis use across different stages of the lifespan has important implications for the development of policies and guidelines that reduce associated harm, as well as approaches to prevention and intervention.

**Cannabis Use During Emerging Adulthood**

It is well established that EAs have the highest rates of cannabis use across the lifespan in Canada and abroad (CAMH, 2014; Forum Research Inc., 2015; Health Canada, 2013, 2017; Ialomiteanu Adlaf, Hamilton, & Mann, 2012; Rotermann & Langlois, 2015; Statistics Canada, 2015; United Nations Office on Drugs and Crime [UNODC], 2012). In fact, cannabis use steadily increased among EAs in Canada from 1997 until about 2005 and has since held at these elevated levels (CAMH, 2014; Health
Cannabis Use in Emerging Adulthood

Canada, 2013, 2017; Rotermann & Langlois, 2015; Statistics Canada, 2015). Individuals aged 18 - 24 years old also report using cannabis more frequently during the past year than other age groups (Rotermann & Langlois, 2015). In 2017, Health Canada developed and implemented the Canadian Cannabis Survey (CCS) to gather additional information regarding cannabis use in the general population. Findings from the CCS supported trends of higher use among EAs than other age groups, as identified in previous surveys: 41% percent of respondents aged 16-19 years and 45% aged 20-24 years reported using cannabis within the past 12 months, and these rates were nearly twice that of respondents aged 25 and older (18%). Higher rates of cannabis use among Canadian EAs may partly reflect increased normalization of certain patterns of cannabis use and perceptions of cannabis use as a socially acceptable or expected behaviour among this age group (Hathaway, Mostaghim, Kolar, Erickson, & Osborne, 2015; Liebregts et al., 2013; Mostaghim & Hathaway, 2013; Parker, Williams, & Aldridge, 2002; Patouris, 2013; UNODC, 2012). Moreover, Canadian EAs were among those most supportive of the legalization, regulation and taxation of cannabis (i.e., 18 to 34-year-olds) and had the greatest intentions to use cannabis with legalization (Forum Research Inc., 2015).

Although many EAs perceive cannabis use as normative and having few negative consequences, it is difficult to differentiate groups who use cannabis. For example, it is difficult to differentiate those who are experimenting with cannabis from those who will escalate their use or experience problems related to their cannabis use (Arnett, 2005). It is possible that many individuals will ‘mature out’ of using cannabis as they proceed into adulthood, as has been observed for heavy alcohol use and related problems (Marlatt et al., 1998; O’Malley & Johnston, 2002; White & Jackson, 2005; Winograd, Littlefield, &
Cannabis Use in Emerging Adulthood

Sher, 2012). It is also possible that some EAs will continue to engage in non-problematic cannabis use as adults. Nonetheless, understanding what contributes to the high levels of cannabis use during EA remains an important focus of recent research.

What is Emerging Adulthood?

Significant social and demographic shifts have occurred in Western societies over the past half-century, reflecting the evolving shared ideals and values that accompany significant social movements, such as the sexual revolution, women’s rights movement and the pursuit of higher education (Arnett, 2005). In turn, roles that were traditionally viewed as representing adulthood, such as marriage and parenthood, have been delayed to later ages, if not indefinitely in some cases. These delays have resulted in the emergence of a distinct developmental period during which individuals have transitioned out of adolescence, but have not yet reached full adulthood (Arnett, 1998, 2000, 2001). Dr. Jeffrey Arnett was the first to identify this period - which typically occurs between the ages of 18 – 29 years - and to label it EA. During EA, individuals face unique developmental tasks to gain the capacities and qualities of character that are associated with fulfilling adult roles in Westernized society (Arnett, 1998). The unique psychosocial features, neurobiological changes and critical tasks that occur during this developmental period have since become a focus in psychological research.

Arnett and colleagues have devoted considerable time and effort to understanding the psychological features and transitions that distinguish EA from adolescence and adulthood. Originally, EA was viewed as a period of role transitions, a time for the development of family capacities, norm compliance, individualistic transitions, and legal and biological transitions. However, modern EAs associate some of these criteria with
EA more strongly than others. For example, modern EAs tend to focus primarily on individualistic transitions when describing their transition to adulthood (Arnett, 1998, 2001) and accepting responsibility for one’s self and actions is integral to EA’s transition to adulthood (Arnett, 1997, 1998, 2001; Greene, Wheatley, & Aldava, 1992; Scheer & Palkovitz, 1995; Scheer, Unger, & Brown, 1998). Individualism in EA reflects a growing desire and ability to be self-reliant and self-sufficient, rather than dependent upon others, especially parents (Arnett, 1998). Individualistic values are reflected in EAs’ sense of responsibility (e.g., being responsible for one’s self; as opposed to responsible to or for others), decision-making (e.g., developing one’s own belief and value system), and in establishing an equal relationship with parents, including financial independence (Arnett, 1997, 1998, 2001; Greene et al., 1992; Scheer et al., 1994, 1998).

Inevitably, modern day EAs’ emphasis on self-growth and individualism is likely to have been informed by contemporary, westernized values (Arnett, 1998, 2001). It is important to note that the criteria for EA were originally established in a sample of predominantly white EAs of binary male and female genders, across a range of middle-class socioeconomic and educational backgrounds. This sample was thought to represent the American majority culture. Issues related to the generalizability of the EA framework, such as cultural influences or demographic vulnerabilities (e.g., low income), have since been acknowledged (e.g., Allem, Lisha, Soto, Baezconde-Garbanati, & Unger, 2013; Arnett, 2003; Lisha, Grana, Sun, Rohrbach, Spruijt-Metz, Reifman, & Sussman, 2014; Sussman, 2010). While the concept of EA has been observed across different groups in North America, important differences with respect to the criteria endorsed, blending of values, and timing of this developmental period are being recognized (e.g., Arnett, 2003).
The body of research on EA highlights that the transition to adulthood is largely based on the gradual development of intangible qualities of character (e.g., individualistic transitions; Arnett, 1998, 2001), rather than clear milestones. While it appears that EAs have a shared sense of the transitions that are inherent to this period, the experience of transition in EA is a highly individualized process for which there is little formal guidance. Given the profound nature of the developmental tasks faced by EAs and the lack of guidance provided, it is likely that most EAs will experience periods of both flourishing and distress during this time (Arnett, 2005). How EAs navigate this developmental period will vary by person, but there are some common behaviours that tend to be somewhat unique to EA, including substance use.

The Importance of the Developmental Context for Understanding Substance Use

The etiology of substance use and substance use disorders is influenced by multiple biological, social and psychological factors. The nature of these factors and magnitude of their influence changes across the lifespan (Arnett, 2005; Bergman, Kelly, Nargiso, & McKowen, 2016; Deas, Riggs, Langenbucher, Goldman, & Brown, 2000; MacLeod & Brownlie, 2014; White & Jackson, 2005). Researchers have argued that it is important to consider the developmental context in which substance use occurs for this reason. For example, Deas and colleagues (2000) have promoted that clinical practices with youth could be strengthened by integrating knowledge about adolescent development into assessment and treatment, rather than relying on the standard application of insights gained from research and clinical practice with adult samples. Others have made similar arguments for integrating knowledge about EA development to strengthen research and treatment for those experiencing substance use-related problems.
Cannabis Use in Emerging Adulthood

(Apprett, 2000, 2005; Bergman et al., 2016; Canadian Centre on Substance Abuse (CCSA), 2007; MacLeod & Brownlie, 2014; White & Jackson, 2005). While experimentation and substance use may represent normative patterns during EA (Apprett, 2005; White & Jackson, 2005), some EAs will develop problematic patterns of use in EA or beyond (Jackson, Sher, Gotham, & Wood, 2001). At present, best practice guidelines targeting the specific needs of EAs experiencing substance use related problems do not exist (Bergman et al., 2016; CCSA, 2007; Goodman, Henderson, Peterson-Badali, & Goldstein, 2015; MacLeod & Brownlie, 2014; Osgood, Foster, & Courtney, 2010). It is possible that tailoring existing interventions to meet the specific needs of EAs may increase treatment engagement; thereby, facilitating earlier interventions and improving long-term outcomes.

The current leading theoretical framework and proposal explaining the increased substance use during EA was developed by Apprett (2000, 2001, 2005). Arnett proposed that the high levels of substance use in this period relate to EA being a time of identity exploration, instability, self-focus, feeling in-between adolescence and adulthood, and a sense of optimism/possibilities. The proposed relationship between each feature of EA and increased substance use, as well as potential treatment implications, are discussed in the section that follows. Of note, the relationships described between the features of EA and substance use are not causal; rather, a reciprocal relationships may exist.

During EA, significant aspects of identity are developed through the exploration or ‘sorting through’ of various identity alternatives and commitment or adherence to one or more of those alternatives (Apprett, 2005; Schwartz, Zamboanga, Luyckx, Meca, & Ritchie, 2013). The ways an individual approaches identity exploration varies according
to their level of exploration and commitment (Schwartz et al., 2013). Traditionally, identity development and role confusion were associated with adolescence (Erikson, 1950, 1968). However, Arnett (2005) differentiated these initial identity explorations that occur during adolescence from those that occur during EA. Arnett (2005) argued that the type of identity-focused explorations that occur in EA require individuals to know who they are and what they are looking for in the long-term, rather than confusion about the same in adolescence. This can be contrasted with adulthood as well, during which greater commitment to chosen identities is typically experienced (Schwartz, Donnellan, Ravert, Luyckx, & Zamboanga, 2013; Schwartz, Klimstra, Luyckx, Hale, & Meeus, 2012; Schwartz et al., 2013).

It is posited that identity exploration during EA may relate to increased substance use in at least two ways: through openness to experiences and through coping with the challenges of identity exploration (Arnett, 2005). First, many EAs will seek out a range of novel experiences before entering into adulthood, a period many associate with ‘settling down’ and fulfilling adult role responsibilities (Arnett, 2005; White & Jackson, 2005). For some, this will involve experiencing different states of consciousness through substance use (Arnett, 2005). It is hypothesized that individuals who are higher in exploratory characteristics, relative to commitment, will report higher rates of substance use for this reason (Arnett, 2005). On the other hand, for some EAs substance use may provide a source of relief from the overwhelming task of developing a stable sense of identity. Individuals who are low in both exploratory and commitment characteristics may turn to using substances for coping purposes (Arnett, 2005).
Secondly, the EA developmental period is characterized by significant instability. Frequent changes in romantic partners, jobs, education status, and residence are synonymous with this period. Such destabilizing events increase stress and may place EAs at greater risk of anxiety, sadness and/or depression. According to lifetime prevalence estimates based on DSM-IV diagnostic criteria, half of all cases of disorders have an onset prior to 14 years, and 75% by age 24 years (Kessler, Berglund, Demler, Jin, & Walters, 2005). It is hypothesized that some EAs will use substances to cope with the stress associated with the instability of this period (e.g., Hoffman, 2016) and/or to self-medicate concurrent psychopathology (Arnett, 2005). Indeed, researchers have come to recognize EA as a particularly vulnerable time for the onset of substance use disorders, and there is a negative relationship between age of onset, typically occurring within EA age bracket, and severity of the disorder (Grant et al., 2015, 2016). Taken together, EAs appear at higher risk of experiencing the onset or persistence of concurrent psychiatric and substance use disorders during this period (SAMHSA, 2013; Wilens & Rosenbaum, 2013). This risk for concurrent disorders is cause for concern, given the increased complexity of the clinical presentation and associated poor treatment outcomes (Bergman et al., 2016; Compton, Cottler, Jacobs, Ben-Abdallah, & Spitznagel, 2003; Grella, Hser, Joshi, & Rounds-Bryant, 2001; McKay & Weiss, 2001; Timko, Sutkowi, & Moos, 2010).

This is also a period when it is socially acceptable to focus on the self and personal growth, at least in Westernized cultures. EAs typically gain the independence they require to actively question and test the values and belief systems with which they were raised, without the restrictions of role responsibilities that characterize adulthood. At different stages of life, sources of social control persuade individuals to avoid
disapproved behaviours that could damage relationships with valued others. However, sources of social control that are present during other developmental periods (e.g., caregivers or dependents) tend to be less influential during EA (Arnett, 2005; Bergman et al., 2016; White & Jackson, 2005). In comparison to childhood and adolescence, parental monitoring tends to decrease during EA (Kypri, McCarthy, Coe, & Brown, 2004). Then, in adulthood, employment responsibilities in an established career, responsibilities to children and/or a spouse are more likely to be taken into consideration. In EA, peer relationships could represent a relevant source of social control; however, EAs tend to establish and maintain friendships with similar-minded individuals (Berndt, 1996). For example, individuals who use substances are likely to surround themselves with peers who support, rather than discourage, substance use. It is posited that being able to focus on one’s own needs and wants, having fewer responsibilities to or for others, and fewer sources of social control increases the likelihood that some EAs will use substances.

In addition, EA is characterized as a period of feeling in-between – EAs neither view themselves or are viewed as adolescents, but are not yet viewed as adults. This feeling in-between can be applied across many aspects of their life; for example, feeling independent in some ways or areas of their life (e.g., living on one’s own), but not in others (e.g., parents paying their rent). There tends to be gains in independence, power, and responsibilities compared to adolescence, though not as widespread throughout their life as in adulthood (Arnett, 2005; Osgood et al., 2010). This specificity and EAs’ perceptions of the aforementioned is posited to have implications for substance use. That is, EAs have increased access to substances (e.g., reaching the age of the majority) and feel capable of deciding whether or not to use substances on their own. However, EAs
may not feel committed to the standards that govern the behaviour (e.g., avoid drinking to intoxication, driving while intoxicated, and using illegal substances) because they associate accepting responsibility for one’s actions and norm compliance with having reached adulthood (Arnett, 2005). Moreover, Westernized societies tend to reinforce carefree attitudes and excitement associated with youth and perpetuate an informal tolerance (or normalization) of experimentation with substances (Arnett, 2005).

Lastly, EA is viewed as the age of possibilities – a time when dramatic changes can be made - and an optimistic bias reigns. Most EAs believe that, regardless of the present circumstances, things will work out well for them in the future (Arnett, 2005). In fact, EA may be a critical period for the expression of resilience as individuals gain the independence that enables movement away from pathogenic environments (Arnett, 2005; Masten, Obradovic, & Burt, 2006). However, this optimism can lead to a false sense of security or invincibility (Arnett, 2005). Indeed, a curvilinear relationship is believed to exist between optimism and substance use, in which increased use may be associated with both low and high levels of optimism (Arnett, 2005; Smith, Bahar, Cleeland, & Davis, 2014). Some EAs may use substances to cope with not feeling optimistic at this stage of life; conversely, at high levels of optimism, some EAs may fail to appropriately consider the possible risks or harms associated with substance use based on the belief that negative consequences would not happen to them (Arnett, 2005). Although decreased from adolescence, EAs remain moderately to highly impulsive and decision-making is still reward-driven (Bergman et al., 2016). Moreover, EAs are likely to have experienced some consequences associated with their substance use, but fewer than would be anticipated among adults (Bergman et al., 2016; Glowacz & Schmits, 2017). As the pre-
frontal cortex develops throughout the twenties there is greater modulation of impulsivity, and reward-driven behaviour tends to become more balanced with consideration of long-term consequences as one moves into adulthood (Bergman et al., 2016). It may be that EAs lack appropriate guidance on how appropriately assess risk and harm associated with substance use in order to make informed and sustainable decisions about their substance use.

Substantial thought has been invested in the theoretical framework proposed by Arnett (2005). Researchers have come to recognize that the developmental context is critical for understanding substance use in EA, as well as the development and implementation of treatment services targeting this population (Arnett 2000, 2005; Bergman et al., 2016; MacLeod & Brownlie, 2014; White & Jackson, 2005). Indeed, the aforementioned EA features are believed to not only influence substance use during this period, but the extent to which EAs seek out and engage in treatment for substance use related concerns. Researchers have proposed a number of related biopsychosocial explanations to explain why, compared to other age groups, EAs demonstrate higher ambivalence towards change and poorer treatment outcomes (e.g., Bergman et al., 2016; Osgood et al., 2010; Rammstedt, 2007; Roberts, Walton, & Viechtbauer, 2006). A common conclusion across this research is that, although EAs have reached the age requirement for adult services, these services and the demands on clients may not align with EAs biopsychosocial needs. While important theoretical and clinical implications of this framework have been recognized, the empirical research examining the proposed relationships between features of EA and increased substance use in this developmental period warrants further empirical attention.
Cannabis Use in Emerging Adulthood

Literature Review

Empirical Research Examining Substance Use in Emerging Adulthood

The focus of the current research is to understand the ways in which the developmental context influences cannabis use during EA. There is limited empirical research on Arnett’s theoretical framework (2005) for understanding increased substance use during this period of life. In addition, few researchers have examined how EAs view their own cannabis use and how it might be influenced by the unique developmental tasks they face during EA. In recent years, however, cannabis use has become an area of particular interest in recent years due to the sociopolitical climate and recent legalization, and additional research is clearly warranted. The following section outlines insights gained from research that has explored substance use within the context of EA, along with some of the limitations and gaps that the current research project sought to address.

Previous research has explored the proposed relationships between particular features of EA and substance use during this period. For example, several researchers have found that greater identity achievement is associated with lower substance use (Bishop, Weisgram, Holleque, Lund, & Wheeler-Anderson, 2005; Luyckx, Goossens, Soenens, Beyers, & Vansteenkiste, 2005; Schwartz et al., 2011). Recently, Blevins and colleagues (2018) found that “cannabis self-concept” (i.e., viewing cannabis use as part of one’s identity or personality) was related to increased frequency of cannabis use, cannabis problems, and solitary cannabis use. Cannabis self-concept was also inversely related with the desire to reduce cannabis use. Other studies found that viewing this period as a time for possibilities or optimism and feeling in-between was associated with increased substance use among university (Lapsley & Hill, 2010) and college attending
Cannabis Use in Emerging Adulthood

EAs (Nelson & Barry, 2005). Instability, specifically housing transitions, during this period has been related to both increases (e.g., alcohol; White & Jackson, 2004–2005; White et al., 2006) and decreases (Schulenberg et al., 2010) in substance use. The discrepant findings may reflect differences in the particular substance that is being studied or participant demographics, such as socioeconomic status or participants’ perception of the instability in their life (Smith et al., 2014).

Several other studies have utilized a more holistic approach by attempting to understand substance use during EA by simultaneously looking at all criteria outlined by Arnett (2005). It is noteworthy that most of these studies have examined views of EA using the Inventory of Dimensions of Emerging Adulthood (IDEA) or IDEA-Revised. The IDEA is a well-validated measure that was developed to assess agreement with statements that reflect perceptions regarding this time of life (Reifman, Arnett, & Colwell, 2007). The IDEA or IDEA-R were included in these studies because they assess features of EA proposed by Arnett (2000, 2005). Thus, the IDEA scales provide an empirical method for validating Arnett’s proposal through quantitative research. The findings of these studies indicate that greater substance use was reported amongst EAs who viewed this period as a time of experimentation and possibilities (Allem et al., 2013, 2017; Lisha et al., 2014), instability (Allem et al., 2013; Smith et al., 2014) and feeling in-between (Smith et al., 2014). Partial or indirect evidence that viewing EA as a time for self-focus and identity exploration (Allem et al., 2013, 2017) is associated with greater substance use has also been noted. Only viewing EA as a time of feeling in-between has been related to both increased substance use frequency and substance use problems (Smith et al., 2014). In sum, researchers have found that certain of Arnett’s proposed EA
features were associated with increased cannabis use or related problems, while others were not.

The studies outlined above provide important information about the relationship between the developmental context and substance use during EA. However, as mentioned above, these studies all relied upon the IDEA or the IDEA-R to elicit EAs’ views on this developmental period but, as with most measures, there are limitations that should be noted. Firstly, the IDEA scales elicit information regarding participants’ views of EA, rather than their actual lived experiences. Issues can arise when EAs view this period of life differently than how they are living it. For example, it is possible that EAs view this period as a time for experimentation and/or possibilities – constructs that have been associated with increased substance use – but have not seized opportunities that are aligned with such views for various reasons (e.g., anxiety, family obligations, low income). A second limitation of relying on the IDEA scales is that this measure captures broad views of EA only. As a result, important insights on specific behaviours that EAs associate with this period may be missed (Nelson, Willoughby, Rogers, & Padilla-Walker, 2015; Ravert, 2009).

In an attempt to address some of these limitations, Goodman and colleagues (2015) conducted a qualitative study to better understand the ways in which EAs in a clinical sample related their transition to adulthood to their substance use. The majority of the sample spontaneously related their substance use to their transition to adulthood. However, the EAs in this sample expressed diverse views on the relationship between their transition to adulthood and substance use. Some participants described their substance use as having interfered with the achievement of developmental tasks, such as
independence, life goals, and more generally, motivation. Substance use was also referred to as a means of *legitimizing delays* in development. Heavy substance use was *normalized* as a pre-adult behaviour and described as a means of maintaining other non-adult behaviours. Conversely, participants also shared how working on their substance use problems had promoted personal reflection and self-growth, and thus contributed to their maturation towards adulthood.

Views of substance use during EA as a normative behaviour have important implications for clinical work and policy development. If substance use is viewed as a normative behaviour during this stage of life, then most EAs may experiment with substances or engage in more regular substance use by default (Mostaghim & Hathaway, 2013). In fact, not using substances would likely require greater self-assertion than using substances (Mostaghim & Hathaway, 2013). In addition, if EAs use substances responsibly, associated harms may not be incurred. However, among EAs with histories of substance use disorders, behaving in a responsible manner and adhering to social norms were viewed as adult behaviours (Goodman et al., 2015); thus, less applicable to EAs who view this period of life in a way that is consistent with Arnett’s framework and report higher substance use. Furthermore, certain views of EA may be linked more strongly with decreased use (e.g., viewing EA as a time for *identity exploration*; Allem et al., 2013), while others relate to substance abuse and/or dependence (e.g., that EA is a time of *negativity/instability* and *feeling in-between*; Smith et al., 2014).

Nelson and colleagues (2015) sought to expand upon extant research that focuses on broad views of this period by also considering more specific views or behaviours EAs’ believe they should be engaging in during EA. Moreover, unlike in other research,
participants in this study were asked about the EA period, specifically, rather than what is required to *transition to adulthood*. Through factor analysis, Nelson and colleagues (2015) found that participants viewed EA as a time of *uncertainty* (e.g., a time of confusion), *stress* (e.g., a time of high pressure and feeling stressed out), *risk-taking* (e.g., a time to drink and get drunk), *role preparation* (e.g., a time to prepare to marry and be a parent), and *possibilities* (e.g., a time of optimism and fun). Three of these factors were associated with increased cannabis use during EA – *uncertainty, stress* and *risk-taking*. *Uncertainty* and *stress* emerged as two distinct constructs, with *uncertainty* almost completely related to markers of maladjustment, whereas viewing EA as a time of *stress* was related to markers of both adjustment and maladjustment (e.g., continuing to make strides in development, despite feeling stressed). The latter relationship between *risk-taking* and cannabis use, offers support for the proposal that some EAs view this period of life as a time for engaging in what have been traditionally conceived as risk-taking behaviors, in this case including cannabis use, before entering adulthood (Ravert, 2009).

Ravert (2009) also explored the influence of a more specific feature of EA – *risk-taking*. He proposed that some EAs engage in certain risk behaviours during this period of life because they believe they will not have the opportunity to do so at a later stage in their life. Consistent with the view that there are essential tasks that EAs associate with this time of life, Ravert (2009) conducted an exploratory study on *now or never behaviours*. The vast majority of the sample acknowledged having engaged in at least one *now or never behaviour*, with alcohol, tobacco, and drug use identified as the third most endorsed behaviour. Ravert (2009) proposed that high-level themes related to *exploration, experimentation* and *risk-taking* in EA offer some explanation as to why
EAs engage in these behaviours. Although he referred to alcohol, tobacco, and drug use as risk factors, Ravert (2009) highlighted that not all risks are necessarily bad, nor should they be avoided; rather, he pointed out that some risks are functional, goal-directed, and inherent to the process of becoming autonomous and transitioning into adulthood.

**Conceptualizing Cannabis Use in Emerging Adulthood**

Although past research has offered important insights into the ways in which substance use in EA can be viewed from a developmental lens, these studies have either focused on substance use in general (and not cannabis use specifically) or framed cannabis use as a harmful behaviour or form of maladjustment. For example, Allem and colleagues (2013) refer to participants as being at high risk for substance use, but they define cannabis use in dichotomous terms – that is, endorsed or not – which does not actually speak to possible harms associated with cannabis use. Goodman and colleagues (2015) recruited EAs who were engaged in treatment for substance abuse, but did not specifically focus on cannabis use or problems. While some patterns of cannabis use are associated with harm among youth and adults, this is not true for all cannabis use (Borodovsky & Budney, 2018; CAMH, 2014; CCSA, 2007; Walsh, Gonzalez, Crosby, Thieseen, Carroll, & Bonn-Miller, 2017).

It has been argued that tradition and the politicization of cannabis use has influenced certain conceptualizations of cannabis use in psychological practice and research (Temple, 2015). However, the same views are not shared across all researchers within psychology and across other disciplines (e.g., sociology: Becker, 1953; Parker Williams, & Aldridge, 2002). Indeed, there is a long history, dating back to at least to the Indian Hemp Drugs Commission Report in 1894, and an accumulating body of research
since that time, that suggests cannabis use is not inevitably associated with problems (e.g., Temple, 2015; Weil, Zinberg, & Nelson, 1968). Research exploring the therapeutic uses of cannabis is well underway, but is beyond the scope of this study. Instead, it is important to note that the psychological literature on cannabis and, in particular, the focus within Clinical Psychology on cannabis-related harms or cannabis use disorder is only one perspective and not necessarily representative of the entire cannabis field.

Many researchers and clinicians have recognized that the above is true for EAs who use cannabis as well – that is, not all EAs who experiment with or use cannabis regularly will go on to experience consequences (Sussman & Arnett, 2014). Similarly, Canadian EAs themselves describe negative societal views about cannabis as exaggerated and foreign to their lived experiences (Mostaghim & Hathaway, 2013). These EAs, as well as their peers who do not use cannabis, tend to express greater acceptance of cannabis use as a common aspect of social experience, likened to alcohol use, and a relatively safe drug that could be used responsibly and may have benefits (Hathaway, Mostaghim, Kolar, Erickson, & Osborne, 2015; Mostaghim & Hathaway, 2013). Ravert’s (2009) compelling arguments about now or never behaviours, including substance use, take this a step further by suggesting that certain risks may serve a function for EAs during this stage of development. Cannabis use may be part of a larger repertoire of risk behaviours that increase during this time, but it might also be a normative part of this transitional period of life - one that fits within the developmental context and serves a function. These perspectives raise important considerations for how cannabis use is conceptualized when examining the relationship between cannabis use and the developmental context of EA.
Identity development in EA has already been linked to cannabis use (e.g., Hathaway et al., 2015; Mostaghim & Hathaway, 2013; Ravert, 2009), whereas associations with other aspects of EA development have yet to be studied. This is surprising, as previous researchers have theorized that several aspects of EA are important for understanding the peaks in cannabis use during this time of life (e.g., instability, feeling in-between adolescence and adulthood, and a sense of optimism/possibilities; Arnett, 2005; Sussman & Arnett, 2014). This is an important next step for research in this area given the emphasis to better understand how substance use is situated within the developmental context of EA in order to better understand the specific needs of EAs.

Summary and Limitations of the Research to Date

The importance of considering the developmental context when examining substance use during EA has been emphasized in past research (e.g., Arnett, 2000, 2005; Bergman et al., 2016; Deas et al., 2000; Goodman et al., 2015; MacLeod & Brownlie, 2014; White & Jackson, 2005). There is evidence that substance use, including cannabis use, may be connected with the EA features outlined by Arnett (2000, 2005), including perceptions of this period as a time of possibilities and experimentation, self-focus, negativity and instability, and feeling in-between adolescence and adulthood (Allem et al., 2013, 2016, 2017; Goodman et al., 2015; Lisha et al., 2014; Smith et al., 2014). Research also indicates that understanding substance use in EA requires consideration of other important features of this time of life, including risk-taking (Nelson et al., 2015; Ravert, 2009), interfering with or legitimizing delays in achieving developmental tasks, normalization as a pre-adult behaviour, and norm compliance and adult behaviours.
Cannabis Use in Emerging Adulthood

(Goodman et al., 2015). Despite the important insights gained, there are some limitations of the extant research. Indeed, the features of EA that have been related to substance use during this period are inconsistently endorsed across studies. Differences in study design and limitations of past studies may be contributing the discrepancies observed. The current research sought to expand upon previous research and address some of these limitations.

The first limitation this research sought to address relates to the substance that was studied. The current research focused on cannabis use, specifically, and sought to explore a broader spectrum of cannabis use experiences. Some of the above studies explored the relationship between features of EA and substance use. However, it is possible that the features of EA relate to the use of different substances in different ways. Therefore, amalgamating different substances may complicate the relationships found. Other studies relied on conceptualizations of cannabis use that do not differentiate harmful cannabis use from other patterns of use (e.g., user/non-user dichotomies, clinical sample). While some patterns of cannabis use have been associated with harm among youth (CCSA, 2007) and adults, at least temporarily (CAMH, 2014), little is known about the negative health consequences of cannabis use among EAs. Equating all cannabis use with harm can be misleading and may not accurately reflect the lived experiences of all EAs who use cannabis. Moreover, the experiences of EAs facing cannabis use problems and/or who are engaged in treatment may be very different from those who engage in cannabis use but are not (necessarily) experiencing significant problems. Based on past proposals that the developmental context is critical for understanding substance use and related problems, there is a need to explore how a broader spectrum of cannabis use
experiences can be contextualized within EA. Currently, EAs are left to reconcile mixed opinions on cannabis use from external sources (e.g., parents, peers, legalisation) during this period of life when they are tasked with developing their own intrinsic attitudes and belief system about many things, including cannabis use. If EAs do not feel that their experiences are reflected in research, they are unlikely to use such resources to help guide their decision-making. Therefore, the current research sought to better understand how EAs who use cannabis conceptualize their use and how normative, problematic and/or other patterns of cannabis use relate to the developmental context.

Secondly, the current research sought to gain a more nuanced understanding of how EAs’ relate their cannabis use to the features and critical tasks of this period of life. Researchers in this area have different opinions on whether broad or more specific views and behaviours in EA influence substance use. Focusing on the relationship between substance use and broad views of EA only, such as those captured on the IDEA or IDEA-R, may cloud or generalize a more nuanced relationship. For example, increased substance use may relate to instability in one’s affect, relationships, career, or a combination of the above. Conversely, focusing on specific views or behaviours only, such as now or never behaviours, may miss the influence of those broad features outlined by Arnett (2005). Therefore, following the example of Nelson and colleagues (2015), the quantitative study of the current research attempted to balance the exploration of the relationship between both broad (Arnett, 2005) and specific views (Nelson et al., 2015) of EA on cannabis use.

Lastly, the qualitative study of the current research attempted to extend this exploration beyond views of EA with the intent to, again, better reflect the lived
experiences of EAs who use cannabis. It is possible that the way in which EAs view this period and how they are actually living it are not one and the same (Nelson et al., 2015; Ravert, 2009). Therefore, studies that examine the relationship between substance use and views of EA only, may not accurately represent how features of EA relate to the increased levels of substance use. Likewise, exploring the influence of the transition to adulthood may not be synonymous with the experience of EA while one is actually in this transitional period. As Nelson and colleagues (2015) argue, knowing what is required to transition to the next phase of life does not necessarily reflect that EAs are currently working on those criteria. Given that EA spans a decade of one’s life, individuals may feel more or less compelled towards the transition to adulthood at different ages within this developmental period. Asking about how their transition to adulthood is connected with their current substance use assumes, to some degree, that all participants are interested in transitioning to adulthood. It may require forward-thinking and theoretical hypothesizing in the majority of EAs who tend to describe themselves as an adult in some ways and in some ways not. Perhaps this means they were in the process of transitioning to adulthood, perhaps not. Therefore, the qualitative study of the current research included an in-depth exploration of EAs’ current lived experience to better understand how cannabis use, specifically, is situated in EA. In general, there are few qualitative studies in this area of research and none that focus explicitly on understanding the influence of EA features on a spectrum of cannabis use experiences. The current research sought to address this gap in the literature.
The Current Research

Purpose

To date, EAs’ thoughts and opinions on how features of EA may relate to their cannabis use has not been explicitly explored. Research that has explored how cannabis use relates to the developmental context of EA has considered cannabis in combination with other substances and/or conceptualized cannabis use as a risk behaviour or an indication of maladjustment. Alternate views of cannabis use have yet to be considered when exploring the ways in which cannabis use fits within this developmental period. The current research aimed to contribute to the existent research by integrating an exploration of EAs’ views of cannabis use while contextualizing their cannabis use within their current stage of development. A mixed methods approach was selected for this purpose – balancing a quantitative investigation of correlates of cannabis use problems and frequency in a community sample with a qualitative, in-depth exploration of how cannabis use is situated within the developmental context of EA. The current research offers a unique approach that aids in the development of a more comprehensive understanding of EAs’ cannabis use, specifically; thereby, contributing to our theoretical knowledge of cannabis use during this developmental period.

Study One

In Study One, quantitative methods were used to examine the influence of developmental correlates of cannabis use problems and frequency in a community sample. Study One furthers research in this area by differentiating problem cannabis use from cannabis use that was not related to problems and examining relationships with EA features. The research questions for this study were: are features of EA associated with
frequency of cannabis use and cannabis use problems in a community sample of EAs who currently use cannabis? If so, which features of EA are associated with frequency of use and problems? Are the same EA features related to frequency of use and problems? Data analyses examined whether specific and broad views of EA and cannabis-specific views were associated with frequency of cannabis use and cannabis use problems. Furthermore, inclusion of male and female EAs and EAs who are at the higher ceiling age (i.e., 29 years) facilitated exploratory analyses examining gender- and age-related differences within this sample.

**Study Two**

In Study Two, a qualitative approach was used to facilitate an in-depth exploration of EAs’ views of cannabis use and how their cannabis use related to the developmental context. Participants were interviewed about what constitutes normative and problematic cannabis use, and other ways they conceptualize cannabis use during this period of their life. Participants were also asked about their current experiences of EA, and if and how their cannabis use related to this developmental stage. The use of qualitative interviews to explore EAs’ impressions of the relationship between their cannabis use and Arnett’s features of EA is a novel approach in this area of research. This approach also facilitated a closer reflection of participants’ lived experiences with cannabis use, rather than relying on conceptualizations of cannabis use as necessarily harmful. The first research question for this study was how do EAs who currently use cannabis describe and conceptualize use? Do they perceive cannabis use as problematic and non-problematic? Do they recognize a continuum of use? The second research question for this study was do EAs who currently use cannabis view their use as linked to
this time of life? If so, what features of EA do they connect with their cannabis use and how do they describe these relationships?

**STUDY ONE**

**Methods**

**Participants.** Two hundred and thirteen participants consented to participate in the online survey. Twenty-three individuals chose to withdraw from the study immediately following consent. Seven addition participants withdrew at different stages of the survey. Finally, one participant reported using cannabis exclusively for medicinal purposes, an exclusion criterion for this study, and so their data was removed. The final sample size consisted of one hundred and eighty-two EAs (63 female, 1 two-spirited, 103 male, 15 unspecified), between the ages of 18-29 years old ($M = 23.69$, $SD = 3.62$, $n = 169$). Participants were recruited from Ontario, Canada, and had to have access to the internet to complete the survey and be fluent in written English. Eligibility criteria also included having used cannabis for non-medicinal purposes within the 30 days prior to completing the online survey.

**Demographics.** A portion of the sample ($n = 13 – 57$) did not respond to demographics questions; therefore, the demographics data presented are based on the information provided by participants who responded to the items. The majority of the participants identified with a single race (90.4%), with 7.2% identifying as biracial and 2.4% identifying as multi-racial (3 or more). Most participants identified at least one of their ethnicities as White (78.0%, $n = 142$). Nine individuals identified as Black (4.9%), nine identified as Asian (4.9%), seven as South Asian (3.8%), seven as Aboriginal or First Nations (3.8%), and 6.6% identified as another ethnicity (i.e., Arab/West Asian,
Latin American, or Other specified). The participants represent an educated sample. Almost half of the participants were currently enrolled in school (43.5%), with 48.0% of these individuals reporting being in an undergraduate university program. For those not currently enrolled in school, participants reported having completed an undergraduate degree (33.0%), high school or a GED (29.8%), or community college (21.3%). Additionally, most participants were employed (78.3%), with 36.7% of these individuals reporting full-time employment. Over a third of participants reported their level of income as less than $20,000 (37.6%). Regarding housing, many participants had experienced a return to living with their parents after a period of living independently (41.7%), and about a third of the sample reported that they were currently living with their parents (33.7%). With respect to relationship status, many reported being single (45.2%), and about a quarter of the sample reported being in an exclusive relationship (25.9%). Most participants self-identified as being heterosexual (68.1%), and 17.3% identified as bisexual, 8.4% as gay or lesbian, 1.1% as asexual and 4.8% as uncertain. The majority of the sample did not have children (95.3%). A summary of participants’ demographic information is included in Tables 2 - 9.

**Procedure.** Participants were recruited through print and online advertisements. Print advertisements were posted in designated areas around the Greater Toronto Area on public message boards. Online advertisements (free and paid) were posted on classified and public community forum websites, including, but not limited to: Reddit, Craigslist, Kijiji, Facebook, and Twitter. The advertisement provided the inclusion criteria, requested participation in an online survey (approximately 30 minutes) and provided a direct link to access the online consent form and survey (Appendices B - C).
Accessing the link provided directed individuals to an information sheet and consent form (see Appendix B) which outlined the inclusion criteria, requirements of participating in the study, as well as possible risks and benefits to participating in the research. The contact information for the investigator and faculty supervisor were provided on this form. To proceed with the online survey, individuals were required to provide consent by responding to a statement at the end of this form that indicated they were aware of the study requirements, between the ages of 18 - 29 years, and consented to participate in the research. Consent was assumed when the individual clicked ‘I agree.’

In an effort to ensure that individuals are within the required age range, participants were asked to provide their current age on the first page of the online survey. As a consistency check, participants were also asked to provide their year of birth on a subsequent page of the survey. Only age was used to determine eligibility since year of birth will not necessarily be accurate without the corresponding birth month. Individuals who do not meet the age requirement were redirected to a webpage that explained their ineligibility (e.g., ‘Sorry, you do not meet the age requirement for this study’). Individuals who met the inclusion criteria and provided consent were directed to the online survey once they clicked ‘Submit’ at the bottom of the webpage. Participants were then directed to complete a series of questionnaires (see Appendix C) that included items on demographic information, personal cannabis use and features of EA.

Upon completion of the survey or clicking the withdrawal button at the bottom of the webpage, exiting participants were directed to a screen that allowed them to enter their email address to enter a draw for a chance to win one of four $50 gift cards from Amazon.ca (see Appendix D). Participants were then directed to the ‘Share, Resource
Recruitment and participant involvement for Study One exceeded the expected five months to complete. The survey was made available to members of the public for five months (August 6, 2017 - January 15, 2018), then briefly closed for an initial review of the data. The survey was made available to the public again from January 27, 2018 – July 27, 2018, because the desired sample size had not been met for key variables of interest.

**Measures.** Individuals who met inclusion criteria and provided consent were asked to complete a series of questionnaires (see Appendix C), including items on demographic information, patterns of personal cannabis use and anticipated changes to use, motives for cannabis use, screening for problem cannabis use, views of EA, and questions exploring cannabis use within the developmental context of EA.

**Demographic information.** Several items were used to gather pertinent background information from participants (e.g., age, gender, ethnicity, education, income, relationship status, residential status).

**Cannabis use.** The following data was collected for the 30 days preceding their participation in the survey: number of days cannabis was used, proportion of the day spent using or under the influence, typical amount consumed per day, frequency different
strains were used (e.g., Sativa; Indica), frequency different modes of consumption were used (e.g., inhalation; ingestion), and frequency of cutting with tobacco. As a validity check, individuals who reported that they did not use cannabis for non-medicinal purposes within the 30 days preceding the survey were redirected to a webpage that thanked them for their interest and explained their ineligibility; thus, concluding the survey.

**Cannabis problems.** The Cannabis Problems Scale (MPS) is a 19-item measure that assesses consequences associated with cannabis use that may have been experienced in the 90 days preceding its administration (Stephens, Roffman & Curtin, 2000; Stephens, Roffman, & Simpson, 1993, 1994). The wording of this measure was adapted in the current survey to examine cannabis use consequences that occurred in the past month for consistency with other measures. Consequences experienced in several life domains are reflected in this measure, including psychological (e.g., memory loss), social (e.g., interpersonal problems), occupational (e.g., job loss), and legal (e.g., legal issues). Items are rated on a 3-point scale ranging from “No Problem” to “Serious Problem.” The MPS has been shown to have high levels of internal consistency and demonstrated to be a valid measure of cannabis use in adult samples (Stephens et al., 2000).

**Views of emerging adulthood.** Past research in this area (e.g., Arnett, 1994, 1997, 1998, 2003), asks participants whether they self-identify as an EA based on their responses to the item “Do you think that you have reached adulthood?” using the response options “yes,” “no,” or “in some respects yes and in some respects no.” The latter response is most often reported by EAs and considered reflective of EA status. However, more recently it has been argued that EAs may differ in the extent to which
they are or are not transitioning to adulthood; therefore, participants’ responses to the aforementioned question may not accurately reflect the EA status (Nelson et al., 2015). Instead, the current study directly asked participants “Do you think you are an Emerging Adult?” and the same response options were used.

The Inventory of Dimensions of Emerging Adulthood (IDEA) is a 31-item measure that assesses the degree to which participants agree with views of the psychosocial changes that occur during the current phase of their life – EA (Reifman et al., 2007). The IDEA subscales reflect dimensions of EA that were conceptualized by Arnett (2004) and were originally validated in a sample of predominantly white, female, university undergraduate students aged 18 - 25 years old (Reifman et al., 2007). The six dimensions assessed include: identity exploration (seven items; e.g., “Is this period of life a…time of finding out who you are?”), optimism/possibilities (five items; “…time of trying out new things?”), negativity/instability (seven items; “…time of feeling stressed out?”), other-focus (three items; “…time of responsibility for others?”), self-focus (six items; “…time of personal freedom?”), and feeling in-between adolescence and adulthood (three items; “…time of feeling adult in some ways but not others?”). Items were rated on a 4-point Likert scale that ranges from 1 (strongly disagree) to 4 (strongly agree). The IDEA has been shown to have strong psychometric properties (Reifman et al., 2007). Each subscale has been shown to have strong internal consistency, and acceptable test-retest reliability following a 1-month delay period (Reifman et al., 2007).

In the current sample, all subscales of the IDEA were found to have good internal consistency (Cronbach’s alphas = 0.81 - 0.89), with one subscale having adequate internal consistency (self-focused subscale: Cronbach’s alpha = 0.76) within this sample.
These scores indicate comparable or higher rates of internal consistency than the original validation sample (i.e., Cronbach’s alphas = 0.70 - 0.85; Reifman et al., 2007).

More specific views of EA were also captured using the 17 items identified by Nelson and colleagues (2015). Six items duplicate questions from the IDEA and therefore were not re-administered. Participants are asked to indicate the extent to which they agree with statements using a similar 4-point Likert scale as on the IDEA that ranges from 1 (strongly disagree) to 4 (strongly agree). These items create five subscales, including: Risk-taking (four items; “Is this period of life a…to drink to get drunk?”), Uncertainty (three items; “…of not being sure who you are?”), Role Preparation (three items; “…to prepare to be a parent?”), Possibilities (five items; “…to have fun?”), and Stress (two items; “…of feeling stressed out?”). In the current sample, the risk, uncertainty, and role preparation subscales demonstrated adequate to very good internal reliability (Cronbach’s alphas = 0.80 - 0.92). These scores indicate comparable or higher rates of internal consistency than the original validation sample (Cronbach’s alphas = 0.77 – 0.81; Nelson et al., 2015). The stress subscale is comprised of only two questions; a significant positive correlation was found between these items ($r = 0.37, p < 0.001$), as in the original validation sample ($r = 0.50, p < 0.001$; Nelson et al., 2015). The possibilities subscale, however, was found to have poor internal reliability within this sample (Cronbach’s alpha = 0.57). Similarly, this subscale produced the lowest level of internal consistency (“moderate”) across the subscales in the original validation sample (Cronbach’s alpha = 0.65; Nelson et al., 2015).

**Cannabis use and emerging adulthood.** In addition to using standardized measures, participants were asked directly whether they believed their cannabis use
related to each of Arnett’s (2000; 2005) features of EA. Participants began this section by responding to the item “Does your cannabis use relate (in any way - good or bad, etc.) to this time of your life - Emerging Adulthood (18-29 years)?” using the response options “yes,” “no,” or “in some respects yes and in some respects no.” Participants were then prompted to consider the extent to which they agreed that their cannabis use related to each of Arnett’s (2000; 2005) features. All response options were rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Results

Preliminary Descriptive Analyses

Preliminary analyses were conducted for each variable of interest to examine descriptive statistics and frequency distributions. Descriptive statistics for demographics and key variables of interest are summarized in Tables 2 - 9 and Figures 1 - 3.

Views of emerging adulthood. The vast majority of this sample self-identified as an EA, with 62.2% of participants responding “yes” they thought they were an EA and 33.1% stating “in some ways yes, in some ways no” (see Figure 1).

The average scores for the IDEA subscales are summarized in Table 9. To examine differences in endorsement of IDEA subscales within this sample Cohen’s $d$ was calculated. Several notable differences were observed. The average score on the other-focused subscale was lower than all other IDEA subscales. These effect sizes fell in the large to very large range when compared to most subscales, and the medium to large range when compared to the instability subscale. The average score on the instability subscale was lower than the identity exploration, optimism/possibilities and self-focused subscales of the IDEA. These effect sizes fell in the medium to large range. Lastly, the
feeling in-between subscale was lower than scores on the identity exploration, optimism/possibilities and self-focused subscales of the IDEA as well. However, these differences fell in the small to medium effect size range.

Effect sizes were also calculated to examine differences in endorsement of the IDEA subscales for this sample compared to the non-clinical, validation sample (Reifman et al., 2007) and a clinical sample (Smith et al., 2014; see Table 1). Glass’ $\Delta$ effect size was calculated to compare the means of the current study with those of Reifman and colleagues’ (2007) study because standard deviations were not available. The current sample was similar to the non-clinical, validation sample in terms of optimism/possibilities, instability, self-focus and other-focus. Average scores on the identity exploration and feeling in-between subscales were lower in this study than in the validation sample. However, these differences were small. Cohen’s $d$ was used to compare the means of the current study and those of Smith and colleagues’ (2014). Upon examination of participants’ endorsement of the IDEA subscales, clear differences between the samples emerge. Most notably, participants in Smith and colleagues’ (2014) study viewed EA as a time to focus on others more so than the current sample, and the validation sample. Participants’ average score on the identity exploration subscale was lower in this study than in Smith and colleagues’ (2014) sample, while average scores on the optimism/possibilities and instability subscales were higher. These differences fell in the small to medium effect size range.

Regarding Nelson’s and colleagues (2015) specific views of EA (hereafter referred to as specific views of EA), differences in endorsement across the subscales were examined using Cohen’s $d$ (see Table 10). Several notable differences were observed.
The average score on the *role preparation* subscale was markedly lower than all other subscales. These differences fell in the large to very large effect size range. The average score on the *risk* subscale was also lower than all subscales except *role preparation*, and these differences ranged from small to large. Lastly, the average score on the *stress* subscale was higher than all other subscales, and these differences ranged from small to very large effect sizes.

**Cannabis-specific views of emerging adulthood.** The cannabis-specific views of EA were face valid items that asked participants explicitly about whether their cannabis use related to one of Arnett’s (2005) features of EA. Items included “Please indicate the extent to which you agree that your cannabis use relates to this being a time in your life to explore your identity,” “…a time of instability in your life,” “… a time in your life to focus on yourself,” “…a time in your life when you feel in-between,” and “…a time of optimism and possibilities in your life.” Most of the sample believed that there was a relationship between their cannabis use and this time of life, at least to some extent (91.4%). Over half of the sample agreed (i.e., endorsed “somewhat agree” or “strongly agree”) that their cannabis use related to this being a time of *self-focus* (63.5%), *optimism/possibilities* (56.7%), and *identity exploration* (55.1%). Approximately one third of the sample agreed that their cannabis use related to this being a time of *feeling in-between* (33.1%), while less than one quarter of the sample agreed that their cannabis use related to the *instability* of this period (24.1%).

**Cannabis use and related problems.** Regarding past month cannabis use, participants reported using cannabis on an average of 18.82 days in the past month (*SD* = 11.12, *Range* = 1 – 30, *n* = 157), with almost half of the sample reporting daily or almost
daily cannabis use (i.e., 25 days or more in the past month; 47.8%). On the days they used cannabis, participants estimated consuming an average of 1.91g/day ($SD = 5.48$, $Range = 0.05 – 56.00, n = 155$) and over half of the sample reported using for “less than half of the day” (53.9%). Smoking was the most commonly reported method of administration (46.5% “every time” and 20.6% “most times”). A portion of the sample had vaped (47.1%) or ingested cannabis with food (41.3%) on occasion. Most participants had never ingested cannabis without food (e.g., tincture; 90.3%, $n = 140$) or sublingually (93.5%, $n = 145$). Participants’ rates of using different strains varied across the Indica, Sativa and Hybrid strains, with about one quarter of the sample reporting that they did not know the strain of cannabis they had been using. Lastly, the majority of the sample denied mixing with tobacco (81.3%, $n = 126$). Summaries of participants’ past month cannabis use are included in Tables 12 - 13 and Figures 2 - 3.

Cannabis use problems was quantified using a total score on the MPS. To date, no cut-off score has been established for the MPS, since the types of problems reflected in the items differ in their severity (e.g., “Has cannabis use caused you to procrastinate?” “…to lose a job?”). Therefore, using a cut-off score could inaccurately equate qualitatively different problems. Instead, higher scores generally reflect more problems. The average score for the current sample was 4.42 ($SD = 4.76$) out of a possible total score of 38. The most frequently reported problems included procrastination (51.1%), and decreased productivity (43.9%) and energy levels (32.4%).

**Missing Data**

A significant limitation of the current dataset is the frequency and pattern of missing data on key variables of interest. To assess whether data was missing at random,
an analysis of missing data using the Missing Values Analysis and Little’s MCAR Test in SPSS were conducted. Results of this analysis are summarized in Table 14. It should be noted that the percentage of missing data across all key variables is not negligible and therefore limits the external validity of the results to some degree. Generally, rates of missing data may relate to factors such as participants’ loss of interest or fatigue during the survey. Although the results of the exit survey suggest that the survey was considered interesting and not onerous by most participants, many of the participants for whom data was missing failed to complete the exit survey.

As illustrated in Table 14, the pattern of missing data for all except one variable was found to be random. The variable missing not-at-random (MNAR) were the specific views of EA subscales \( \chi^2 (5, N = 182) = 64.48, p < 0.00 \). Additional exploratory analyses suggest a few notable patterns regarding missingness among the variables. Firstly, the amount of cannabis consumed per day (g/day) in the past month was positively correlated with non-response \( (r = 0.19, p \leq 0.05) \). That is, EAs who consumed greater amounts of cannabis were more likely to be missing data on the specific views of EA. Secondly, negative correlations were found between viewing EA as a time of instability \( (r = -0.18, p \leq 0.05) \) and viewing one’s cannabis use as related to EA \( (r = -0.18, p \leq 0.05) \) and non-response. This means that participants who viewed EA as a time of instability or viewed their cannabis use as related to this period were more likely to have responded to items on specific views of EA. It is also possible that an unknown variable that was not captured in the current survey could have influenced participants’ decision to not respond to questions about specific views on EA.
Multiple Imputation

To address the issue of missing data in the current dataset the methods-based approach of multiple imputation was applied. This method was chosen because although the approach assumes missing data is missing at random, it is often unbiased by data that is not missing at random (Schafer and Graham, 2002). The multiple imputation method ran five iterations of the data and replaced missing data with imputed values based on statistical patterns in the existing data. When available, the pooled statistic, a summary statistic based on all five iterations of the data, was analyzed. The results of analyses based on the incomplete and imputed datasets were compared, and a largely consistent pattern of results was observed across the datasets. The results of analyses conducted using the imputed dataset are presented in the sections that follow and differences between the incomplete and imputed datasets are noted in the tables.

Bivariate Analyses – Relationships Between Key Variables of Interest

Bivariate analyses were used to explore correlational relationships between key variables of interest and identify variables that would be used as predictors in subsequent multivariate analyses. The details of these analyses can be found in Table 15.

Demographics and views of emerging adulthood. The relationships between age and gender (self-defined) and key variables of interest were explored. These relationships are summarized in Table 15. A significant negative relationship was found between age and optimism/possibilities ($r = -0.24, p \leq 0.01$), risk ($r = -0.16, p \leq 0.05$), and uncertainty ($r = -0.25, p \leq 0.01$). Being a younger EA was associated with viewing this period as a time for optimism and possibilities and taking risks. Younger EAs were also more likely to view EA as a time of uncertainty. Conversely, age was significantly
positively related to other-focused views \( r = 0.33, p \leq 0.01 \) and role preparation \( r = 0.39, p \leq 0.01 \). Being an older EA was associated with viewing this period as a time to focus on others and prepare to take on societally prescribed adult roles (e.g., spouse, parent). Age was not significantly correlated with the cannabis-specific views of EA. Gender was not significantly correlated with any views of EA.

**Views of emerging adulthood.** The details of the following correlations are provided in Appendix F. Within the IDEA subscales, several significant, positive relationships were observed. Identity exploration was positively correlated with the optimism/possibilities \( r = 0.33, p \leq 0.01 \), self-focus \( r = 0.36, p \leq 0.01 \), and feeling in-between \( r = 0.42, p \leq 0.01 \) subscales. The optimism/possibilities and self-focus subscales were also correlated with one another \( r = 0.49, p \leq 0.01 \). The instability subscale was positively correlated with the other-focused \( r = 0.19, p \leq 0.05 \) and feeling in-between \( r = 0.31, p \leq 0.01 \) subscales. No significant negative correlations existed between the IDEA subscales.

Several significant, positive relationships were also observed between the IDEA subscales and specific views of EA. Identity exploration was correlated with uncertainty \( r = 0.25, p \leq 0.01 \), possibilities \( r = 0.25, p \leq 0.01 \), and stress \( r = 0.17, p \leq 0.05 \). Instability was correlated with risk \( r = 0.18, p \leq 0.05 \), uncertainty \( r = 0.63, p \leq 0.01 \), and stress \( r = 0.71, p \leq 0.01 \). Other-focused was correlated with role preparation \( r = 0.53, p \leq 0.01 \) and stress \( r = 0.21, p \leq 0.01 \). Self-focused was correlated with risk \( r = 0.20, p \leq 0.05 \) and possibilities \( r = 0.45, p \leq 0.01 \). Feeling in-between was correlated with uncertainty \( r = 0.50, p \leq 0.01 \) and stress \( r = 0.25, p \leq 0.01 \). Optimism/possibilities was significantly and positively correlated with risk \( r = 0.37, p \leq 0.01 \) and
possibilities \( (r = 0.45, p \leq 0.01) \), but significantly and negatively correlated with role preparation \( (r = -0.17, p \leq 0.05) \).

**Views of emerging adulthood and cannabis-specific views of emerging adulthood.** The details of the following correlations are provided in Appendix F. Several significant, positive relationships were observed between the IDEA subscales and cannabis-specific views of EA. Participants who viewed EA as a time for identity exploration were more likely to report that their cannabis use was related to identity exploration \( (r = 0.19, p \leq 0.05) \) and self-focus \( (r = 0.31, p \leq 0.01) \) in EA. Participants who viewed EA as a time for optimism/possibilities were likely to report that their cannabis use was connected to identity exploration \( (r = 0.18, p \leq 0.05) \) and self-focus \( (r = 0.27, p \leq 0.01) \), as well as optimism/possibilities \( (r = 0.21, p \leq 0.01) \) in EA. Those who viewed EA as a time of self-focus were also likely to report that their cannabis use was related to this being a time of optimism/possibilities \( (r = 0.17, p \leq 0.05) \). Participants who viewed this as a time of instability were more likely to report that their cannabis use was related to EA, generally \( (r = 0.17, p \leq 0.05) \), as well as feeling in-between \( (r = 0.28, p \leq 0.01) \). Participants who viewed EA as a time of feeling in-between were more likely to report that their cannabis use was related to feeling in-between \( (r = 0.19, p \leq 0.05) \).

Lastly, one significant negative correlation was found that suggests that EAs who view this as a time for focusing on others were less likely to view their cannabis use as related to exploring their identities \( (r = -0.17, p \leq 0.05) \).

Two specific views of EA were significantly correlated with cannabis-specific views of EA. Both Uncertainty and Stress were significantly and positively correlated with participants’ reports that their cannabis use was related to feeling in-between in EA.
(r = 0.28, p ≤ 0.01 and r = 0.18, p ≤ 0.05, respectively). No significant negative correlations were observed.

**Frequency of cannabis use and cannabis use problems.** The details of the following correlations are provided in Table 15. One of the IDEA subscales was consistently correlated with cannabis use frequency. Participants who viewed EA as a time to *focus on others* reported using cannabis more frequently (r = 0.16, p ≤ 0.05). Due to the non-normal distribution of the frequency of cannabis use data in this sample, this variable was coded into two groups to support a subsequent binary logistic regression (see multivariate analyses section). This split variable was also significantly positively correlated with the *other-focused* subscale of the IDEA (r = 0.17, p ≤ 0.05). Age was also significantly positively correlated with this split variable (r = 0.16, p ≤ 0.05), with older EAs being more likely to report near daily to daily cannabis use. No other variables were significantly correlated with these measures of cannabis use frequency.

Frequency of cannabis use and cannabis use-related problems were not significantly correlated. Similar to the frequency variable, the MPS total score data were not normally distributed in this sample. Therefore, the data were transformed in order to support a subsequent hierarchical multiple regression (see multivariate analyses section). Following a (Log10) transformation of the MPS total score, the positive correlation between frequency of cannabis use and cannabis use problems became significant (r = 0.16, p ≤ 0.05). Cannabis use-related problems were not significantly correlated with the split frequency of cannabis use variable.

Several views of EA were consistently correlated with cannabis use problems. Participants who viewed EA as a period of *instability* (r = 0.17, p ≤ 0.05) and their
cannabis use as related to this instability \((r = 0.28, p \leq 0.01)\) reported experiencing more problems related to their cannabis use. Participants who viewed EA as a time of uncertainty \((r = 0.20, p \leq 0.01)\) also reported experiencing more cannabis use related problems. These relationships were significant when the MPS total score was used and when the data were transformed. Following the (Log10) transformation of the MPS total score data, the positive correlation with views of EA as a time of stress also became significant \((r = 0.17, p \leq 0.05)\). Neither age nor gender were significantly correlated with cannabis use problems.

In addition, one view of EA was a significantly negatively correlated with cannabis use problems. Participants who viewed EA as a time of optimism/possibilities \((r = -0.15, p \leq 0.05)\) and their cannabis use as related to this sense of optimism/possibilities \((r = -0.17, p \leq 0.05)\) reported fewer cannabis use-related problems. This pattern was no longer significant when the MPS total score data were transformed (Log10).

**Multivariate Analyses – Exploring the Relationships between Emerging Adulthood Views and Cannabis Use Frequency and Problems**

Regression analyses were conducted to examine the extent to which views of EA (i.e., the IDEA subscales and specific views of EA) and cannabis-specific views of EA was associated with frequency of cannabis use and cannabis use problems. All analyses were completed using the imputed dataset \((N = 182)\). Independent predictors were chosen based on the results of bivariate analyses \((p < 0.05)\) to ensure model parsimony, as recommended by Hosmer and Lemeshow (2004). Participant age and gender were not significantly correlated with the original dependent variables in the bivariate analyses, and therefore, were not included in the regression analyses as covariates. The results of
the regression analyses are summarized in Tables 17 – 20.

**Frequency of cannabis use.** An initial screening analysis of the imputed data was completed prior to running the intended hierarchical multiple regression (HMR) to check whether the assumptions of this analysis were supported by the data (Field, 2013; 2016). Of note, pooled statistics are not produced for all statistics in SPSS 25. Therefore, when possible the pooled statistic is presented and when not available the statistics for the incomplete and each imputation are provided in corresponding tables. The screening tests revealed that not all assumptions of an HMR analysis were supported.

First, the dependent variable data were not normal distributed as evidenced both in visual inspection of the histogram plots and relevant statistics (see Appendix G). The skewness statistics are negative across the incomplete and all imputations of the data, indicating the data is piling up on the higher end of the frequency of cannabis use measure (i.e., closer to daily cannabis use). However, the skewness statistics were less than double the absolute value of the standard error across all imputations of the data and equal to the absolute value of the standard error in the incomplete dataset. This suggests that the data is skewed but may be within acceptable limits. The kurtosis statistics are also negative across the incomplete and all imputations, indicating that the data distribution has a flat and light tail. The Kolmogorov-Smirnov tests and Shapiro-Wilk tests suggest that the data distributions are, in fact, non-normal. These statistics were significant across the incomplete and all imputations of the data; indicating that the data is significantly different from a normal distribution. Several transformations of the data were explored (i.e., Log10, Natural Log, Square root and Reciprocal), but none of the transformations produced data that were sufficiently normalized. Upon further inspection
of the plots, it appears that the frequency variable may be made up of different subgroups (see Appendix G).

About half of the sample was made up of EAs who used cannabis on a near daily to daily basis in the preceding month. Therefore, the frequency of cannabis use data was split into two groups: those who used cannabis on a near daily to daily basis (coded 0) and those who did not (coded 1). A binary logistic regression was then completed to test whether views of EA were significantly related to using cannabis on a near daily to daily basis. Based on the results of the bivariate analyses, only other-focused views of EA were entered as an independent variable. These views were, in fact, significantly related to participants’ frequency of cannabis use coding. Table 16 summarizes the pooled variable table of the binary logistic regression analysis and Table 17 summarizes the $R^2$ statistics across the incomplete data and imputations.

**Cannabis use problems.** As above, an initial screening analysis of the imputed data was completed before the HMR to check whether the assumptions of this statistical analysis were supported by the data (Field, 2013; 2016). The screening tests revealed that not all assumptions of an HMR analysis were supported.

First, the dependent variable data were not normal distributed as evidenced both in visual inspection of the histogram plots and relevant statistics (see Appendix I). In this sample, participants reported experiencing low levels of problems associated with their use which resulted in positively skewed data. The skewness statistics are positive across the incomplete and all imputations of the data, indicating the data is piling up on the lower end of the MPS scores, and more than double the absolute value of the standard error. The kurtosis statistics are also positive across the incomplete and all imputations,
indicating that the data has a heavy tail. Moreover, the Kolmogorov-Smirnov tests and Shapiro-Wilk tests were significant across the incomplete and all imputations of the data; indicating that the data is significantly different from a normal distribution. Therefore, the MPS total score data were transformed using a Log10 transformation. A constant value (i.e., 1) was added to all cases, because zeroes cannot be included in Log transformations. The screening analyses were re-run on the transformed data and indicate that the data were sufficiently normalized.

Correlations were re-run with the transformed (Log10) MPS total scores (see Table 15). As described above, participants who viewed EA as a time of instability and their cannabis use as related to this instability, and those who viewed EA as a time of uncertainty and stress had higher transformed MPS total scores. The sample size of 182 was deemed appropriate for testing the predictive abilities of these four independent variables on the transformed MPS total score (Tabachnick & Fidell, 2001).

The remaining assumptions were tested using the transformed data for the dependent variable (i.e., Log10 MPS Total Score). Examination of the scatter and residual plots (zpred vs. zresid) for the transformed data suggest that the assumptions of normality, linearity and homoscedasticity were supported. The residual plots showed no indications of systematic relationships between the variables (Field, 2016). Moreover, the pooled Cook’s distance was within acceptable limits (i.e., <1; Cook & Weisberg, 1982, Field, 2016); indicating there are no significantly outlying cases influencing the data. Regarding the assumption of independent errors, the Durbin-Watson test (1951) statistics were within the acceptable limits across the incomplete and all imputations (Durbin-Watson statistic = 1.88 – 1.94). Lastly, regarding multicollinearity, an examination of the
correlational matrix revealed no marked correlations between the independent variables (e.g., $r > 0.8 - 0.9$; Field, 2009). Furthermore, the collinearity statistics (i.e., Tolerance and VIF) were within acceptable limits for all variables across the incomplete and all imputations (Tolerance $< 10$ and VIF $> 0.1$; Field, 2009; Myers, 1990).

With the assumptions satisfied, an HMR analysis was conducted using the transformed (Log 10) measure of cannabis use problems as the dependent variable. An HMR analysis was used to examine the stepped influence of factors on the dependent variables based on theory. In step 1, Arnett’s (2005) broad view of EA as a period of instability, as captured on the IDEA, was entered. Next, Nelson and colleagues’ (2014) specific views of EA as a period of uncertainty and stress were entered. Then, the perceived relationship between cannabis use and the instability of EA was entered. Table 18 summarizes the pooled coefficient table of the HMR analysis and Table 19 summarizes the $F$ and $R$ statistics across the incomplete data and imputations of the data.

The results of this analysis revealed significant effects in two of the steps. Step One significantly contributed to the regression model (see Table 19 for $F$ statistics) accounting for 3.0 - 6.0% of the variation in the transformed MPS total score across the incomplete and all imputations of the data. The pooled coefficient table (see Table 18) also indicates that the IDEA instability subscale was significantly related to the transformed cannabis use problems value ($t(180) = 2.39, p \leq 0.05$).

The second step, which introduced the specific views of EA as a period of uncertainty and stress, did not reliably produce significant contributions to the regression model. Rather, only one imputation of the data suggested an effect. Across the incomplete and all imputations of the data, Step Two accounted for 4.0 - 9.0% of the
variation in the transformed MPS total score. The pooled coefficient table also indicates that none of the independent variables, including the IDEA instability subscale, were significantly related to the transformed cannabis use problems data in this second step. Although, views of EA as a time of uncertainty were approaching significance ($t(178) = 1.66, p = 0.098$).

Finally, introducing the perceived relationship between cannabis use and the instability of EA in the third step, produced consistent, significant contributions to the regression model (see Table 19 for $F$ statistics) and accounted for 9.0 – 15.0% of the variation in the transformed MPS total score. The pooled coefficient table (see Table 18) indicates that the perceived relationship between cannabis use and the instability of EA was the only significant relationship with the transformed cannabis use problems data ($t(177) = 3.10, p \leq 0.001$) in this step of the model. As in the previous step, views of EA as a time of uncertainty approached significance ($t(178) = 1.92, p = 0.055$).

**Discussion**

In Study One, problem cannabis use was differentiated from other cannabis use, and relationships between developmental features of EA and cannabis use frequency and problems were explored in a community sample. The research questions for this study were: are features of EA associated with frequency of cannabis use and cannabis use problems? If so, which features of EA are associated with frequency of use and problems? Are the same EA features related to frequency of use and problems? The results of the multivariate analyses indicate that certain core features of EA were associated with experiencing cannabis use problems, but not frequency of cannabis use.
The findings of this study provide interesting insights into EAs’ perceptions of the relationship between their cannabis use and the developmental context.

**Interpretation of Main Findings and Comparisons with Past Research**

**Instability as a predictor of cannabis use problems.** In this study, participants who viewed EA as a time of *instability* and viewed their *cannabis use as related to the instability in EA* reported experiencing more cannabis use problems. Importantly, it was only the cannabis-specific view (i.e., *cannabis use as related to the instability in EA*) that was a significantly related to cannabis use problems when all factors were included in the multivariate model. This is particularly noteworthy given that this relationship was endorsed by less than one quarter of the sample (24.1%); suggesting the robustness of this relationship. In sum, certain features of EA (i.e., *instability*), but not all, were related to cannabis use problems.

In addition to the above, the loss of significance in the stepped model of the broad view of *instability*, as measured on the IDEA, is an interesting observation. In this study, the cannabis-specific view of instability was a stronger predictor of cannabis use problems than the broad view of instability. There are several possible explanations for this pattern which raise important theoretical considerations. First, it may be that the cannabis-specific view of instability explicitly connected the concept of *instability* in EA with a specific, current behaviour (i.e., cannabis use). A similar trend was observed in which the relationship between cannabis use problems and Nelson and colleagues’ (2015) view of *uncertainty*, a more specific subcategory of instability, trended towards significance in the stepped model. Indeed, it has been argued that the IDEA captures views of EA which may not reflect current specific experiences or behaviours in EA.
It may also be that the concept of instability is too broadly defined on the IDEA and could be further distilled (Nelson et al., 2015). In addition to using conceptually broad definitions, it may be the abstract wording that is used on the IDEA that contributed to the lack of significant relationships observed (Lisha et al., 2014; Nelson et al., 2015). The wording of these questions may pose a challenge for some EAs based on the stage of development of their prefrontal cortex alone (due to its involvement in abstract reasoning abilities) or, at least, contribute to discrepancies in interpretations of the items.

Another conceptual consideration is whether instability is properly defined on the IDEA. Indeed, Lisha and colleagues (2014) justified eliminating the instability subscale altogether in the revised version of the IDEA by noting that the subscale was “less about where one sees the self in relation to adulthood and more about the accompanying emotions of the transition” (pp. 6). Of note, the researchers seem to be alluding to an overlapping effect of instability (as an emotional experience) with the other features of EA in this statement; this is an observation that will be revisited in Study Two. The researchers raise an excellent point - that the questions that make up the IDEA – Instability subscale tap into emotional experiences (i.e., stress and anxiety). This is not how Arnett (2000; 2005) described instability. Arnett (2005) described instability as changes in one’s relationships, jobs, and education (also described as aspects of EAs’ identity exploration), and in residence. Arnett’s (2005) hypothesized that instability events in the aforementioned areas of life will increase substance use, and that this relationship would be mediated by mood disruptions (i.e., anxiety and sadness). Thus, the IDEA appears to capture the proposed mediator of the relationship between instability
and substance use, rather than instability, the proposed feature of EA, itself. It is unclear why this is the case. The considerations raised about the conceptualization of instability on the IDEA, whether it is too broad, too abstract, or improperly defined, have implications for research in this area. These implications are discussed in the designated section at the end of this document.

**Comparisons with past research.** One previous study has examined the influence of EA views on cannabis use problems. In the study conducted by Smith and colleagues (2014), the researchers also found that not all views or features of EA were associated with substance use problems. However, the views that were associated with problems differ between these two studies. Smith and colleagues (2014) found that viewing EA as a time of feeling in-between was associated with increased substance use problems, not viewing EA as a time of instability.

The discrepancy between these two studies may relate to the nature of the sample or substance being studied. In Smith and colleagues’ (2014) study, participants represented a clinical sample, with nearly half meeting criteria for cannabis dependence in their lifetime. In contrast, participants in the current study represented a nonclinical sample and reported experiencing few cannabis use problems. It may be that clinical and non-clinical samples view EA in qualitatively different ways; in turn, Arnett’s (2000, 2005) features may differentially influence substance use in these samples. Indeed, the current sample endorsed the IDEA subscales in a manner that more closely reflected the non-clinical, validation sample (Reifman et al., 2007) than the clinical sample (Smith et al., 2014; see Table 11). It is also possible that the substance studied also contributed to differences between these two studies. Smith and colleagues (2014) used a measure that
pooled information on alcohol and other substance use; whereas, the current study focused on cannabis use only. It may be that Arnett’s (2000, 2005) features differentially contribute to problems associated with one substance to a greater extent than another substance. If this is true, measures that combine the use of different substances may complicate or overlook patterns. For example, viewing EA as a time of feeling in-between may be associated with alcohol use problems, but not cannabis use problems; however, when summed together, appears to predict problems for both substances.

**Other-focused views as a predictor of cannabis use frequency.** There were no significant relationships between the views of EA (broad or specific) and frequency of cannabis use. In fact, it was only viewing EA as a time to focus on others that was associated with near daily to daily cannabis use. Focusing on others is not a feature that is typically associated with this developmental period. It is possible that other-focused views directly relate to frequency of cannabis use; however, a third variable may also account for this relationship. For example, recall that older EAs were more likely to describe EA as a time to focus on others. Therefore, it may be that the relationship between other-focused views and frequency of cannabis use can be accounted for by the increased freedoms, privacy and independence typically experienced by older EAs. Indeed, when the sample is split into groups based on frequency of cannabis use an examination of demographical data revealed that participants who use cannabis on a near daily to daily basis were older, fewer were currently enrolled in school or unemployed, and more had a higher income and lived outside the parental home (see Appendix H). Although, age alone may not account for this relationship.
Comparisons with past research. The current finding partially corroborates those of Smith and colleagues (2014) who also found no relationship between features of EA and cannabis use frequency. However, Smith and colleagues (2014) also did not observe a relationship with other-focused views. In fact, no other studies in this area have found this relationship between other-focused views and cannabis use frequency. Allem and colleagues (2013) actually found that individuals with other-focused views were less likely to report cannabis use; although, this finding was not replicated in a subsequent stage of the same longitudinal study – when participants were older (i.e., Allem et al., 2017). Other studies have found that increased cannabis use frequency was associated with viewing EA as a time of experimentation and possibilities (Allem et al., 2013, 2017; Lisha et al., 2014), independence (Lisha et al., 2014), as well as risk-taking and uncertainty (Nelson et al., 2015). Thus, a consistent relationship between EA features and cannabis use frequency has not been observed.

It is difficult to compare the current results with those on the study conducted by Lisha and colleagues’ (2014), because other-focused views were not measured in that study and independence was not included in the current study. Lisha and colleagues’ (2014) finding is of particular interest, since it is hypothesized in the current study that a third variable, such as independence, may account for the relationship that was observed between other-focused views and increased cannabis use frequency. It would be interesting to replicate the current research using the IDEA-R to see if independence was also significantly associated with cannabis use frequency in the current sample.

The variation in results observed across the remaining studies likely relates to differences in the measures used or sample characteristics. In the research conducted by
Allem and colleagues (2013, 2017), cannabis use frequency was captured in dichotomous terms. Studies that rely on a dichotomous counts of cannabis use are likely to conflate patterns. For example, individuals who use cannabis once or 30 times in the preceding month would fall into the same group. However, individuals who are using cannabis at low versus high frequencies may represent distinctly different groups and may view the relationship between cannabis use and EA differently. Indeed, more frequent users are likely to have a more consistent basis of cannabinoids in their system than, for example, light users. Future research might explore the similarities and differences across EAs who use cannabis at different frequencies.

In addition to differences in measures (e.g., frequency, EA views), differences in sample characteristics may be contributing to the discrepancies observed across these studies. As discussed in an above section, clinical (e.g., Smith et al., 2014) and nonclinical samples may differ with respect to their views of the relationship between cannabis use and features of EA. Similarly, demographically distinct groups may differ in their views of this relationship. Indeed, research has demonstrated that ethnicity (e.g., Allem et al., 2013, 2017), demographic vulnerabilities (e.g., at-risk youth; Lisha et al., 2014), as well as age and post-secondary enrollment (e.g., Nelson et al., 2015) influence EAs’ views of this period and the prioritization of developmental tasks (Arnett, 2003). These discrepancies may highlight the importance of tailoring Arnett’s (2000, 2005) theoretical framework to the unique needs of a specific group of EAs.

**Limitations and Future Directions**

The results of this study contribute to the literature by offering additional insight into the impact of the developmental context on cannabis use in EA. However, several
limitations should be taken into consideration when interpreting these results and their implications. Firstly, a non-negligible amount of data was incomplete on several variables of interest, with 13.7 – 26.4% of responses missing. Moreover, on one subscale the data was missing in a non-random pattern. This is notable, because it suggests that the participants who failed to respond to items regarding Nelson and colleagues’ (2015) specific views of EA may differ from those who provided a response which could contribute to bias in the results. For example, exploratory follow-up correlations suggest that one way in which these two groups (i.e., responders and non-responders) may differ is in the amount of cannabis consumed in the past month, with non-responders consuming more cannabis. To address the concern of incomplete data, a multiple imputation method in SPSS 25 statistical software was used to impute data based on patterns of response within the existing data. This has been demonstrated to be an effective method for analyzing incomplete data (Field, 2013), and often produces unbiased results even when data is missing in a non-random pattern (Schafer & Graham, 2002). Nonetheless, the reader is cautioned in extrapolating these results beyond the current sample, since imputed data is created based on the data entered. Replication of the current findings is recommended.

Secondly, as with any study that is based primarily on self-report, online data, there is a risk of being influenced by biases, such as social desirability. Speaking with EAs themselves is a crucial step towards better understanding their lived experiences; however, accurate depictions of their cannabis use are not guaranteed. This may be especially true when it comes to disclosing sensitive information, such as cannabis use (an illegal activity in Canada at the time of this study) or cannabis use problems. The
option to submit responses anonymously via an online survey administration may have helped mitigate such concerns. However, offsite survey administration presents its own challenges, such as a lack of control over the testing environment (Hodgins et al., 2010). Moreover, EAs may vary in the extent to which they are aware or have insight into the consequences they are experiencing. Future research may benefit from including third parties, such as parents, partners, and friends, who can provide corroborating information during data collection. Gathering information from EAs and third parties concurrently would facilitate a triangulation of data and offer some validation for the responses provided.

Lastly, in this study, participants were only directly asked whether their cannabis use was related to Arnett’s (2000, 2005) proposed features. Arnett’s (2000, 2005) proposed features were the focus in this exploration because it is the leading framework in this area. However, participants were not directly asked whether their cannabis use was related to the features proposed by Nelson and colleagues (2015), Ravert (2009), or Allem and colleagues’ (2013) role transitions. There may be other features of this developmental period that EAs directly associate with their cannabis use that were not captured in this study. Future research might consider asking participants directly whether their cannabis use relates to these other features of EA.

Conclusions

This study offers novel insight into the impact of the developmental context on cannabis use during EA. In this nonclinical sample of EAs, certain views of this EA were associated with cannabis use problems, but not cannabis use frequency. Specifically, viewing EA as a time of *instability* and *cannabis use as related to this instability* was
associated with experiencing more cannabis use problems. Conversely, no views of EA were significantly associated with cannabis use frequency, and frequency of cannabis use was not reliably correlated with cannabis use problems. The extent to which these findings corroborate past research varied. General trends, such as certain views of EA, but not all, being related to cannabis use problems, were supported. However, the specific relationships observed may be significantly impacted by the characteristics of the sample (e.g., clinical vs. nonclinical), measures used, and/or the conceptualization of the substance being studied. Thus, researchers are encouraged to tailor the application of Arnett’s (2000, 2005) theoretical framework to the specific group of EAs in question.

STUDY TWO

Methods

Participants. Twenty EAs (11 female, 1 non-binary, 8 male) were recruited through online and print advertisements posted around the Greater Toronto Area. Participants ranged in age from 18 - 29 years old, with a mean age of 24.3 years ($SD = 3.31$). Participants identified with several different ethnicities, and a significant portion of the sample identified as Caucasian/European. All participants were required to be fluent in spoken English. The participants represented an educated sample, and most individuals were currently employed. Regarding living accommodations, participants tended to report shared living arrangements, with over a third of the sample living with their parents. The details regarding certain demographics of interest and cannabis use of each participant are included in Table 20.

Participants were also required to have used cannabis for non-medicinal purposes within the 30 days preceding the interview. Overall, participants used cannabis a mean of
13.95 days in the past month ($SD = 9.67$; range: 2-30 days). The mean age of initiation of cannabis use was 16.78 years ($SD = 5.08$; range: 12 – 25.5 years) and participants reported that they had used cannabis for a mean of 6.58 years ($SD = 4.35$; range: 1 – 15 years). Interestingly, some participants differentiated the first time they had ever tried cannabis from the age at which they began using cannabis regularly - which occurred at a later age. Consistent with previous research on cannabis use, participants had difficulty quantifying their use in a consistent manner. Half of the sample reported smoking as their primary method of use, with vaping and edibles accounting for the next most frequent methods of use.

**Procedure.** Recruitment and participant involvement were completed across five months (i.e., September 2016 - February 2017). A brief telephone screening was conducted with interested individuals to ensure that inclusion criteria related to the age requirement and cannabis use were met (see Appendix K). Eligible individuals were informed of the study requirements and the possible risks and benefits of participating in the proposed research. These individuals were also emailed an electronic copy of the information and consent form, as well as a list of helpful resources in Ontario and information about deleting all study-related information from their computers (see Appendix L). Verbal consent for participation was obtained. Participants completed a 45-60-minute semi-structured interview, which explored how EAs contextualize cannabis use within EA by asking participants about their current developmental stage and how their cannabis use is connected with this period, as well as a brief demographical survey (administered verbally). Participants could choose whether they wished to complete the interview in person or by phone. Sixteen participants completed the interview via
telephone and four completed it in person. A $10 gift card from Amazon.ca was sent to participants via email to thank them for their participation in the research. All procedures were reviewed and approved by the Research Ethics Board of the University of Toronto.

**Interviews.** The original semi-structured interview was guided by five main questions, and prompts were used to further deepen and clarify responses, as well as query about the tenets proposed by Arnett (2005; see Appendix M). First, participants were asked about their current developmental stage. A general description of the EA developmental period was provided, and participants were asked whether they identify themselves as an EA. If so, they were asked to elaborate upon the distinct features of this period. The interview was discontinued with one individual when they did not identify as an EA following an elaboration as to why they do not identify as an EA. Participants who identified as an EA were asked to describe their cannabis use, including frequency, amount, types of cannabis products consumed and methods of administration in the preceding month and whether this was representative of their typical pattern of use. Participants were then asked to describe their cannabis use during this stage of their life, and to elaborate on different conceptions of use during this period of life (e.g., normative, problematic, and other). Participants were also asked whether they perceived their cannabis use as connected with this time in their life. Lastly, participants were asked to contextualize their cannabis use within the EA period by contrasting use at this age with their use during other developmental periods (i.e., adolescence and projected into adulthood). The interview guide evolved based on information reported in the initial interviews to include three additional questions and prompts (see Appendix M).
interview concluded by providing participants with the opportunity to add any other pertinent comments and demographics questions.

All interviews were audio recorded, transcribed verbatim and de-identified, then checked once in full. Coding was conducted by the investigator and four trained research volunteers who were female EAs. The investigator (i.e., the interviewer) was consulted to clarify any sections of the audio recording that were unclear. The qualitative data was then organized and analysed for deductive [based on Arnett’s (2000, 2005) proposal] and inductive (participant identified) themes using NVivo 10, a software program used for qualitative data analysis (QSR International, 2013).

Training in coding interviews. All members of the coding team reviewed Arnett’s (2005) article independently and then met together to establish a baseline knowledge for identifying deductive themes. The team also received group training on the use of NVivo software to facilitate the sorting process, identification of themes, the development of coding categories and subcategories, and communication across team members. All members of the team coded and then discussed the assigned categories for one and a half transcripts as a group. The team members then felt prepared to engage in independent coding. Throughout independent coding, team members consulted with the investigator and flagged any sections of their assigned transcripts where they were uncertain about the coding. Team members were involved in the creation, deletion and amalgamation of themes and subcategories. The investigator completed random checks of the categories throughout the coding process, discussing inconsistencies with the coders as they arose. Upon completion of coding their assigned transcripts, each volunteer research assistant met with the investigator to review sections of the interviews.
they had coded into the final categories to ensure proper application of coding procedures. Any discrepancies were discussed and resolved so that both coder and investigator agreed with the final coding. On several occasions, all members of the research team were consulted to resolve discrepancies and decide on over-arching changes, such as the creation and deletion of new categories.

Results

Emerging Adulthood

All participants identified as EAs. A few participants described themselves as being closer to adulthood, rather than adolescence. That is, most agreed that they were an EA based on the individualistic transitions (e.g., being responsible for one’s self), while fewer believed they were an EA because of role transitions (e.g., getting married) or building family capacities (e.g., developing the skills to be a parent/care for a family). When asked for a description of this period of life, a 29-year-old male who has been smoking regularly for 3 - 4 years, summarized: “It’s a difficult one. It’s a confusing one. The training wheels come off, and you are expected to guide yourself as opposed to following instruction. It’s a complicated, but a fun, part of life.”

Conceptions of Cannabis Use

Participants did not tend to describe distinct profiles of cannabis use; in fact, they advised against this approach. Instead, participants described use in several ways, including whether the use was problematic or not, the function of or reason for use, the social context in which cannabis was used, the frequency and amount of use, and whether cannabis was used in combination with other substances (i.e., polysubstance use), including alcohol. Participants noted that an individual’s use may fall on a spectrum
within any of these descriptors (e.g., someone who tends to smoke cannabis more often in social settings, but not exclusively so). Moreover, participants often described cannabis use by using these descriptors in combination (e.g., someone who uses regularly in social settings for enhancing a positive experience, but also occasionally uses on their own to self-medicate sleep difficulties or relax). Participants asserted that an individual’s use would rarely, if ever, be captured by a discrete category or pattern of use, such as “social user” only. It was also noted that an individual’s use is not fixed, rather it may change over time (e.g., someone who tended to use in social settings when they were younger, but now smokes on their own as well). The descriptions of cannabis use that were provided by participants are discussed in greater detail in the sections that follow.

**Non-problematic and problem cannabis use.** All participants were prompted to consider what constitutes normative and problematic cannabis use in EA. Consistent with other studies, the majority of participants in this study described cannabis use as normative and socially acceptable among individuals their age. Several stated that cannabis use was comparable to alcohol or tobacco use in terms of its acceptability in society. However, participants had difficulty describing what constituted “normative” use and judging whether their use should be considered as such due to the wide variability in use patterns.

All participants had opinions on what constitutes problematic use. While there was some variability across participants’ descriptions of problem cannabis use, common themes included a dependence or need to use cannabis rather than a choice, and cannabis use that interfered with responsibilities (e.g., at school or work; in relationships). The following quotes exemplify participants’ descriptions of problematic cannabis use.
I think it crosses the line when weed becomes the only way for you to release…If you’re smoking every day to feel better about yourself. At some point, it’s not the weed that’s [going to make you] feel better. It has to be you. It has to be your thoughts. It can’t be weed anymore…it [cannabis use] can’t be the only thing you’re doing [to heal]…[U]sing it as a crutch or using it to cope with a lot of situations, basically every situation, without developing the skills to do it [cope] sober. [I]f I relied on it to get through every single day. If it became a reliance versus the thing I do every so often, then I think that’s when it becomes problematic. (26-year-old female, smoking more regularly for the past 2 – 4 years)

[W]e would call that addiction…When you let something take over your life to the point where you can no longer live your ordinary life…So, am I making enough money? Go do your job, do your job effectively, follow through on relationship promises…You can’t let it control you. (27-year-old male, smoking for 12 years)

Where it interferes with somebody else’s goals. [F]or example, they will miss work because of it or they will not perform well at work because of it… I know someone who was doing it so much that he dropped out of school because of it. Also, spending too much money on it, I would say is problematic, because that interferes with your financial goals. Also, prioritizing it over other things. In that,
[using cannabis] is all they want to do… [and] obviously someone who has been in trouble with the law because of something to do with [using cannabis]. (28-year-old female, smoking for 13 years)

Participants also described cannabis use that resulted in negative health consequences as problematic. A 28-year-old male who had been smoking for four years gave the following examples of potential negative health effects “[w]hen it causes psychiatric issues…[F]or example, there’s a correlation with psychosis… hallucinations, for example, when you aren’t using…[I]f you start having lung trouble, because you’re smoking every day.”

Participants had difficulty identifying a particular frequency or amount of cannabis use that might lead to problems, noting that what might cause problems for one person, may not for another. However, many participants noted that “heavy” use (i.e., using cannabis more often and in greater amounts) was more likely to be associated with problems than “light” or non-daily cannabis use. A 28-year-old male who had been smoking for four years gave the example that “heavy use, every day, or constant use, all day” is likely to cause problems. Another participant, a 25-year-old male who had been smoking for 10 years described having gone through a period of habitual, problem cannabis use:

My cannabis use is quite heavy. When I was working I would smoke everyday maybe twice, three times a day depending. It was obviously out of habit, I would definitely say I’m dependent on cannabis… when it’s been engrained in you for so
long... it’s harder to get rid of it. It’s all around, typically it is. *(25-year-old male, smoking for 10 years)*

Some participants also noted that binge use of cannabis could result in cannabis use problems. A 23-year-old female, smoking for eight years, described: “[t]here’s a term, ‘greening out’… [you’re] like a zombie or you can get sick…that’s too excessive. If you’re doing that every time, that’s a lot. It’s the same thing as drinking. If you’re blacking out every time, that’s excessive.”

Lastly, the term “stoner” arose in discussions of problem cannabis use. Stoner was widely recognized as a stigmatized term and often assumed, whether true or not, that someone’s use was moderate to heavy, resulting in problems, and described certain personality characteristics. A 22-year-old male, who had been smoking for four years, described a stoner as someone for whom “[w]eed is a big part of their identity. Who uses weed habitually. Who enjoys being high a lot.” Another participant, a 21-year-old female who had been smoking more regularly for the past year, stated “[t]here’s this idea of stoners who are unmotivated and lazy, and that old idea that they’ve lost their brain cells and they’re not smart anymore. That’s not true.” Some participants described the term as an outdated, negative stereotype, such as the following participant:

I think it’s an outdated term because we don’t really view it [cannabis use] that way anymore - like a typical user is a Cheech and Chong kind of guy, who just sits in their basement and listens to vinyls and stuff. There are those people, but I think with the emergence of dispensaries and more cultural acceptance of it that
doesn’t apply to a lot of people now, as it would have 20 or 30 years ago…

because then anyone who smoked cannabis was a stoner. (26-year-old female, smoking more regularly for the past 2 – 4 years)

However, the term was also deemed acceptable within the community when used amongst people who used cannabis at comparable levels. One participant explained:

I don’t think it’s bad [to use the term] between people who smoke, but I think that between people who don’t smoke or between light users…to call someone a stoner implies that they smoke a lot, in a negative way. (20-year-old female, smoking for two years)

Reasons. Another common way participants described cannabis use was according to the individual’s reason for using cannabis. Participants often associated cannabis use with an enhancement of experience (e.g., to make good times better), especially with respect to increasing positive affect. One participant reported:

[T]he main reason I smoke is because it’s fun. You’d rather do everything that you do, high. I’m going to work, I’d rather do it high. If I’m going outside for a walk with my dog, I’d rather do it high. That’s why people smoke, it makes you energetic and euphoric … you love life. You’re open to experience. (21-year-old male, smoking for four years)
Similarly, participants described the use of cannabis for recreational purposes (e.g., to have a fun, a pleasurable experience). A 29-year-old male who had been smoking for 13 years described recreational cannabis use as “something to celebrate the weekend…Whether its social or not… I can’t give you [an] amount. I figure it would be recreational if it’s a weekend thing… something that you would do to relax or have fun.”

Participants also described using cannabis for creative purposes (e.g., to facilitate creating art). A 21-year-old female who had been smoking more regularly for the past year reported “I think a lot of people use it creatively to get over some blocks or some humps they are in, because it’s just doing whatever comes to mind and it’s less self-controlled.” Another participant, a 22-year-old male who had been smoking for four years, gave the example “musicians using it for creativity…I’d imagine that it would lower your inhibitions and allow you to explore and create avenues that you usually don’t in art.”

Participants described the intentional reasons for using cannabis in social (e.g., to offset social anxiety) or solitary (e.g., to offset boredom) settings. The aforementioned was differentiated from the general social context in which the use occurs (see Social Context below). Typically, reasons for use in these contexts related to coping with something. For example, a 23-year-old female who had been smoking for four years explained her solitary cannabis use as “[when] I feel depressed and I feel like I need something…[then] I would do it on my own.” Conversely, a 28-year-old male who had been smoking for four years described his use in social settings as “I use it socially, almost as a ‘social lubricant.’ For some people, it’s alcohol. Some people prefer other
substances. For me, I find cannabis allows me to relax and open up with people, especially with people I don’t know.”

The intentional use of cannabis to facilitate self-reflective practices (e.g., mindfulness, meditation, journaling, non-judgmental reflections on one’s day) was another interesting reason for which participants described using cannabis. One participant shared some of the introspective practices she engaged in while using cannabis:

I’ve meditated while I was high and that was the coolest experience ever, and that’s a part finding yourself, in a sense… you can reflect on your life and you can reflect on different things and you can kind of find answers that you’re not looking for just [by] going through things in your head. Sometimes I talk to myself and I talk through a situation … and you find answers just through being able to go into that deeper thought. (23-year-old female, smoking for eight years)

Participants also spoke about experimental use of cannabis, and they distinguished one’s initiation to using cannabis as a distinct experience from experimental use during ongoing cannabis use. Often the circumstances or reasons for experimental cannabis use changed over time. The following quote is an example of one participant’s description of their initiation to using cannabis during EA:

I mainly tried it for recreational use at first to see how it feels. Because in Emerging Adulthood you’re very curious about new things…if somebody claims
that it’s supposed to do [something] specific, you want to see if it works for yourself as well. And it’s [cannabis use] not life threatening, it could be addictive, but not extremely, and it doesn’t cause death if you overdose on it, so I was willing to try it. (23-year-old female, smoking for four years)

In the context of ongoing cannabis use, experimentation involved the use of different cannabis-related products and methods of administration. A 23-year-old female who had been smoking for eight years explained how her peers continue to experiment, beyond their introduction to using cannabis “I think others my age are more experimental, so they’d try more products and they may mix tobacco, and use different forms like eating it, doing joints [etc.]”

Lastly, participants discussed using cannabis for coping and medicinal purposes. Interestingly, participants generally felt that coping and medicinal cannabis use were distinct. However, participants, and coders alike, found it difficult to differentiate the two descriptors when a medical professional was not directly involved (e.g., when an individual does not have a prescription from a physician). Often the distinction between using cannabis for coping or medicinal purposes relied on the user’s level of insight into their illness. In the end, the coding team conceptualized medicinal use as a subgroup of coping use. In their opinion, medicinal use was necessarily a form of using cannabis to cope with something, but the reverse is not necessarily true. Participants provided various examples of conditions for which cannabis could be used to cope. For example, a 26-year-old female who had been smoking more regularly for the past 2–4 years described using cannabis to relax in the evenings: “[a]n after-work thing…to relax and unwind. In
the same way people say, ‘I have a glass of wine after work.’” Another participant described using cannabis to relieve stress and/or boredom:

I definitely know a lot of students use cannabis to relax, because school is so stressful and sometimes you finished a big mid-term. So, smoking a joint is a great way to relax and take the stress off and just have a nice leisurely activity…it is illegal, but I wouldn’t say it’s harmful. I just think it’s a good way to de-stress…My boyfriend smokes to not be so bored…he feels like he’s not doing very much. So, things aren’t as interesting when you’re sober, but when you’re high things are funnier, things are more interesting, you can get more passionate about music for example. When you’re high, it’s easier to express yourself, it’s easier to be creative, and I think he uses it for that every day. (18-year-old female, smoking for 3 – 4 years)

Other participants described using cannabis to regulate affect, such as in the following quote:

[T]he right strain, it will uplift my mood. So, if I am stuck and if my heart is beating in my throat. I can’t do anything. I have no faith in myself at all. I am just really dark and miserable. I smoke…it interacts with our sense of humour, right? So, it’s easier to laugh, things look more beautiful…You smoke a joint, go for a walk, go run an errand, come back and it can be really restorative for me. It can reset my mood. Take me to another place. Change my perspective, and yeah, its
relaxing. Then I can sort of get to work and sort of do whatever that I need to be doing in a better frame of mind. (28-year-old non-binary, smoking for 12 years)

Participants also described using cannabis to alleviate physical pain and muscle tension, as well as sleep, as did the following participant:

I got into a minor accident…I have lower back and neck pain. I occasionally see a chiropractor. [Cannabis use] helps put it at ease sometimes. The pain is never debilitating, but it does help to ease tension. And then for any stress I may have accumulated over the week. And then it sometimes helps me get to sleep. And again, [its] a nice way to relax. After I get my work done and then I might just unwind with a little bit of Indica. (22-year-old male, smoking for four years)

Finally, some participants shared their thoughts on what they believed constitutes medicinal use of cannabis. Participants differed with respect to the level of stringency they felt was required to be considered medicinal use. The following are examples of some participants’ opinions:

[A]nybody with a serious illness…[using cannabis] for legitimate pain relief…but you have to be very stringent on the things that qualify as a medicinal user…[For example,] unless you have like the heaviest end of depression, I don’t think you should count it towards medicinal. (25-year-old male, smoking for 10 years)
I have gout…I eat a lot of edibles high in CBD, because it helps with the muscle inflammation, and when it’s not inflamed, the circulation moves better… I consume about a thousand milligrams of RSO (Rick Simpson Oil), which is CBD and CBM-rich oil, a day, to help with boosting my endocannabinoid system… the problem with ADHD is sometimes you don't get it [a task] done and switch gears again. But with certain Sativas, you get to slow down just enough. (*27-year-old male, smoking for 12 years, who completed Cannabis Medical Access Regulations paperwork with his family physician*)

Social context. Participants also described cannabis use in terms of the social context in which cannabis is used; regardless of the intent or reason for which a person was using within the social context (see Reasons for Use above). Social use, therefore, simply describes cannabis use that occurs in the presence of others; typically, others who are also using or sharing the cannabis. One participant, a 24-year-old female who had been smoking for three years, explained why her cannabis use was predominantly a social activity, “I don’t really go out of my way to buy cannabis. A lot of the time it’s at parties and someone has [a joint], then I take a smoke.” Conversely, solitary use refers to using cannabis on one’s own; for example, a 26-year-old female who had been smoking more regularly for the past 2 – 4 years stated, “now it’s [her cannabis use] more of a solitary thing I do on my own.” Moreover, participants tended to describe social and solitary cannabis use as existing on a spectrum. A 23-year-old female who had been smoking for eight years summarized this in the following quote “[s]ocial [use occurs] the majority of the time, maybe 80 percent of the time, with their friends. And I would say usage by
The same participant also explained that her cannabis use could fluctuate from more or less of a social activity over time, such as the seasonal fluctuation she described in the following quote: “[p]eople just want to do more things [in the summer] and I hang out with my friends more…and whenever my friends get around, we smoke and we drink. It’s a social [activity].” Lastly, a few participants expressed concern or hesitation towards using cannabis alone. One 28-year-old male who had been smoking for four years noted “I find isolated use perhaps more likely to be problematic, because you don’t have feedback from other people.”

**Frequency and amount of use.** Generally, coders found these descriptors to be less helpful in defining cannabis use given the wide range of descriptions provided by participants for frequency (e.g., “seasonal,” “casual,” “occasional,” “moderate,” “light,” etc.) and participants’ difficulties in quantifying use. Regarding frequency of use, patterns could be sorted based on participants’ descriptions of a consistent interval (regardless of the frequency; e.g., daily, weekly, etc.) or not (i.e., irregular use). An example of regular, moderate use was provided by a 22-year-old male who had been smoking more regularly for the past 3-4 years, “[w]hen it [cannabis use] falls in to a pattern…[such as] every 3-4 days in a two-week span.” Seasonal cannabis use was described by a couple participants, such as the 23-year-old female who had been smoking for eight years who reported, “in the summer it was more, because it’s the summer and everyone is smoking in the summer.” Irregular cannabis use subsumed a range of frequencies. For example, a 20-year-old female who had been smoking for two years described “light” use as “[using cannabis] a few times a year.” Intermittent cannabis use was described by a 28-year-old
male, smoking for four years, as occasional cannabis use, “maybe once a month or a few times a year – very occasional” or cannabis use that was interrupted by random periods of not using, “intentionally stopping use to lower tolerance [i.e., a tolerance break to enhance the effects of cannabis].” Casual cannabis use was also identified as a frequency that could fall into a regular pattern (e.g., “I use it in a way that’s more casual, relaxing on the weekend sort of thing” - 28-year-old female, smoking for 13 years) or not (e.g., “[I use] on a casual basis, just when I go out to a party or something…I don’t seek it out. I enjoy it with friends. I’m open to it” - 24-year-old female, smoking for seven years).

Some participants seemed to combine cannabis use frequency and amount consumed when they used terms such as “heavy” or “habitual” to describe cannabis use, but vaguely described these patterns as more frequent use during which greater amounts are consumed. The quotes provided in an above section (page 65 – 66) demonstrated this conflation. Lastly, several participants also identified non-use as a frequency and amount pattern as well, acknowledging that some people do not use cannabis at all.

Combination (polysubstance) use. Finally, several participants spoke about cannabis use when combined with alcohol and/or other substances as a distinct pattern of use. Participants tended to note negative consequences that can be associated with combining substances (e.g., rapid onset of effects and intensified intoxication). Interestingly, one participant connected their thoughts on polysubstance use to the current political context. This participant advised against the then proposal that cannabis be sold in liquor stores upon its legalization in the following quote:
I know that its particularly commonly combined with alcohol…[They] talk about the LCBO as an option [as a venue for selling cannabis] and I think that will be a disaster…[T]he fact that you can have cannabis and alcohol on the same shelf in the same store, I don’t think that’s a good thing, because it’s going to encourage people. I have combined [cannabis and alcohol] and the effects of cannabis are amplified, the effects of alcohol are amplified… It was extremely intoxicating. I was stumbling around. I was impaired. (28-year-old male, smoking for four years)

Emerging Adulthood and Cannabis Use

Participants were asked if they believed there was a connection between their cannabis use and this period of their life – emerging adulthood. Over half of the participants believed that their cannabis use was related to this time of life. Another significant portion of the sample believed that there was a relationship between their cannabis use and this time of life, but that the relationship alone could not fully account for their use (“in some ways yes, in some ways no”). One participant believed there was no relationship at all.

All participants who reported that their cannabis use was at least partly related to this time of life (n = 19) were asked to elaborate on this relationship. Open-ended questions were used to allow participants to comment freely upon the relationship, then participants were specifically prompted to consider each of Arnett’s proposed tenets. Participants tended to speak about the features of EA in an overlapping way, rather than as mutually exclusive categories (see examples below). Most often, participants’ spontaneous responses were coded as identity exploration during EA. Instability was the
next most frequently coded, followed closely by *optimism and possibilities* and *self-focus* during this period of life. One participant provided a response that reflected the sense of *feeling in-between* adolescence and adulthood during EA. When participants were prompted to consider Arnett’s proposed tenets, they elaborated more fully on each of the themes, and often agreed that their cannabis use was consistent with the features of emerging adulthood. The descriptions provided by participants are reviewed in the sections that follow.

**A sense of optimism and possibilities.** One of the most commonly endorsed themes among participants was that cannabis use was linked to the sense of *optimism and possibilities* during EA. Participants often wanted to divide this category into two separate ones – some reported that their use related to one aspect, and not the other. With respect to a *sense of optimism*, participants spoke about how cannabis enhanced positive affect while using (i.e., induced euphoria) and helped them to enjoy the present moment. Participants also commonly spoke about how their cannabis use increased their sense of optimism and facilitated their consideration of positive thoughts about a difficult situation or the future (e.g., feeling more hopeful that a difficult situation will work out). For example, one participant shared the following:

*I don’t judge myself, and I'm not beating myself up, and I’m not worried about anything. I’m not tearing myself apart like I usually do. It’s just more about, ‘okay, this is how to be happy in the moment. This is taking it one day at a time. This is enjoying the things you can enjoy while they’re here’…It makes me more...*
centered and it makes me more present. (*28-year-old female, smoking for 13 years*)

One participant spoke about how their sense of optimism regarding their career was directly related to their cannabis use, as they were pursuing business opportunities in the growing cannabis industry. Another individual spoke about how successfully changing their cannabis use (i.e., decreasing their use) contributed to an increased sense of optimism that they would be able to achieve other changes in their life.

Regarding a *sense of possibilities*, participants spoke about how their cannabis use helped to facilitate a sense of openness to opportunities and helped them cope with the number of possibilities available to them (e.g., coping with feeling overwhelmed by many choices and possibilities to pursue). Participants spoke about how their cannabis use helped them to cope with the stress related to not knowing which opportunities to pursue or whether the path they chose would work out. One participant reported the following:

[M]arijuana might make me more of an optimist… I think it’s just so easy when there’s *instability* or when you’re unsure about things to only see it [in] a negative way. But with cannabis, that worry is less there, because of the effect it has. So, it’s easier to be optimistic about the future, and it’s easier to be comfortable with the amount of possibilities that there [are]. (*20-year-old female, smoking for two years*)
A minority of participants also acknowledged that choosing to use cannabis was, in and of itself, a possibility or option that became available to them during EA that they then pursued. For example, this relationship was described by two participants in the following way:

I think it relates to that explorative period of possibilities, and the exploration of yourself, and what is out there in the world, and trying out new experiences. [EA is] often a period of your life when you want to try many new experiences…After [adolescence], when you get the freedom that comes with the age of the majority, you can do anything really. I can walk out and do anything in the world. Some of [those things] could land me in jail, but you know what I mean…I could go and travel to China if I wanted to. There are so many possibilities; with that, cannabis comes into it there. (28-year-old male, smoking for four years)

[M]aybe I’m biased, because I’m a light user, [but] I don’t see anything wrong with using substances like cannabis or alcohol during this period. I think that you have to try these things to figure out how they make you act. It puts you into situations and that’s how you figure out who you want to be, and how you want to be known, and how you want to define yourself. I don’t think [cannabis use is] necessary, but I think for the people who do use it, it contributes a lot to how they end up defining themselves. Whether it’s as a non-user or a user. (20-year-old female, smoking for two years)
Three participants acknowledged a negative or the potential for a negative impact of their cannabis use on their sense of optimism or possibilities during EA. Participants spoke about how their cannabis use had become a source of their anxieties and had the potential to negatively impact their mood, if abused. Participants also spoke about how their cannabis use had interfered with pursuing possibilities that were available to them or had made them complacent with the status quo, to the point that they were not looking for possibilities to pursue. A 28-year-old male who has been smoking for four years stated, “it affects me negatively, because I’m unable to do all of the things I want to do, when I want to do it, and I know the cannabis use is holding me back.”

Two participants felt that there was no relationship between their cannabis use and a sense of optimism and possibilities during EA. No elaborations upon these responses were provided.

**Self-focus.** Participants also commonly related their cannabis use to EA being a period of life for focusing on one’s self. This relationship was described in two ways. First, participants spoke about how the circumstances of this period of life are conducive to use. They spoke about having greater independence and privacy now compared to when they were adolescents, as well as having resources available to them (e.g., money, time) that are conducive to their cannabis use. For example, one participant summarized the relationship in the following way:

[Y]es, in that, in full adulthood, you might have children who you can’t use it around, you might have a job in which you can’t use it, so I suppose…this period allows you to focus on yourself, because you have fewer responsibilities, but also
parents [are not] supervising…in that same way, you are more free to use, because you want to, and you don’t have to think about your kids or your job or… I’d say it has fewer negative impacts on your life, so you can do it if you want to and not have to think about other people as much. (21-year-old female, smoking more regularly for the past year)

Interestingly, the second explanation participants provided reflected a more literal, in-the-moment focusing on one’s self. Participants spoke about how using cannabis helps them to feel more comfortable engaging in self-reflective practices in the present moment and allows them to observe their thoughts with a non-judgemental stance. They described engaging in practices such as journaling, turning their focus inward, meditation and mindfulness activities while using cannabis. One participant explained:

[If you smoke, and you reflect on your life – I do, but not necessarily everyone does - …you can reflect on your life and you can reflect on different things and you can kind of find answers that you’re not looking for just [by] going through things in your head…you find answers just through being able to go into that deeper thought. (23-year-old female, smoking for eight years)]

A minority of participants also pointed out that cannabis use in and of itself is an example of an activity that serves their personal needs and wants alone. For example, a
28-year-old male who has been smoking for four years stated “I want to use a
recreational drug, responsibly… It’s a self-oriented idea. It’s something that’s serving my
interests. It’s selfish, but it’s not injuring anyone else…” These responses also reflected
an increased independence in thought. For example, a few participants spoke about
independently exploring cannabis use as a form of self-medication. A 22-year-old male
who has been smoking more regularly for the past 3 - 4 years to medicate symptoms of
anxiety and depression stated “[y]ou’re responsible for your own well-being [in EA] and
you do different things to get yourself at the level that you want.” Another participant
highlighted how one’s approach to cannabis use can evolve from adolescence with
increased independence in thought in EA. One participant reported, for example:

[Y]ou have to face [that] part of being an adult is developing the ability to not
really be occupied with what other people think, what other people are doing and
what other people expect of you. You think about those things, but you think of
them more so in the people you really care about. Whereas, when you’re an
adolescent it’s more everyone at once… [Y]our identity is rooted in a really
shallow idea of ‘all my friends are doing this and maybe I should be doing
this’…[W]hen you get older those things don’t matter anymore and it’s like…[I]f
you don’t like cannabis then don’t have it, but if you do like it, have it [to the
extent] that it doesn’t interfere with your daily life… [K]nowing those things -
your limits, your likes and dislikes - without being adulterated by what your
friends think you should like or dislike. (26-year-old female, smoking more
regularly for the past 2 - 4 years)
Three participants did not endorse a relationship between their cannabis use and self-focus during EA. One participant interpreted this prompt literally, explaining that their cannabis use did not relate to focusing on themselves during this period of life, because they did not use cannabis on their own. Another person was not prompted with this relationship, because they had denied that EA was a period of life for focusing on themselves earlier in the interview. The final person did not elaborate upon their response.

**Instability.** A majority of the sample also spoke about how their cannabis use relates to the *instability* that is inherent to EA. Participants spoke about their cannabis use as helping them to cope with instability during this period of life (e.g., in one’s career, identity, relationships, worrying, stress, emotion lability). For example, one participant shared the following:

> Yeah, it definitely helped after I hit a stressful point in time. Those stresses usually come from not knowing if my current plan will work out or not knowing anything I’m depending on will come to be. There’s a lot of instability, and because there’s nothing that I can really do about it - because it’s all in the future and it’s out of my control – cannabis is definitely… a good way to sort of take me out of that element. (*20-year-old female, smoking for two years*)

However, participants also acknowledged that cannabis use could or had likewise contributed to the instability in their life (e.g., decreasing motivation, increased sense of...
Cannabis Use in Emerging Adulthood

stuckness, worsening symptoms of depression). In this way, EAs’ cannabis use seemed to have both positive and negative effects on instability during this period of life. For example, a 29-year-old male who had been smoking regularly for 3 - 4 years stated: “it’s a double-edged sword, because it… [en]ables me to do things at my lowest point, but it also disables me (if I abuse it) from doing things, by taking away motivation and my actual ability to work.”

Four participants did not endorse a relationship between their cannabis use and instability during EA. One participant reported that their cannabis use had neither a positive nor negative influence on instability during EA. Another person was not prompted with this relationship, because they had denied that EA was a period of instability earlier in the interview. The final two participants did not elaborate upon their responses.

**Feeling in-between adolescence and adulthood.** Most participants believed that their cannabis use also related to their feeling in-between adolescence and adulthood during this period of life. As Arnett had proposed, participants spoke about using cannabis to cope with the difficulties of feeling in-between in important aspects of their development – feeling in-control or independent or powerful in some ways, but not in other ways (e.g., I’m living on my own, but my parents help me pay rent). For example, one participant reported:

[T]he whole stress coping mechanism of just trying to figure out where I am in my life, like career, my relationships, and just overall independence… I don’t really have that independence that I necessarily want. So definitely that [cannabis]
would be a really great coping mechanism. It’s just a good way to just forget about things… [W]hen all the work I put into my career, eventually manifests in some sort of either full-time work or more in-depth work that requires more of me, then… I’m not going to be able to use as much, because I’m not going to want to use as much, right?… My mental health struggles are really tied with my work and where I am at with that, and so, as I’m doing more work… my mental health is in a great place, because I feel like my self-esteem is raised. So yeah, if I’m working to a point where I’m not miserable, I think I will use cannabis a lot less. (28-year-old non-binary person, smoking regularly for 12 years)

Some participants spoke about the relationship between their cannabis use and feeling in-between in a similar way that they had spoken about the relationship between their cannabis use and the self-focus feature. That is, that the conditions of this period - being situated between adolescence and adulthood (i.e., more privacy and independence; not as many responsibilities) - provide resources (e.g., privacy, money, time) that are conducive to use for those who chose to use.

Participants also spoke about their cannabis use as a way of prolonging this sense of feeling in-between and thereby holding on to their youth. Both positive and negative implications of this relationship were discussed. Positive experiences reflected a sense of nostalgia, such as that reported by the following participant:
[H]olding on to the things that I remember from university… I guess it is a memory of the past too… it does make me think about the times when I was in school. It brings up memories of my younger self. (24-year-old female, smoking for seven years)

Negative experiences tended to reflect an uncertainty in their developmental standing due to a perpetuation of this feeling in-between. For some, this culminated into a feeling or state of stuckness. That is, some participants felt unable to progress into adulthood or self-actualization due to their cannabis use. Take the following excerpts for example:

[Sometimes] I do feel bad about it a bit, because… becoming an adult comes with so many responsibilities … so smoking weed feels like it’s a contradiction of those new responsibilities, because an adult shouldn’t be smoking weed. That’s kind of a common perception, even though I don’t really believe that. But because so many people do … so sometimes when I smoke, I feel like I’m not supposed to be doing it, because I’m becoming an adult… I think it kind of makes [me] feel like I’m on a teeter-totter. (18-year-old female, smoking for 3 - 4 years)

Four participants did not endorse a relationship between their cannabis use and feeling in-between adolescence and adulthood during EA. One participant reported that they felt that their cannabis use was reminiscent of adolescent behavior, more so than a transitionally aged behaviour. Two other participants reported that their use has and/or
will persist throughout their life, rather than being specific to this transitional period. Therefore, they viewed this co-occurrence as coincidental. One participant did not elaborate upon their response.

**Identity exploration.** Over half of the sample believed that their cannabis use related to *identity exploration* during EA. Participants tended to focus on the introspective practices associated with their cannabis use when describing its relationship with identity exploration during EA. Many reported that their cannabis use facilitated non-judgmental, self-reflective practices that enabled them to explore who they are and who they want to become. Participants also spoke about how their cannabis use allows them to shift or consider alternative perspectives and was often an example of them developing their own values and opinions. For example, one participant reported:

> I think it was very dependent on my search for identity and all that, because when I first experimented, it was something that my parents had told me not to engage in [it]… But the second I was on my own and figuring out what I wanted to do and how I wanted to define myself… to use it was entirely something that was my decision… it felt nice to do something that was just mine. And then after a while I realized that that wasn’t what I wanted, and that wasn’t how I wanted to define myself. I just took time to figure it out. (*20-year-old female, smoking for two years*)

In addition, participants spoke about how their cannabis use allows them to access aspects of their identity with which they otherwise have difficulty connecting (e.g.,
creativity). Some participants spoke about how their cannabis use could quite literally provide them with an identity (e.g., stoner) to attach to fully, or in part, during this period of exploration and finding one’s self. One individual described their cannabis use as a consequence of not knowing who they are, proposing that their use would decrease if they had a “more secure” sense of who they are. Moreover, a few participants spoke about how their use has or continues to stagnate their identity exploration. Instead of actively exploring new parts of themselves and other possible identities, their attachment to this one identity (e.g., stoner) has made them complacent with who they are. For example, the same participant who spoke about his cannabis use interfering with his progression towards self-actualization and adulthood (see Feeling in-between) described the following about the impact of his use on identity exploration:

When I was constantly using, I felt like I was stagnated. I felt like I wasn’t exploring parts of myself or what to do at this point in my life and my identities…the identity that comes with being a stoner…the sense of what it’s like to have an identity of being part of a subculture…[It also] affected my ability to just explore identities and to grow out of one into another… it stagnated me into one identity, as opposed to being able to explore others…I think instability is good, because it allows you to break from one identity to another. And then what cannabis did was, it grounded me into a… it prevented that breaking out of that one identity of being a stoner, of being lazy, of being complacent, into the identity of a functioning adult, for example. (22-year-old male, smoking for four years)
Interestingly, several participants differentiated identity exploration in EA from that which they experienced during adolescence. Participants spoke about identity exploration during this period of life as a more active and intentional process and less distressing than the identity confusion they recalled experiencing during adolescence. For example, one participant reported the following:

I just didn’t know who I was. I didn’t know myself…but now I’ve learned things where I’m like ‘okay, I’m not as confused.’ I’m going through life now [like it’s] an adventure. Now I’m learning things. Now I’m packing on things, like different skills that I’m learning. Before I was just like ‘I don’t know anything.’ Now I need to add things on, but now I feel like I have a base. (23-year-old female, smoking for eight years)

Six participants did not endorse a relationship between their cannabis use and identity exploration during EA. One person was not prompted with this relationship, because they had denied that EA was a period of life for exploring their identity earlier in the interview. Another participant reported the same – that they were not exploring their identity at this time, and so this relationship with their cannabis use could not exist. Four participants did not elaborate upon their responses.

**Anticipated Future Cannabis Use**

To further contextualize participants’ cannabis use during EA, participants were asked to anticipate how their use might be influenced by upcoming changes. Specifically, participants were asked to anticipate what their use will look like as they transition out of
EA and into adulthood. Additionally, considering the socio-political context in which this research was being conducted, participants were asked to anticipate how their use might be influenced by the future legalization of cannabis.

**Cannabis use and adulthood.** Half of the participants expected that their cannabis use would decrease as they transitioned from EA into adulthood. Participants tended to attribute this decrease in use to an increase in responsibilities in adulthood (e.g., to spouses, children, employers). No participants were certain that their use would increase. One participant did not specify whether or not their cannabis use would change.

Interestingly, almost half of the sample anticipated that they would continue to use cannabis. A number of these participants believed that they would continue to use to the same extent or less. These individuals described feeling satisfied with their use and/or experiencing therapeutic effects. However, they also noted that changes in their life circumstances (e.g., moving to a country where use is strictly prohibited or culturally unacceptable; no longer enjoying or being able to tolerate the effects of cannabis; no longer having access to cannabis) or an increase in responsibilities could lead to a decrease in their use. The remaining participants were less certain of what their use would look like in adulthood and could think of reasons or periods of their adult life during which their use might increase (e.g., coping with a negative event; legalization) or decrease (the reasons provided were similar to those noted above).

**Cannabis use and legalization.** A number of participants did not anticipate a change in their cannabis use, should it become legalized in Canada. One person noted that their use will continue to decrease regardless, because cannabis use will continue to be stigmatized for the foreseeable future even with legalization. This individual compared
cannabis use with tobacco cigarette use in this regard. Several participants pointed out that the legal status of cannabis in Canada has not impacted their personal beliefs about or access to cannabis, to date. However, one of these participants acknowledged that their use could decrease if prices increased due to the market value. Two participants noted that they have been prescribed cannabis and so are already using cannabis legally.

Some participants believed that their use would increase, should cannabis use become legalized. Participants attributed increased use to increased access to cannabis and feeling safer to experiment with a variety of strains. One person likened this to the craft brewery industry. Furthermore, a number of these participants qualified that this would likely be a temporary increase in their use, and that their use would then return to their current (pre-legalization) level of use. These individuals tended to note that certain barriers to their cannabis use (e.g., limited finances, time) will persist independent of its legal status.

This question was developed through the iterative process of developing the interview and interviewing participants; therefore, not all participants were asked this question directly. No responses are available for about a third of the sample. One participant was uncertain whether or not their cannabis use would change with legalization.

**Discussion**

In Study Two, the researcher sought to gain insight from EAs on their current *lived experience* in order to contextualize cannabis use in the EA developmental period. This study sought to take a broader conceptualization of cannabis use into consideration by exploring a breadth of EAs’ cannabis use experiences. The results of this study add to
the literature by offering an in-depth discussion on how EAs view their cannabis use as situated within EA. The insights gained from participants provide a more nuanced understanding of the relationships between features of EA and cannabis use, specifically.

**Interpretation of Main Findings and Comparisons with Past Research**

**Emerging adults’ descriptions of cannabis use.** The first research question was, how do EAs who currently use cannabis describe and conceptualize use? Do they perceive cannabis use as problematic and non-problematic? Do they recognize a continuum of use? The participants of this study did in fact describe cannabis use in a number of ways, including, but not limited to, non-problematic and problem cannabis use. Consistent with past research (e.g., Hathaway et al., 2015; Mostaghim & Hathaway, 2013; Parker et al., 2002), the vast majority of this sample described cannabis use as a normative and socially acceptable behaviour at their age. Several participants compared it to alcohol or tobacco use, in terms of its acceptability in society. When asked to describe different patterns of cannabis use, it became clear that cannabis use could be described in a number of diverse ways. Participants also described a continuum of experience within dynamic categories and erred against using the descriptors as discrete categories. For example, an individual’s cannabis use may fall on a spectrum from a social to solitary activity. The dynamic nature of EAs’ cannabis use was highlighted when described by any combination of the descriptors reported and as changing over time. The diverse descriptions participants provided to describe their cannabis use, lends support to the recommendation that researchers explore and capture more diverse views of cannabis use in psychological research rather than rely upon the user and non-user dichotomy (Patouris, 2013). Furthermore, several descriptions existed outside the context of problem
and non-problematic cannabis use which offers support for past proposals that not all 
cannabis use constitutes problem use (e.g., Becker, 1953; Hathaway et al., 2015; 
Mostaghim & Hathaway, 2013; Parker et al., 2002; Ravert 2009; Temple, 2015; Weil et 
al., 1968).

**How cannabis is used in emerging adulthood.** The second research question for 
this study was do EAs who currently use cannabis view their use as linked to this time of 
life? If so, what features of EA do they connect with their cannabis use and how do they 
describe these relationships? In this sample, an overwhelming majority believed their 
cannabis use did relate to this period of life and related their cannabis use to each of the 
EA features proposed by Arnett (2005). Interestingly, when explicating these 
relationships between this time of life and their cannabis use, participants spoke about 
Arnett’s (2000, 2005) features in an overlapping way, rather than as mutually exclusive 
categories. Consistent with previous research (e.g., Arnett, 2005; Mostaghim & 
Hathaway, 2013), participants discussed how the circumstances of EA provide conditions 
that are conducive to using cannabis (e.g., greater self-focus and independence, fewer 
sources of social control). However, the relationship between cannabis use and EA was 
not circumstantial alone; rather, participants also described an intentional use of cannabis 
to regulate their internal experience and for exploratory and expansive reasons. In this 
way, participants described a functional use of cannabis to help with important 
developmental tasks of this period of life, such as developing and refining one’s own 
value and belief system, and identity exploration. Importantly, when describing the 
functional uses of cannabis participants described a continuum that recognized 
problematic and non-problematic aspects of use. That is, participants described the ways
in which cannabis use could facilitate adjustment or interfere with growth and
development. With respect to using cannabis to regulate one’s experience, participants
described how cannabis could enhance and modulate or exacerbate instability in their
mood and sense of optimism. Similarly, participants described how cannabis could be
used to facilitate and deepen self-exploration and reflective capacities, but could also
stagnate their self-exploration; for example, through full identification with a single
cannabis user identity, such as identifying as a stoner. In sum, some EAs will use
cannabis as one strategy amongst a repertoire of other coping and exploratory strategies
when navigating the developmental tasks of EA and may not experience significant
problems. However, other EAs will use cannabis in a way that undermines the
development of other coping strategies or in lieu of developing other coping and
exploratory strategies for navigating these developmental tasks and may experience
problems as a result.

Comparisons with past research. Among the few qualitative studies that have
been conducted in this area of research similar themes regarding the conditions of EA
being conducive to cannabis use, the functional use of cannabis and its interference with
achieving developmental tasks have been described (e.g., Goodman et al., 2015;
Hathaway et al., 2015; Mostaghim & Hathaway, 2013). Indeed, the current findings
partially corroborate some of the patterns or themes observed in previous studies.
However, the continuum between functional and problematic use that participants
described in the current study has not been explicitly documented.

In Hathaway and colleagues’ (2015) study, participants who do not use cannabis
spoke about themes of using cannabis to cope and identity formation. However,
participants in that study described the functional use of cannabis to cope or as an “escape” as problematic use. Whereas, participants in the current study expressed acceptance for using cannabis to cope or escape something in their life temporarily, especially if the individual had insight into the underlying issue and was working to address it in some other way. Regarding identity formation, participants spoke about how abstaining from cannabis use distinguished them from others, as well as representing a symbol of their maturity and personal integrity. They also reported that ethnic, religious and familial values that were in contradiction to cannabis use that had informed their decisions to abstain. Mostaghim and Hathaway (2013) reported similar findings after interviewing both EAs who did and did not use cannabis. In that study, participants spoke less about engaging in self-reflective and exploratory strategies while using cannabis and more about marking their transition out of adolescence or defining an aspect of their identity with cannabis use.

The discrepancies between the current and previous findings may reflect differences in the sample characteristics. Indeed, the differences observed may suggest that there are, in fact, some differences in how cannabis use is viewed by those who do and those who do not use cannabis. For example, those who use cannabis may view coping reasons for using cannabis differently compared to those who abstain from cannabis use. This highlights the importance of speaking with those with lived experience. Nonetheless, there appears to be a common thread throughout these studies that there is a relationship between the self-reflective practices involved in developing one’s own belief and value system, and decisions about whether to use or abstain from cannabis use during EA.
In the study conducted by Goodman and colleagues (2015), participants similarly spoke about themes of self-reflection and personal growth, as well as how their substance use interfered with their development during EA. However, participants in Goodman and colleagues’ (2015) study did not discuss substance use contributing to self-reflection in the context of ongoing use, rather they reported how changing their substance use and addressing substance use concerns in treatment contributed to personal growth. Indeed, participants focused exclusively on how substance use exacerbated their sense of instability in EA, interfered with developmental tasks, and prolonged their sense of feeling in-between adolescence and adulthood. Benefits of substance use were not acknowledged.

It is likely that functional uses of cannabis use were not discussed in Goodman and colleagues’ (2015) study because it was a clinical sample and substance use was conceptualized as a problem behaviour. It is possible that EAs who have engaged in treatment for a substance use disorder have different experiences and views of EA, relative to those who engage in substance use, but are not experiencing significant problems. It is also not surprising that a treatment-seeking sample would focus on negative experiences with substance use and overcoming these challenges, rather than positive substance use experiences. It is also unlikely that participants would be prompted to consider and discuss benefits associated with their use by the interviewers in a study where the focus was on exploring the views of youth who were experiencing substance use problems. Since problematic substance use is the shared experience between these samples, it makes sense that the similar themes emerged in relation to this pattern of use. Lastly, it is possible that some of the benefits discussed in the current study are specific
to cannabis, and not other substances. As a result, patterns observed for cannabis use, specifically, might be missed when pooled with the use of other substances. Furthermore, Arnett’s (2000, 2005) EA features may relate to the use of one substance differently than multiple and/or different substances; thus, contributing to differences in the relationships observed.

**Limitations and Future Directions**

The results of this study offer important insights into the lived experiences of EAs who use cannabis during this developmental period. However, several limitations should be taken into consideration in interpreting these findings. Firstly, the patterns and relationships observed in the current study reflect the lived experiences of this particular sample. This sample was recruited from the Greater Toronto Area, used cannabis at least once in the preceding month and did not use cannabis exclusively for medicinal purposes. The sample was predominantly white, binary male or female gendered, heterosexual, well-educated and employed. The intent of this research was to deepen the understanding of current cannabis use in a group of EAs. This qualitative study did not intend to delineate patterns and relationships that are true for all EAs, nor to reflect the lived experience of all EAs who use cannabis. Therefore, the reader is cautioned in extrapolating the current findings to other groups. Future directions for research might include investigating the lived experiences of individuals of diverse backgrounds or under-represented groups, and/or who use cannabis predominantly for medical reasons.

Secondly, the structuring of the interview may reflect a bias in the researcher’s approach. This study was informed by previous research in the area (e.g., Arnett, 2000, 2005; Bergman et al., 2016; Goodman et al., 2015), and as such it was hypothesized that
the developmental context will relate to cannabis use. Moreover, the research was informed by Arnett’s (2000; 2005) theoretical framework and, in part, a deductive approach was used to explore his themes in the data. Of course, the research and researcher cannot realistically exist in a true neutral stance, nor is this necessarily advised in qualitative research. However, the researcher failed to consistently follow up on responses that negated relationships. For example, one participant rejected this relationship altogether and it is not clear why they did not view their cannabis use as related to the developmental context of EA. Additionally, during the interview open-ended questions were used to allow participants to first explain the relationship between EA and their cannabis use in their own words, and then prompted to consider each feature proposed by Arnett (2005). Participants were not prompted to consider other features of EA, such as the specific views proposed by Nelson and colleagues (2015) or Ravert (2009). It was necessary to focus the goals of the semi-structured interview to some extent due to the breadth of the project and time limitations of the interview. However, in hindsight, this approach may reflect a biased approach. As a result, these findings are best understood as reflecting the experiences of participants who believe their cannabis use relates to the developmental context of EA. Future research would likely benefit from expanding this focus to consider the influence of specific views and behaviours in EA on cannabis, as well as exploring the complementary explanations of EAs who do not believe their cannabis use relates to the developmental context.

**Conclusions**

The current study offers important insights into the participants’ cannabis use. Participants defined their cannabis use in a number of diverse and dynamic ways,
Cannabis Use in Emerging Adulthood

including, but not limited to, non-problematic and problematic use. This finding suggests that in order to close the gap between certain definitions of cannabis use and participants’ lived experiences broader conceptualizations of cannabis use should be taken into consideration. Moreover, participants believed that their cannabis use was related to the developmental context of EA. Participants spoke about Arnett’s (2000, 2005) features in overlapping ways as they described how the conditions of EA were conducive to cannabis use, and functional uses of cannabis and ways in which cannabis use could interfere with their development.

Research Summary

This research sought to gain insight from EAs on their current lived experience in order to contextualize cannabis use in the EA developmental period. Past research has emphasized the importance of the developmental context in understanding substance use and related problems during EA (e.g., Arnett, 2000, 2005; Bergman et al., 2016; Deas et al., 2000; Goodman et al., 2015; White & Jackson, 2005). However, few empirical studies have focused on the use of cannabis specifically in these explorations. Moreover, biased views of cannabis as necessarily a problem behaviour or form of maladjustment in research have complicated our understanding of this relationship. There is a need to better understand EAs’ perspectives on cannabis use and whether it is connected with the developmental context, and if so, how; given that across the lifespan, cannabis use peaks during EA and society’s shifting views towards increasing acceptance of cannabis use. This research explored EAs’ views of cannabis use and the relationship between developmental features of EA and cannabis use and related problems.
Not All Cannabis Use is the Same

A consistent, and perhaps not unexpected, finding in this research was that cannabis use could look very different across EAs. Participants provided dynamic descriptions of cannabis use according to whether it was problematic or not, the frequency and amounts consumed, their reasons for use, the social context in which it was used, and whether it was used with other substances. Based on this information, it seems that using a single category to capture all cannabis use in a sample (e.g., dichotomous terms) runs the risk of equating qualitatively distinct patterns of use and increases the risk of erroneous results (e.g., false negatives or positives). Thus, the current research supports Patouris’ (2013) recommendation that researchers broaden their conceptualizations of cannabis use to better understand the behaviour.

One way in which researchers can begin to examine different patterns of cannabis use is by differentiating problematic from non-problematic cannabis use. It became clear in this research that not all EAs who use cannabis experienced problems associated with their use; therefore, not all cannabis use should be considered problematic. This pattern challenges certain conceptualizations of cannabis use as necessarily a harmful or maladaptive behaviour, and offers support for past research and claims that not all cannabis use constitutes problem use (e.g., Becker, 1953; Hathaway et al., 2015; Mostaghim & Hathaway, 2013; Parker et al., 2002; Ravert 2009; Temple, 2015; Weil et al., 1968).

Furthermore, frequency of cannabis use and amount consumed were inconsistently related to cannabis use problems in this research. This finding has significant implications in psychological research since frequency of cannabis use, in
Cannabis Use in Emerging Adulthood

particular, has often been equated with cannabis use problems or used interchangeably with harm and maladjustment (e.g., Allem et al., 2013, 2015, 2016, 2017; Lisha et al., 2014; Nelson et al., 2015). However, caution may be warranted in doing so. Importantly, it was not that participants altogether denied that the frequency of cannabis use or amount consumed could be associated with problems, but rather participants found it difficult to communicate specific quantities that constitute harm, and therefore, found these measures less helpful. There was some consensus, however, that “heavy” use (i.e., higher frequencies and amounts) was more likely to be associated with problems than “light” and non-daily use. Participants in a previous study by Hathaway and colleagues’ (2015) had also had difficulty quantifying problem and normative use, and provided varying opinions on what constituted “too much” cannabis use. Taken together, there is some agreement that consuming cannabis more frequently and in greater amounts is more likely to be associated with problems. However, the exact frequencies and amounts that constitute harm remain unclear, and there is a need to develop a consistent way of quantifying cannabis use.

In addition to frequency of cannabis use or amount consumed, there were several other ways participants defined cannabis use problems. In this research, participants described cannabis use problems as a dependence or need to use cannabis to function, interference with responsibilities (e.g., school, work, and/or relationships), experiencing negative health consequences, procrastination, decreased productivity and decreased energy level. Parts of this description complement previous research in which responsible cannabis use was described as remaining in control of the effects of cannabis and maintaining one’s priorities (e.g., Hathaway et al., 2015; Mostaghim & Hathaway, 2013).
Researchers are encouraged to use measures that capture these criteria when examining problem cannabis use, rather than relying on frequency of cannabis use and amount consumed only.

**Cannabis Use in Emerging Adulthood**

In this research, participants believed that the developmental features of EA related to their cannabis use and cannabis use problems. Cannabis could be used in a functional way to facilitate or help navigate important developmental tasks. Indeed, cannabis could be used to facilitate self-reflective and exploratory strategies related *identity exploration*, as well as coping and regulating *instability* in one’s internal experience. However, cannabis could also be used in a way that interferes with development. Participants described a continuum between functional and problematic cannabis use in addressing these developmental tasks. In particular, cannabis use problems emerged among participants who viewed their cannabis use as related to the *instability* of EA. Perhaps, EAs who lack additional strategies for managing the instability in their life are at particular risk of experiencing cannabis use problems.

In sum, consistent with past research, not everyone in this sample were at risk of experiencing cannabis use problems due to the developmental context. Instead, specific views of EA were more likely to be associated with cannabis use problems. This finding lends support to Ravert’s (2009) proposal that not all “now or never behaviours” are maladaptive; rather, some of these behaviours can help EAs to progress in their development. Perhaps more important, however, in predicting whether problems will be experienced is the *way* in which cannabis is used to address a developmental task. For example, individuals who rely on cannabis use *only* to cope with instability in EA, as
opposed to this behaviour being one of many coping strategies, may be at particular risk of experiencing problems.

**Theoretical and Clinical Implications**

Over the course of this research, Canada’s position on recreational cannabis use underwent a historical shift. Researchers have a responsibility to help support members of the public, including EAs, through this shift by providing evidence-based knowledge to inform their decisions about cannabis use and the development of related policies. The importance of protecting those most vulnerable to experiencing cannabis use problems has been emphasized throughout this process. One of these vulnerable groups is EAs. The current research provides important insights into what constitutes and contributes to cannabis use during EA, including problem cannabis use, that can help to inform theory and clinical practice.

Foremost, this research contributes to our theoretical understanding of cannabis use in EA. The mixed methods approach drew on the strengths of qualitative and quantitative methods to better understand how EAs’ conceptualize their cannabis use within the developmental context. In Study One, the use of quantitative methods facilitated an exploration of relationships between the critical tasks and features of EA and cannabis use during this period in a community sample. In Study Two, the use of qualitative methods facilitated an in-depth exploration of how cannabis use is situated within EA. Through this approach we were able to reflect a broader spectrum of experiences, as well as ground this exploration in the current, lived experiences of participants rather than their views of EA alone. This study also contributes to the literature by offering a novel perspective on how cannabis use relates and is influenced
by the developmental context. Indeed, this represents the first qualitative study to explicitly ask EAs for their impressions of the relationships between their cannabis use and Arnett’s features (2005) of EA. Taken together, the combined findings of Study One and Two provide a more nuanced understanding of cannabis use in EA.

**Theoretical considerations.** The results of the current research encourage researchers and other professionals to consider a wider breadth of cannabis use experiences when working with EAs. Relying on user and non-user dichotomies in research will not accurately reflect the lived experiences of EAs who use cannabis, since there is such diversity within these categories. Differentiating problem cannabis use from non-problematic cannabis use is a helpful first step in recognizing that not all use is the same or constitutes harm. It is also recommended that frequency of cannabis use and quantity consumed not be used interchangeably with cannabis use problems. Clear cut-off values that quantify problem cannabis use have yet to be established. Instead, it is recommended that researchers use validated measures that assess cannabis use problems, such as the MPS and/or diagnostic interview procedures. Clinical interviewing procedures, such as those in the DSM-V and SCID-V, provide appropriate means by which cannabis use that is and is not associated with clinically significant levels of distress or impairment can be differentiated. It is proposed that such procedures may be further bolstered by including input from reliable, secondary sources (e.g., a relative, partner, or close friend). In sum, researchers and clinicians are encouraged to critically evaluate what constitutes cannabis use problems among EAs, rather than rely upon conceptualizations that equate any use with harm or maladjustment that have been used in Clinical Psychology.
In addition to the conceptualization of cannabis use, participants described how their cannabis use facilitated or interfered with developmental tasks of EA. The author offers several considerations when evaluating Arnett’s (2000; 2005) framework and hypotheses based on participants’ insights. First, when discussing the theory of EA, particularly with EAs themselves, it may be helpful to recognize that these features are not likely to have mutually exclusive effects on cannabis use or vice versa. Rather, these EA features likely have additive, interactive or iterative effects on cannabis use. For example, it may not be enough to conclude that viewing one’s cannabis use as related to the instability of EA is related to cannabis use problems. We might also ask, instability in what aspect of their life – their identity? ...their sense of optimism? In fact, the relationship between EA features and cannabis use may be a case where “the whole is greater than the sum of its parts.” If this is true, there are implications for which methods, measures and analyses (e.g., simple versus interaction effects) are selected as we strive for both parsimony and externally valid interpretations of how cannabis use is situated in the developmental context of EA. These implications would be particularly relevant for quantitative research since the measures relied upon distill EA into unique subscales – a process that may be missing some information.

In addition to the implications of the overlapping way EA features are discussed, the theoretical considerations raised regarding the conceptualization of instability on the IDEA also have implications for the selection of quantitative measures. The conceptualization of instability raises an important theoretical question – how are we measuring the instability of EA? While eliminating the instability subscale was an arguably reasonable approach taken by Lisha and colleagues (2014) when revising the
measure, it is not likely that the current relationship between instability and cannabis use problems would have been captured using the IDEA-R. Unlike Lisha and colleagues (2014), additional measures of anxiety and stress were not included in Study One of this research. Moreover, neither the IDEA nor the measures administered by Lisha and colleagues (2014) seem to capture the unique aspects of instability in EA, as conceptualized by Arnett (2000, 2005). In Study One, it was the direct prompt that asked EAs whether they viewed their cannabis use as being related to the instability of EA that was related to cannabis use problems, not the IDEA-Instability subscale. It is possible that the current participants were thinking about a specific aspect of instability in EA when responding to the direct question that would not captured by a general measure of stress and anxiety. In sum, it seems warranted for researchers to evaluate affect dysregulation and stress in some way when examining correlates of cannabis use problems. However, this may not be equated with instability in EA. It is recommended that researchers reflect upon the experience of instability in EA, and whether and how to best to capture this concept in quantitative research. One option was to eliminate the instability subscale. Another option may be to revise the subscale in order to better reflect the instability of EA, as originally theorized by Arnett (2000, 2005). For example, processes that reflect the development of EAs’ pre-frontal cortex, such as impulse control, decision-making, and affect regulation, which could reasonably be expected to contribute to instability in EA might be captured on this revised subscale. Researchers might also take previous recommendations to distill broad concepts into more specific concepts and move beyond measuring views of EA. For example, providing participants with direct, concrete and tangible examples of instability in EA may be a more
developmentally appropriate and useful way of asking EAs about their current experiences.

Furthermore, Arnett’s theoretical framework and the hypothesized relationships between EA and substance use (2005) may be further understood by delving into the relationships between EA features and specific substances. As previously noted, the relationships observed in the current study did not consistently corroborate those of past research. This may be due to the incomplete dataset in the current research; however, inconsistent findings have been reported across past research as well. In addition to differences in methodological design, it may be that differences relate to the sample that participated, as well as the target substance being studied. Many studies consider the use of substances generally, rather than exploring the relationships between the different EA features and a specific substance. Indeed, the original hypotheses developed by Arnett (2005) spoke about “substance use.” However, the features of EA may relate to the use of different substances in different ways. For example, the reasons for and implications of using or abusing cannabis (recently legalized) versus Codeine (a controlled opioid) in EA may differ greatly. Undoubtedly, there are benefits to exploring the relationship between EA features and substance use broadly. For example, many EAs use more than one substance and/or engage in polysubstance use; therefore, studying substance use broadly may increase the external validity of findings. However, examining the relationship between EA features and substance use may also conflate more specific relationships. Therefore, it is recommended that we also examine how EA features differentially influence and are influenced by the use of specific substances.
Clinical considerations. Before discussing the clinical implications of this research, it is important to reiterate a limitation related to extrapolating these results to other populations. The findings of this research are based on the experiences of its participants – a non-clinical sample, who believed there was a connection between their cannabis use and the developmental period. It is important to keep this in mind as implications in clinical practice are discussed. Nonetheless, the results of this research raise several considerations for Clinical Psychologists.

Access to services and openness to discussing cannabis use. This research highlights the importance of accurately evaluating who is and who is not experiencing problems related to their cannabis use, and the degree of those problems. Accurate evaluation of symptoms and needs has important implications for helping EAs access appropriate mental health services. When accessing services, especially for the first time, EAs need assistance navigating the options that are available to them and in determining the level of service that will best suit their needs. One consideration when developing an appropriate referral is whether or not the EA is experiencing clinically significant distress or impairment related to their cannabis use. This consideration could be broadened further to also explore the benefits they are experiencing related to their use. Clinicians are not immune to the influence of socio-political stigma against cannabis use, and stigma can influence how cannabis use is assessed, discussed and treated at the individual and systems level. Well-meaning clinicians whose primary goal is to do no harm, may inadvertently be creating unnecessary barriers to treatment. For example, the belief that an EA must abstain from all substance use, including cannabis use, to address an underlying mood or anxiety disorder persists in some services. This can lead to premature
referrals and longer wait times for EA clients who already demonstrate poor engagement in and adherence to treatment (Bergman et al., 2016). As we moved towards integrative, interdisciplinary team approaches and away from siloed practices, the value in treating substance use and other mental health concerns concurrently has been recognized. However, it’s not always a linear process. Broadening how we think about cannabis use in Clinical Psychology requires clinicians to reflection on their own beliefs and biases, and those perpetuated within their discipline. Personal reflection and group discussion (e.g., by discipline and team) can promote growth as a service by elucidating biases, identifying barriers, and prompting problem-solving. Reflection and discussions might explore questions such as: do individuals have the right to choose to use substances, including cannabis? What are my experiences with and thoughts about cannabis? What do we know about cannabis from the literature? Importantly, interdisciplinary discussion provides an opportunity for the exchange and sharing of knowledge on cannabis use across disciplines that may approach cannabis from a different lens.

It is imperative that, as a discipline, we support clinicians in gaining sufficient training to become comfortable and competent to assess and discuss cannabis use with clients. This may include training Clinical Psychologists who conduct intake and formal psychodiagnostic assessments, as well as other team members who are involved in screening that occurs during the initial phases of treatment planning (e.g., Choice appointments are conducted by all team members within the Choice and Partnership Approach [CAPA] model). In addition to assessment and treatment planning, it can be important to make space in therapy to explore the benefits EA clients associate with their cannabis use. Such an exploration conveys respect for the individual’s experience and
provides important insights into their reasons for using cannabis. It may be sufficient for some clients to recognize the relationship between their use and psychiatric symptoms. That is, it may or not be necessary to target an EA client’s cannabis use directly in treatment depending on its relationship with the individual’s symptoms. For example, an EA client with Social Anxiety Disorder who typically smokes before parties to mitigate their symptoms might be open to refraining from using cannabis during exposure work. Personal reflection, interdisciplinary discussion, and appropriate training can facilitate an openness to discussing cannabis use with EA clients and help ensure that referrals to specialized substance use programs are only being made when they are genuinely needed.

Prevention. Professionals’ openness to discussing cannabis use also has implications for the development and implementation of prevention strategies. In their introduction to an issue of the American Psychologist dedicated to Positive Psychology, Seligman and Csikszentmihalyi (2000) astutely noted regarding prevention strategies:

What psychologists have learned over 50 years is that the disease model does not move psychology closer to the prevention of these serious problems [including substance use disorders]. Indeed, the major strides in prevention have come largely from a perspective focused on systematically building competency, not on correcting weakness. (pp. 7)

Indeed, peers, researchers and clinicians alike have gained much from asking individuals who use cannabis about their reasons for using cannabis and safe use practices. Insights such as these help researchers and policy-makers further develop and
refine documents, such as the Lower-Risk Cannabis Use Guidelines (LRCUG; Fischer et al., 2017).

Moreover, the current sample provided valuable insights that can help to inform how prevention strategies can be tailored to meet the specific needs of this age group. Clinicians and trained educators can be introducing the concept of EA much earlier in life; for example, in middle and high school courses. We can help to build youths awareness about the upcoming developmental period and in developing strategies for managing the tasks they will face. In particular, supporting youth in developing a range of healthy strategies for managing a sense of instability in various aspects of their lives may be important, given its connection with problem cannabis use. In the case of managing instability, this might include the development of emotion regulation and relaxation skills, and interpersonal effectiveness skills (especially related to conflict management). In doing so, youth will have a larger repertoire of skills to draw from, aside from using cannabis, to manage the instability of this period.

*When cannabis use problems are experienced.* Some EAs who present to a mental health service will be experiencing clinically significant problems related to their cannabis use. These individuals will require access to appropriate services that target their cannabis use, specifically or concurrently, and that are tailored to things like the severity of their use (e.g., as measured in the DSM-V), their goals and readiness of change, and resources. Abstinence-based programming can be helpful or necessary for some individuals (e.g., Marijuana Anonymous). However, for many individuals mandated, complete abstinence is an outdated concept and presents as an unachievable goal. For EAs in the latter group, treatment criteria that mandates abstinence may create
yet another barrier to treatment. Instead, programming that promotes a harm reduction approach may be more appropriate for individuals this group. It is important to clarify here that while harm reduction within a medical model can be interpreted as substituting the use of one substance with another (e.g., using cannabis instead of opioids), the intended meaning in this discussion is broader. Harm reduction strategies might include choosing methods, products, etc. that are associated with less harm and understanding factors that contribute to the individual’s use of cannabis. Harm reduction strategies can be easily integrated with other humanistic therapeutic approaches.

In addition to encouraging EAs to discuss their cannabis use, there is value in discussing EA and the associated developmental tasks with EAs who are experiencing problems with their cannabis use. For many individuals, the concept of EA as a developmental period is still novel. Providing psychoeducation about EA and the developmental tasks associated with this period can be an important first step in developing client awareness of their developmental needs and how they may be relying on cannabis use to address those needs. Exploring how EA clients relate their cannabis use to this period of life and the extent to which they rely on cannabis to navigate these developmental tasks will provide valuable insight into areas of discussion and intervention. For example, an EA may experience the instability of this period of life as fluctuations in their mental health symptoms (e.g., emotion dysregulation; dysphoria; anxiety) and rely on cannabis to regulate their internal experience. This client would benefit from learning additional strategies for regulating their emotions (e.g., DBT skills – distress tolerance and emotion regulation) and/or anxiety (e.g., relaxation and CBT skills). In doing so, these clients would likely become less reliant upon cannabis as their
only means of regulating their experience. Another example concerns the EA client who is referred to treatment to address their cannabis use by their parents. Motivational Interviewing can be a helpful way to explore the client’s thoughts on their cannabis use, as well as their goals and values. A developmentally cognizant therapist may recognize that an EA client may not be aware or have fully developed their own values and belief system. The therapist might consider incorporating prompts to explore whether the EA client is working on any tasks associated with this developmental period (e.g., increasing independence; exploring one’s identity), and if not, whether they would like to be doing so. If so, their cannabis use they may subsequently identified during an exploration of factors that are interfering with working on these tasks and addressed within this context.

Conclusion

Not all EAs who use cannabis will experience significant problems. In fact, some EAs will use cannabis in an intentional manner that helps them to manage or facilitates certain developmental tasks. However, some EAs will experience problems associated with their cannabis use. These EAs are likely to be relying more heavily upon cannabis to manage these developmental tasks, at the expense of developing other exploratory or coping strategies. Individuals who rely upon cannabis to manage the instability of EA may be at particular risk of experiencing problems. By speaking with EAs who have lived experience, insights were gained on the language EAs use to describe their cannabis use, the relationship between features of EA and cannabis use, and areas in which EAs who are experiencing problems may need additional support. Integrating this information into the design and implementation of developmentally-appropriate prevention and
intervention services may enhance the appeal of these supports and help to tailor programs in order to meet the unique needs of the individuals they intend to serve.
Tables and Figures

STUDY ONE

Tables 1 - 8.

Descriptive Statistics for Participants’ Demographic Information of Study One

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<tr>
<th>Variable</th>
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<tr>
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*Note.* Participants were permitted to endorse multiple ethnicities and so the percentages presented in the table above will amount to more than 100%.
### Education

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<td>Graduated high school or GED</td>
<td>28</td>
<td>29.8</td>
</tr>
<tr>
<td>Graduated community college</td>
<td>20</td>
<td>21.3</td>
</tr>
<tr>
<td>Graduated post-graduate</td>
<td>7</td>
<td>7.4</td>
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<tr>
<td>Up to high school</td>
<td>6</td>
<td>6.4</td>
</tr>
<tr>
<td>Other specified</td>
<td>2</td>
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<tr>
<td>Missing</td>
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### Employment

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<tr>
<td>Full-time</td>
<td>61</td>
<td>36.7</td>
</tr>
<tr>
<td>Part-time</td>
<td>41</td>
<td>24.7</td>
</tr>
<tr>
<td>Unemployed</td>
<td>36</td>
<td>21.7</td>
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<tr>
<td>Seasonal</td>
<td>14</td>
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<tr>
<td>Other specified</td>
<td>14</td>
<td>8.4</td>
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</table>

### Level of income (of employed participants)

<table>
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</thead>
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<tr>
<td>&lt; $20,000</td>
<td>47</td>
<td>37.6</td>
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<tr>
<td>$20,000 - $40,000</td>
<td>34</td>
<td>27.2</td>
</tr>
<tr>
<td>$40,000 - $60,000</td>
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<td>24.8</td>
</tr>
<tr>
<td>$60,000 - $80,000</td>
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<td>5.6</td>
</tr>
<tr>
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<td>0.8</td>
</tr>
<tr>
<td>&gt; $100,000</td>
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</table>
### Cannabis Use in Emerging Adulthood

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>% yes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing - Living arrangement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living with parents</td>
<td>56</td>
<td>33.7</td>
</tr>
<tr>
<td>Living with roommate(s)</td>
<td>30</td>
<td>18.1</td>
</tr>
<tr>
<td>Living with partner</td>
<td>27</td>
<td>16.3</td>
</tr>
<tr>
<td>Living alone</td>
<td>27</td>
<td>16.3</td>
</tr>
<tr>
<td>Living with spouse</td>
<td>16</td>
<td>9.6</td>
</tr>
<tr>
<td>Living with other relatives</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>University residence with roommate</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>University residence single room</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>Other specified</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Lived independently and then moved back to live with parents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>95</td>
<td>58.3</td>
</tr>
<tr>
<td>Yes</td>
<td>68</td>
<td>41.7</td>
</tr>
<tr>
<td><strong>Number of places lived in past 5 years</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One</td>
<td>30</td>
<td>18.4</td>
</tr>
<tr>
<td>Two</td>
<td>46</td>
<td>28.2</td>
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<tr>
<td>Three</td>
<td>38</td>
<td>23.3</td>
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<tr>
<td>Four</td>
<td>21</td>
<td>12.9</td>
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<tr>
<td>Five</td>
<td>10</td>
<td>6.1</td>
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<tr>
<td>Six</td>
<td>12</td>
<td>7.4</td>
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<tr>
<td>7-10</td>
<td>6</td>
<td>3.7</td>
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<table>
<thead>
<tr>
<th>Variable</th>
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<th>% yes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relationship status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>75</td>
<td>45.2</td>
</tr>
<tr>
<td>In an exclusive relationship</td>
<td>43</td>
<td>25.9</td>
</tr>
<tr>
<td>Common law</td>
<td>18</td>
<td>10.8</td>
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<tr>
<td>Casually dating</td>
<td>16</td>
<td>9.6</td>
</tr>
<tr>
<td>Married</td>
<td>12</td>
<td>7.2</td>
</tr>
<tr>
<td>Engaged</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Polyamorous (1 male and 1 female partner)</td>
<td>1</td>
<td>0.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>% yes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sexual orientation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>113</td>
<td>68.1</td>
</tr>
<tr>
<td>Bisexual</td>
<td>30</td>
<td>17.3</td>
</tr>
<tr>
<td>Gay or Lesbian</td>
<td>14</td>
<td>8.4</td>
</tr>
<tr>
<td>Unsure</td>
<td>8</td>
<td>4.8</td>
</tr>
<tr>
<td>Asexual</td>
<td>2</td>
<td>1.1</td>
</tr>
</tbody>
</table>
Cannabis Use in Emerging Adulthood

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>% yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parenthood</td>
<td>163</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>155</td>
<td>85.2</td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>4.4</td>
</tr>
<tr>
<td>Number of children living with participant</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>No children in household</td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>One</td>
<td>4</td>
<td>50.0</td>
</tr>
<tr>
<td>Two</td>
<td>2</td>
<td>25.0</td>
</tr>
</tbody>
</table>

Figure 1. Percent of participants who agreed that they were an EA (n = 148).

Table 9.

Comparisons of Average Scores Across the IDEA Subscales using the Incomplete Dataset (n = 142)

<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>95% CI</th>
<th></th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ID</td>
<td>O/P</td>
<td>Instab</td>
<td>Other</td>
</tr>
<tr>
<td>ID</td>
<td>3.29 (0.52)</td>
<td>3.21 – 3.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O/P</td>
<td>3.31 (0.48)</td>
<td>3.23 – 3.38</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Instab</td>
<td>2.93 (0.59)</td>
<td>2.83 – 3.02</td>
<td>0.65</td>
<td>0.71</td>
</tr>
<tr>
<td>Other</td>
<td>2.51 (0.73)</td>
<td>2.39 – 2.63</td>
<td><strong>1.23</strong></td>
<td><strong>1.29</strong></td>
</tr>
<tr>
<td>Self</td>
<td>3.30 (0.44)</td>
<td>3.23 – 3.37</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>In-B</td>
<td>3.14 (0.76)</td>
<td>3.01 – 3.26</td>
<td>0.23</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Note. ID = IDEA-Identity Exploration; O/P = IDEA-Optimism/Possibilities; Instab = IDEA-Instability; Other = IDEA-Other-focused; Self = IDEA-Self-focused; In-B = IDEA-Feeling In-between. Bolded items reflect effect sizes that fall into the large to very large range (d > 0.80).
Table 10.

Comparisons of Average Scores Across the Specific Views of EA using the Incomplete Dataset

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>M (SD)</th>
<th>95% CI</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Risk (SD)</td>
<td>Uncert (SD)</td>
<td>Role P (SD)</td>
</tr>
<tr>
<td>Risk</td>
<td>138</td>
<td>2.69 (0.63)</td>
<td>2.58 – 2.79</td>
<td></td>
</tr>
<tr>
<td>Uncert</td>
<td>142</td>
<td>2.97 (0.83)</td>
<td>2.84 – 3.11</td>
<td>0.38</td>
</tr>
<tr>
<td>Role P</td>
<td>138</td>
<td>1.78 (0.83)</td>
<td>1.64 – 1.92</td>
<td>1.24</td>
</tr>
<tr>
<td>Poss</td>
<td>142</td>
<td>2.92 (0.51)</td>
<td>2.83 – 3.00</td>
<td>0.40</td>
</tr>
<tr>
<td>Stress</td>
<td>141</td>
<td>3.17 (0.70)</td>
<td>3.06 – 3.29</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Note. Risk = Risk behaviours; Uncert = Uncertainty; Role Prep = Role preparation; Poss = Possibilities; Stress = Stressful. Bolded items reflect effect sizes that fall into the large to very large range (d > 0.80).

Table 11.

Average Scores Across the IDEA Subscales for Current Study using the Incomplete Dataset, Smith et al. (2014) and Reifman et al. (2007) Sample

<table>
<thead>
<tr>
<th></th>
<th>Current study (n = 142)</th>
<th>Smith et al., 2014 (n = 105)</th>
<th>Cohen’s d</th>
<th>Reifman et al., 2007a (study 3: n = 101b)</th>
<th>Glass’ Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td></td>
<td>M (SD)</td>
<td></td>
</tr>
<tr>
<td>Identity Exploration</td>
<td>3.29 (0.52)</td>
<td>3.44 (0.44)</td>
<td>-0.31</td>
<td>3.36</td>
<td>-0.13</td>
</tr>
<tr>
<td>Optimism/Possibilities</td>
<td>3.31 (0.48)</td>
<td>3.16 (0.55)</td>
<td>0.29</td>
<td>3.28</td>
<td>0.06</td>
</tr>
<tr>
<td>Instability</td>
<td>2.93 (0.59)</td>
<td>2.78 (0.60)</td>
<td>0.25</td>
<td>2.90</td>
<td>0.05</td>
</tr>
<tr>
<td>Other-focused</td>
<td>2.51 (0.73)</td>
<td>3.08 (0.67)</td>
<td>-0.81</td>
<td>2.54</td>
<td>-0.04</td>
</tr>
<tr>
<td>Self-focused</td>
<td>3.30 (0.44)</td>
<td>3.29 (0.42)</td>
<td>0.02</td>
<td>3.32</td>
<td>-0.05</td>
</tr>
<tr>
<td>Feeling In-between</td>
<td>3.14 (0.76)</td>
<td>3.13 (0.68)</td>
<td>0.01</td>
<td>3.26</td>
<td>-0.16</td>
</tr>
</tbody>
</table>

aStandard deviations were not provided in Reifman et al., 2007.

bSample size was estimated by Smith et al., 2014 based Reifman et al.’s (2007) report that 83.5% of the total sample was between 18-26 years of age.
Table 12.

**Descriptive Statistics for Past Month Cannabis Use**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (days)</td>
<td>157</td>
<td>18.82 (11.12)</td>
<td>1.00 - 30.00</td>
</tr>
<tr>
<td>Amount (g)/day</td>
<td>155</td>
<td>1.91 (5.48)</td>
<td>0.05 – 56.00</td>
</tr>
<tr>
<td>MPS Total Score</td>
<td>146</td>
<td>4.42 (4.76)</td>
<td>0.00 – 21.00</td>
</tr>
</tbody>
</table>

*Figure 2. Frequency of cannabis use in the past month (n = 157)*

*Figure 3. Portion of the day spent using cannabis in the past month (n = 154)*
Table 13.

*Frequencies of Different Methods of Administration and Strains of Cannabis Used, and Mixing Cannabis with Tobacco, in the Past Month*

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Never</th>
<th>Sometimes</th>
<th>Half of the time</th>
<th>Most times</th>
<th>Every time</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking</td>
<td>155</td>
<td>11.6</td>
<td>14.2</td>
<td>7.1</td>
<td>20.6</td>
<td>46.5</td>
<td>-</td>
</tr>
<tr>
<td>Vaping</td>
<td>155</td>
<td>52.9</td>
<td>21.3</td>
<td>5.2</td>
<td>9.7</td>
<td>11.0</td>
<td>-</td>
</tr>
<tr>
<td>Ingest with food</td>
<td>155</td>
<td>58.7</td>
<td>34.2</td>
<td>4.5</td>
<td>1.9</td>
<td>0.6</td>
<td>-</td>
</tr>
<tr>
<td>Ingest without food</td>
<td>155</td>
<td>90.3</td>
<td>8.4</td>
<td>0</td>
<td>0</td>
<td>1.3</td>
<td>-</td>
</tr>
<tr>
<td>Sublingual</td>
<td>155</td>
<td>93.5</td>
<td>6.5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td><strong>Strain</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indica</td>
<td>155</td>
<td>8.4</td>
<td>25.8</td>
<td>17.4</td>
<td>17.4</td>
<td>6.5</td>
<td>24.5</td>
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<tr>
<td>Sativa</td>
<td>154</td>
<td>14.9</td>
<td>26.6</td>
<td>14.9</td>
<td>14.9</td>
<td>3.2</td>
<td>25.3</td>
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<td>Hybrid</td>
<td>154</td>
<td>14.9</td>
<td>33.8</td>
<td>11.0</td>
<td>12.3</td>
<td>3.2</td>
<td>24.7</td>
</tr>
<tr>
<td><strong>Mix with Tobacco</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>155</td>
<td>81.3</td>
<td>5.8</td>
<td>3.2</td>
<td>3.9</td>
<td>4.5</td>
<td>1.3</td>
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</tbody>
</table>
Table 14.

**Missing Values Analysis for Key Variables of Interest (N = 182)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Mean (SD)</th>
<th>% Missing</th>
<th>Chi-square</th>
<th>DF</th>
<th>Significance</th>
<th>Pattern</th>
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<tbody>
<tr>
<td>Age</td>
<td>169</td>
<td>23.69 (3.62)</td>
<td>7.1</td>
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<td>1</td>
<td>0.75</td>
<td>MAR</td>
</tr>
<tr>
<td>Gender</td>
<td>167</td>
<td>0.39 (0.50)</td>
<td>8.2</td>
<td>0.00</td>
<td>0</td>
<td>-</td>
<td>MAR</td>
</tr>
<tr>
<td>ID</td>
<td>142</td>
<td>3.29 (0.52)</td>
<td>22.0</td>
<td>0.000</td>
<td>0</td>
<td>-</td>
<td>MAR</td>
</tr>
<tr>
<td>O/P</td>
<td>142</td>
<td>3.31 (0.48)</td>
<td>22.0</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Instab</td>
<td>142</td>
<td>2.93 (0.59)</td>
<td>22.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>142</td>
<td>2.51 (0.73)</td>
<td>22.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self</td>
<td>142</td>
<td>3.30 (0.44)</td>
<td>22.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-B</td>
<td>142</td>
<td>3.14 (0.76)</td>
<td>22.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk</td>
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<td>2.69 (0.63)</td>
<td>24.2</td>
<td>64.48</td>
<td>5</td>
<td>0.00</td>
<td>MNAR</td>
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<tr>
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<td>2.97 (0.83)</td>
<td>22.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role P</td>
<td>138</td>
<td>1.78 (0.83)</td>
<td>24.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poss</td>
<td>142</td>
<td>2.92 (0.51)</td>
<td>22.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>141</td>
<td>3.17 (0.70)</td>
<td>22.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAN-ID</td>
<td>138</td>
<td>2.25 (1.40)</td>
<td>24.2</td>
<td>9.68</td>
<td>8</td>
<td>0.29</td>
<td>MAR</td>
</tr>
<tr>
<td>CAN-Insta</td>
<td>137</td>
<td>1.54 (1.07)</td>
<td>24.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAN-Self</td>
<td>137</td>
<td>2.31 (1.46)</td>
<td>24.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAN-In-B</td>
<td>136</td>
<td>1.50 (1.34)</td>
<td>25.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAN-O/P</td>
<td>134</td>
<td>2.15 (1.47)</td>
<td>26.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freq</td>
<td>157</td>
<td>18.82 (11.12)</td>
<td>13.7</td>
<td>1.53</td>
<td>1</td>
<td>0.22</td>
<td>MAR</td>
</tr>
<tr>
<td>MPSTot</td>
<td>146</td>
<td>4.42 (4.76)</td>
<td>19.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** MAR = Missing at Random; MNAR = Missing Not at Random; ID = IDEA-Identity Exploration; O/P = IDEA-Optimism/Possibilities; Instab = IDEA-Instability; Other = IDEA-Other-focused; Self = IDEA-Self-focused; In-B = IDEA-Feeling In-between; Risk = Risk behaviours; Uncert = Uncertainty; Role Prep = Role preparation; Poss = Possibilities; Stress = Stressful; CAN-EA = Cannabis use-Emerging Adulthood; CAN-ID = Cannabis use-IDEA-Identity Exploration; CAN-Insta = Cannabis use-IDEA-Instability; CAN-Self = Cannabis use-IDEA-Self-focused; CAN-In-B = Cannabis use-IDEA-Feeling In-between; CAN-O/P = Cannabis use-IDEA-Optimism/Possibilities; Freq = Frequency of Past Month Use (days); MPSTot = Total Problem Score on the MPS

*p ≤ 0.05, **p ≤ 0.01
### Table 15.

**Bivariate Correlations Between Age, Gender, Frequency and Problem Cannabis Use (Imputed and Transformed Variables), IDEA Subscales, Specific Views of EA, and Cannabis-specific Views of EA using the Imputed – Pooled Data (N = 182)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Gender</td>
<td>-0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Freq</td>
<td>0.13</td>
<td>-0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. SplitFreq</td>
<td>0.16*</td>
<td>0.01</td>
<td>0.84**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. MPSTotal</td>
<td>-0.10</td>
<td>0.06</td>
<td>0.14</td>
<td>0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Log10MPSTotal</td>
<td>-0.06</td>
<td>0.09</td>
<td>0.16*</td>
<td>0.03</td>
<td>0.91**</td>
<td></td>
</tr>
<tr>
<td>7. ID</td>
<td>-0.10</td>
<td>0.02</td>
<td>0.12</td>
<td>0.12</td>
<td>0.09</td>
<td>0.13</td>
</tr>
<tr>
<td>8. O/P</td>
<td>-0.24**</td>
<td>-0.02</td>
<td>-0.03</td>
<td>0.00</td>
<td>-0.12</td>
<td>-0.12</td>
</tr>
<tr>
<td>9. Instab</td>
<td>-0.10</td>
<td>0.10</td>
<td>0.12</td>
<td>0.03</td>
<td>0.17*</td>
<td>0.18*</td>
</tr>
<tr>
<td>10. Other</td>
<td>0.33**</td>
<td>0.01</td>
<td>0.16*</td>
<td>0.17*</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>11. Self</td>
<td>0.06</td>
<td>0.01</td>
<td>0.06</td>
<td>0.08</td>
<td>-0.13</td>
<td>-0.15</td>
</tr>
<tr>
<td>12. In-B</td>
<td>-0.13</td>
<td>-0.00</td>
<td>0.14</td>
<td>0.10</td>
<td>0.06</td>
<td>0.12</td>
</tr>
<tr>
<td>13. Risk</td>
<td>-0.16*</td>
<td>-0.02</td>
<td>-0.10</td>
<td>-0.09</td>
<td>0.08</td>
<td>0.04</td>
</tr>
<tr>
<td>14. Uncert</td>
<td>-0.25**</td>
<td>-0.00</td>
<td>0.14</td>
<td>0.08</td>
<td>0.20**</td>
<td>0.21**</td>
</tr>
<tr>
<td>15. Role P</td>
<td>0.39**</td>
<td>0.06</td>
<td>0.14</td>
<td>0.15</td>
<td>0.09</td>
<td>0.12</td>
</tr>
<tr>
<td>16. Poss</td>
<td>-0.07</td>
<td>0.08</td>
<td>0.03</td>
<td>0.03</td>
<td>-0.15*</td>
<td>-0.12*</td>
</tr>
<tr>
<td>17. Stress</td>
<td>-0.08</td>
<td>0.12</td>
<td>0.12</td>
<td>0.03</td>
<td>0.12</td>
<td>0.17*</td>
</tr>
<tr>
<td>18. CAN-ID</td>
<td>-0.12</td>
<td>-0.07</td>
<td>0.12</td>
<td>0.10</td>
<td>0.05</td>
<td>0.10</td>
</tr>
<tr>
<td>19. CAN-Insta</td>
<td>0.03</td>
<td>0.09</td>
<td>-0.03</td>
<td>-0.02</td>
<td>0.28**</td>
<td>0.24**</td>
</tr>
<tr>
<td>20. CAN-Self</td>
<td>-0.14</td>
<td>-0.04</td>
<td>0.00</td>
<td>-0.03</td>
<td>0.07</td>
<td>0.09</td>
</tr>
<tr>
<td>21. CAN-In-B</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.07</td>
<td>-0.09</td>
<td>0.10</td>
<td>0.09</td>
</tr>
<tr>
<td>22. CAN-O/P</td>
<td>-0.01</td>
<td>-0.08</td>
<td>0.00</td>
<td>-0.02</td>
<td>-0.17*</td>
<td>-0.09*</td>
</tr>
</tbody>
</table>

**Note.** Freq = Frequency of Past Month Use (days); SplitFreq = Frequency recoded as a dichotomous variable; MPSTotal = Total Problem Score on the MPS; Log10MPSTotal = Transformed MPS Total Score; ID = IDEA-Identity Exploration; O/P = IDEA-Optimism/Possibilities; Instab = IDEA-Instability; Other = IDEA-Other-focused; Self = IDEA-Self-focused; In-B = IDEA-Feeling In-between; Risk = Risk behaviours; Uncert = Uncertainty; Role Prep = Role preparation; Poss = Possibilities; Stress = Stressful; CAN-EA = Cannabis use-Emerging Adulthood; CAN-ID = Cannabis use-IDEA-Identity Exploration; CAN-Insta = Cannabis use-IDEA-Instability; CAN-Self = Cannabis use-IDEA-Self-focused; CAN-In-B = Cannabis use-IDEA-Feeling In-between; CAM-O/P = Cannabis use-IDEA-Optimism/Possibilities

*p ≤ 0.05, **p ≤ 0.01
Table 16.

*Variable Table of the Binary Logistic Regression Analysis Examining the Predictive Ability of the IDEA Subscales, Specific Views of EA, and Cannabis-specific Views of EA on Frequency of Cannabis Use Group using the Imputed – Pooled Data (N = 182)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Imputed Dataset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency Group</td>
</tr>
<tr>
<td>IDEA-Other</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Frequency coded into two groups: near daily – daily cannabis use (i.e., ≥ 25 days/month) and other frequencies (i.e., < 25 days/month). IDEA-Other = Other-focused subscale.

Table 17.

*Model Summary Table of the Binary Logistic Regression Analysis Examining the Predictive Ability of the IDEA Subscales, Specific Views of EA, and Cannabis-specific Views of EA on Frequency of Cannabis Use Group, using the Incomplete (n = 142) and Imputed – Pooled (N = 182) Data*

<table>
<thead>
<tr>
<th></th>
<th>Nagelkerke R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomplete</td>
<td>0.06</td>
</tr>
<tr>
<td>Imputation 1</td>
<td>0.03</td>
</tr>
<tr>
<td>Imputation 2</td>
<td>0.03</td>
</tr>
<tr>
<td>Imputation 3</td>
<td>0.05</td>
</tr>
<tr>
<td>Imputation 4</td>
<td>0.03</td>
</tr>
<tr>
<td>Imputation 5</td>
<td>0.05</td>
</tr>
</tbody>
</table>
Table 18.

Coefficients Table of the Hierarchical Regression Analysis Examining the Predictive Ability of the IDEA Subscales, Specific Views of EA, and Cannabis-specific Views of EA on Cannabis Use Problems (Transformed) using the Imputed – Pooled Data (N = 182)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized coefficients</th>
<th>Imputed Dataset Log10 MPS Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDEA-Insta</td>
<td>0.12</td>
<td>0.05</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDEA-Insta</td>
<td>0.00</td>
<td>0.09</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>0.08</td>
<td>0.05</td>
</tr>
<tr>
<td>Stress</td>
<td>0.05</td>
<td>0.07</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDEA-Insta</td>
<td>-0.03</td>
<td>0.09</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>0.09</td>
<td>0.05</td>
</tr>
<tr>
<td>Stress</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>CAN-Insta</td>
<td>0.08</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Note. IDEA-Insta = Instability subscale; CAN-Insta = Cannabis use-IDEA-Instability
Table 19.

Model Summary Table of the Hierarchical Regression Analysis Examining the Predictive Ability of the IDEA Subscales, Specific Views of EA, and Cannabis-specific Views of EA on Cannabis Use Problems (Transformed) using the Incomplete (n = 136) and Imputed – Pooled Data (N = 182)

<table>
<thead>
<tr>
<th>Step</th>
<th>R</th>
<th>R²</th>
<th>ΔR²</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomplete</td>
<td>1</td>
<td>0.24</td>
<td>0.06</td>
<td>0.06</td>
<td>8.15**</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.30</td>
<td>0.09</td>
<td>0.03</td>
<td>2.37</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0.39</td>
<td>0.15</td>
<td>0.06</td>
<td>9.44**</td>
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</tr>
<tr>
<td>Imputation 1</td>
<td>1</td>
<td>0.18</td>
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<td>0.03</td>
<td>5.83*</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.22</td>
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<td>0.02</td>
<td>1.51</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0.31</td>
<td>0.10</td>
<td>0.05</td>
<td>9.39**</td>
<td>1</td>
</tr>
<tr>
<td>Imputation 2</td>
<td>1</td>
<td>0.17</td>
<td>0.03</td>
<td>0.03</td>
<td>5.63*</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.25</td>
<td>0.06</td>
<td>0.03</td>
<td>3.08*</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0.33</td>
<td>0.11</td>
<td>0.05</td>
<td>9.69**</td>
<td>1</td>
</tr>
<tr>
<td>Imputation 3</td>
<td>1</td>
<td>0.18</td>
<td>0.03</td>
<td>0.03</td>
<td>6.19*</td>
<td>1</td>
</tr>
<tr>
<td></td>
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<td>0.23</td>
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<td>1.62</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0.32</td>
<td>0.10</td>
<td>0.05</td>
<td>9.77**</td>
<td>1</td>
</tr>
<tr>
<td>Imputation 4</td>
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<td>0.18</td>
<td>0.03</td>
<td>0.03</td>
<td>6.23*</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.25</td>
<td>0.06</td>
<td>0.03</td>
<td>2.61</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0.35</td>
<td>0.12</td>
<td>0.06</td>
<td>12.61**</td>
<td>1</td>
</tr>
<tr>
<td>Imputation 5</td>
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<td>0.17</td>
<td>0.03</td>
<td>0.03</td>
<td>5.03*</td>
<td>1</td>
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<tr>
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<td>0.21</td>
<td>0.04</td>
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<td>1.40</td>
<td>2</td>
</tr>
<tr>
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<td>0.30</td>
<td>0.09</td>
<td>0.05</td>
<td>9.11**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. *p ≤ 0.05, **p ≤ 0.01
**STUDY TWO**

Table 20

*Demographic Information for Study Two*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Gender</th>
<th>History of use (years)</th>
<th>Past month use*</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>27</td>
<td>female</td>
<td>15</td>
<td>4 times/week</td>
</tr>
<tr>
<td>2</td>
<td>23</td>
<td>female</td>
<td>8</td>
<td>“15 or more” days/month</td>
</tr>
<tr>
<td>3</td>
<td>29</td>
<td>male</td>
<td>13</td>
<td>3-4 times/week</td>
</tr>
<tr>
<td>4</td>
<td>28</td>
<td>female</td>
<td>13</td>
<td>14 days/month, multiple times per day</td>
</tr>
<tr>
<td>5</td>
<td>21</td>
<td>female</td>
<td>1</td>
<td>15-20 days/month</td>
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<tr>
<td>6</td>
<td>21</td>
<td>male</td>
<td>4</td>
<td>6-7 times/month</td>
</tr>
<tr>
<td>7</td>
<td>22</td>
<td>male</td>
<td>3 - 4</td>
<td>5-10/month</td>
</tr>
<tr>
<td>8</td>
<td>25</td>
<td>male</td>
<td>10</td>
<td>20 days/month</td>
</tr>
<tr>
<td>9</td>
<td>23</td>
<td>female</td>
<td>4</td>
<td>10 days/month</td>
</tr>
<tr>
<td>10</td>
<td>26</td>
<td>female</td>
<td>2 - 4</td>
<td>2 times/week</td>
</tr>
<tr>
<td>11</td>
<td>27</td>
<td>male</td>
<td>12</td>
<td>Daily</td>
</tr>
<tr>
<td>12</td>
<td>28</td>
<td>non-binary</td>
<td>12</td>
<td>Daily</td>
</tr>
<tr>
<td>13</td>
<td>28</td>
<td>male</td>
<td>4</td>
<td>“Nearly all”</td>
</tr>
<tr>
<td>14</td>
<td>18</td>
<td>female</td>
<td>3 - 4</td>
<td>10 days/month</td>
</tr>
<tr>
<td>15</td>
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<td>female</td>
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<td>3 days/month</td>
</tr>
<tr>
<td>16</td>
<td>21</td>
<td>female</td>
<td>6</td>
<td>20 days/month</td>
</tr>
<tr>
<td>17</td>
<td>22</td>
<td>male</td>
<td>4</td>
<td>2 days/month</td>
</tr>
<tr>
<td>18</td>
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<tr>
<td>19</td>
<td>24</td>
<td>female</td>
<td>7</td>
<td>4-5 days/month</td>
</tr>
<tr>
<td>20</td>
<td>29</td>
<td>male</td>
<td>3 - 4</td>
<td>Daily</td>
</tr>
</tbody>
</table>

*Note.* Participants’ current cannabis use is based on responses provided during the initial telephone screen.*
References


American Psychological Association (APA; 2013). *Diagnostic and Statistical Manual of Mental Disorders (5th ed.)*. Washington, DC: APA.


Cannabis Use in Emerging Adulthood


Appendix A

Study One - Recruitment Advertisement

UNIVERSITY OF TORONTO
OISE | ONTARIO INSTITUTE
FOR STUDIES IN EDUCATION

Clearing the Smoke:
MARIJUANA USE DURING EMERGING ADULTHOOD

IF YOU...

• Have used marijuana in the past 30 days (non-medicinal reasons)
  • Are 18 – 29 years old
  • Currently live in Ontario
  • Are fluent in written English
  • Have access to the internet

WE'RE INTERESTED IN YOUR EXPERIENCES!

What will you be asked to do?

• You’ll be asked to complete an online survey (approx. 30 minutes or less)
• You’ll be asked questions about your marijuana use and this stage of your life

You will have an opportunity to participate in a draw for one of four online $50 gift cards from Amazon.ca for participating

To learn more and access the survey please go to the website below:

Clear the Smoke
(https://survey.ca1.qualtrics.com//fje/form/SV_6r73cNOpu0To4br)

Replies to this ad are confidential

*******************************************************************************

Check out Clear the Smoke Study and Dr. Goldstein’s Lab on Facebook and Twitter!
@clearthesmokestudy and @DrAbbyGoldstein

*******************************************************************************
Appendix B

Study One – Study Information Sheet and Informed Consent

Consent Form

UNIVERSITY OF TORONTO
OISE | ONTARIO INSTITUTE
FOR STUDIES IN EDUCATION

Research title: Clearing the Smoke on Marijuana Use: Exploring Conceptions of Marijuana Use During Emerging Adulthood

Short title: Conceptions of Marijuana Use in Emerging Adulthood

Consent to participate in a research study:

The purpose of an informed consent form is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information so you have the opportunity to decide if you would like to participate in the study.

You must be between 18 - 29 years of age to participate in this study.

Investigator:

Mallory Campbell, M.A., Ph.D. Candidate in Clinical and Counselling Psychology
Applied Psychology and Human Development, OISE/University of Toronto

Supervisor:

Abby Goldstein, Ph.D., C. Psych., Associate Professor
Applied Psychology and Human Development, OISE/University of Toronto

Purpose:

- The purpose of this study is to better understand perceptions and patterns of marijuana use during emerging adulthood (i.e., 18 – 29 years old), the stage of development between adolescence and adulthood
- We hope to better understand what constitutes normal, problematic, and/or other patterns of marijuana use at this age
- By understanding emerging adults’ own perceptions of marijuana use, we can have a better understanding of the ways in which emerging adults use marijuana and some of this
information could be used to better support those who are in fact experiencing problems with their use to reduce associated harms

- We hope that approximately 160 people will participate in our survey

**Procedure:**

- If you agree to participate in this research study, you will be asked to complete an online survey
- During the survey, you’ll be asked questions about:
  
  - Background information
  - Personal marijuana use
  - This stage of your life - emerging adulthood

- The entire survey will take approximately 30 minutes to complete
- You will have the option to enter your e-mail address to participate in a draw for one of four online $50 gift cards from Amazon.ca for your participation

**Right to Refuse:**

- Participation is completely voluntary, and you are under no obligation to agree to participate in this study
- You may choose to skip questions you find objectionable for any reason without penalty
- You have the right to withdraw from the research at any time during the survey without penalty

- To withdraw from the study during the online survey, simply click on "Yes" for the Withdraw option at the bottom of each screen before clicking on the Next page button
- It will not be possible to redirect your browser to the screen that allows you to enter your email address in the draws if you exit the survey without clicking "Yes" for the withdrawal option
- It will not be possible to withdraw your survey responses once they have been submitted. Survey responses are entered anonymously, without identifying information. Therefore, we cannot identify your data once you have submitted your responses.
- If you enter your email address to participate in the draws, but then change your mind, you can contact Mallory directly by email (mallory.campbell@mail.utoronto.ca) about having it removed. If the draws have not yet been completed, you will be forfeiting your participation
in them.

**Risks:**

- By contacting the Investigator about this study and/or participating in this study others can infer that you have used marijuana.
- There will be a brief period of time between submission of your email address to the draw and confirmation of receipt of compensation by the winner during which your email address will remain in the email address database.
- There is some risk associated with reporting on an illegal behaviour (marijuana use) due to possible external pressure to disclose identifiable information (e.g., a subpoena or in connection with a legal proceeding). If this situation were to arise, we would resist disclosing any information about you and would immediately contact our institutional supports and legal counsel.
- If you choose to submit your email address, it will be stored in a database that is separate from the survey database and cannot be linked with your survey responses. Therefore, we would not be able to provide your survey responses even if there was an external pressure to disclose.
- It is possible that you may experience feelings of discomfort associated with disclosing personal information concerning your marijuana use and/or question your level of use.
- We will provide you with the contact information for resources that you may access if you would like to discuss any questions you may have about your marijuana use.

**Benefits:**

- By sharing your experiences, you may gain a better understanding of your marijuana use at this stage of your life.
- Your views will help us to better understand how marijuana use is perceived among young people, when marijuana use is cause for concern and when it is not, and how it may relate to this time in your life and how to support young people who might want to reduce their marijuana use.
- You will also receive a list of helpful contacts for future reference.

**Compensation:**

- In appreciation for your assistance with this study, you will have an opportunity to enter into a draw for one of four online $50 gift cards from Amazon.ca.

**Confidentiality:**
• All information will be kept confidential
• You will not be asked to report your name on any of the questionnaires you complete
• We cannot guarantee complete anonymity if you choose to participate in the draws because you will be required to provide your email address
• If you participate in the draws, your email address will be stored in a separate database that is not linked with your survey responses
• There will be a period of time between your submission to the draws and confirmation of receipt of compensation by the winner during which your contact information will remain in the email account and email database associated with this study
• Once the draws have been completed, the email database and study emails with your contact information will be deleted
• Only research personnel affiliated with the study will have access to the study email account and the encrypted and password-protected files in which survey responses and email databases are stored
• Aggregate data (e.g., patterns) will be included in the reporting of the results of the study, and your name will not appear in any reports or presentations that may arise from this study
• In addition, representatives from the University of Toronto research ethics program may have confidential access to your data to ensure participant protection procedures are being followed.

Other Information:
If you are interested in obtaining a brief report of the results, please feel free to contact the investigator.

Questions:
Should you have any questions or concerns about this study, or if any issues arise because of your participation, please feel free to contact the Investigator or Faculty Supervisor.

Ms. Mallory Campbell, M.A., Ph.D. Candidate
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Ontario Institute for Studies in Education, University of Toronto
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Telephone: (416) 978 - 0702
E-mail: mallory.campbell@mail.utoronto.ca

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Should you have any questions about your rights as a research participant, please feel free to contact the Office of Research Ethics at the University of Toronto.

Office of Research Ethics, University of Toronto
Telephone: (416) 946 - 3273
E-mail: ethics.review@utoronto.ca

I have read the above form and understand the conditions of my participation. My participation in this study is voluntary, and if for any reason, at any time, I wish to leave the study I may do so without having to give an explanation and with no penalty whatsoever. I am aware that the data gathered in this study are confidential and anonymous with respect to my personal identity. I also confirm that I am between 18 – 29 years old.

Please print this screen if you would like a copy of this page for your own records.

Clicking the “I consent” button indicates that you have agreed to participate in this online survey and confirm the above.

☐ I consent and confirm the above.

WITHDRAW

Click Yes, if you’d like to withdraw from this study and exit the survey before clicking Next page.

or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes
Appendix C

Study One – Online Survey

Demographics

What is your gender?
- Male
- Female
- Or please enter a different response:

People sometimes identify themselves by ethnicity or race. Do you consider yourself:
- Single race
- Bi-racial
- Multi-racial (3 or more)

Please check all the boxes that show how you identify yourself:
- [ ] Aboriginal or First Nations. Group/Band:
- [ ] White
- [ ] Chinese
- [ ] Filipino
- [ ] Latin American
- [ ] Japanese
- [ ] Korean
- [ ] Black (e.g., African, Haitian, Jamaican, Somali)
- [ ] South Asian (e.g., East Indian, Pakistani, Punjabi, Sri Lankan)
- [ ] Arab / West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)
What is your year of birth?

Please enter in numerical form (e.g., 1989).

How old are you now?

Please enter in numerical form (e.g., 28).

What is your relationship status?

- Single
- Casually dating
- In an exclusive relationship
- Common Law
- Married
- Separated
- Divorced
- Widowed

Or please enter:
What is your sexual orientation/identity?

- Heterosexual
- Gay or Lesbian
- Bisexual
- Unsure
- Or please enter:

Are you currently in school?

- Yes
- No

If yes, what grade level?

- High school (grade 9 to grade 12)
- Completing my General Educational Development (GED)
- Community college
- Undergraduate program in university
- Post-graduate program (e.g., Master's or PhD)
- Or please enter:

If you are not currently in school, what was the highest level of education you have completed?

- Up to high school
- Graduated high school or completed my GED
Cannabis Use in Emerging Adulthood

- Graduated community college
- Graduated university with an undergraduate degree
- Graduated from a post-graduate program (e.g., Master's or PhD)
- Or please enter:

Overall, what marks do/did you usually get in school?

- A (80% - 100%)
- B (67% - 79%)
- C (60% - 66%)
- D (50% - 59%)
- Less than D (below 50%)

What is your employment status?

- Full-time employment
- Part-time employment
- Seasonal
- Unemployed
- Or please enter:

If employed, what is your personal yearly income?

- Less than $20,000
- $20,000 - $40,000
- $40,000 - $60,000
- $60,000 - $80,000
What is your current living situation?

- University residence with roommate
- University residence single room
- Apartment with roommate(s)
- Apartment alone
- Living with parents
- Living with other relatives
- Living with partner
- Living with spouse
- Or please enter:

If living with family (origin or through marriage), what is your yearly family income?

- Less than $20,000
- $20,000 - $40,000
- $40,000 - $60,000
- $60,000 - $80,000
- $80,000 - $100,000
- $100,000 +

Have you ever lived independently and then moved back home to live with your parent(s)?

- Yes
How many places have you lived in the past 5 years?

*Please enter in numerical form (e.g., 3).*

Are you a parent?

- Yes
- No

*If yes,* how many children are currently living with you?

*Please enter in numerical form (e.g., 2).*

**WITHDRAW**

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page.

or leave empty and click Next page at the bottom of the screen to continue with the survey.

- Yes
Personal MJ Use

In the section that follows, you will be asked about your personal marijuana use. When thinking about your use, please include your use of any cannabis products (e.g., buds, hashish, oils, etc.).

In the past 30 days, how many **days** have you used marijuana for **non-medicinal** reasons?

Note, you must have used marijuana at least once in the past 30 days to participate in this survey.

*Please enter in numerical form (e.g., 10).*

On the days that you used in the past 30 days, how much of your day did you typically spend using or under the influence of marijuana?

- [ ] All day, hourly
- [ ] Most of the day
- [ ] Half of the day
- [ ] Less than half of the day
- [x] Less than an hour
On the days that you used in the past 30 days, **how much** marijuana did you typically use per day?

If you're having trouble estimating, consider that typically one joint contains approximately .32 - .33 g of marijuana (i.e., that would be 3 mid-sized joints rolled from a gram).

*Please enter your best estimate of the amount in grams.*

How often did you use an **Indica** strain in the past 30 days?

- Every time
- Most times
- Half of the time
- Sometimes
- Never
- I don't know what strain I used.

How often did you use a **Sativa** strain in the past 30 days?

- Every time
- Most times
- Half of the time
- Sometimes
- Never
- I don't know what strain I used.
Cannabis Use in Emerging Adulthood

How often did you use a Hybrid strain in the past 30 days?

- Every time
- Most times
- Half of the time
- Sometimes
- Never
- I don't know what strain I used.

How often did you inhale marijuana by smoking in the past 30 days?

- Every time
- Most times
- Half of the time
- Sometimes
- Never

How often did you inhale marijuana by vaping in the past 30 days?

- Every time
- Most times
- Half of the time
- Sometimes
- Never

How often did you ingest marijuana in food (e.g., edibles) in the past 30 days?
How often did you ingest marijuana on its own (e.g., tincture) in the past 30 days?

- Every time
- Most times
- Half of the time
- Sometimes
- Never

How often did you use marijuana sublingually (i.e., under your tongue) in the past 30 days?

- Every time
- Most times
- Half of the time
- Sometimes
- Never

Did you use marijuana in any other way? If so, please describe:
How often did you use marijuana in the way you described above (if you responded to the previous question) in the past 30 days?

- Every time
- Most times
- Half of the time
- Sometimes

How often did you cut with tobacco when you used in the past 30 days?

- Every time
- Most times
- Half of the time
- Sometimes
- Never
- I don’t know if there was tobacco in what I used.

WITHDRAW -

Click Yes, if you’d like to withdraw from this study and exit the survey before clicking Next page.

or leave empty and click Next page at the bottom of the screen to continue with the survey.

☐ Yes

MMM
Please consider all the times you have used marijuana and indicate how often you have used for each of the following reasons.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Almost never/Never (1)</th>
<th>Some of the time (2)</th>
<th>Half of the time (3)</th>
<th>Most of the time (4)</th>
<th>Almost always/Always (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To forget my worries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Because my friends pressure me to use marijuana</td>
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<tr>
<td>3. Because it helps me enjoy a party</td>
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<tr>
<td>4. Because it helps me when I feel depressed or nervous</td>
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<td>5. To be sociable</td>
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<tr>
<td>6. To cheer me up when I am in a bad mood</td>
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<td>7. Because I like the feeling</td>
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<td>8. So that others won't kid me about not using marijuana</td>
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<td>9. Because it's exciting</td>
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<td>10. To get high</td>
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<tr>
<td>Question</td>
<td>Option 1</td>
<td>Option 2</td>
<td>Option 3</td>
<td>Option 4</td>
<td>Option 5</td>
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<tr>
<td>11. Because it makes social gatherings more fun</td>
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<tr>
<td>12. To fit in with the group I like</td>
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<td>13. Because it gives me a pleasant feeling</td>
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<td>14. Because it improves parties and celebrations</td>
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<td>15. Because I feel more self-confident and sure of myself</td>
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<tr>
<td>16. To celebrate a special occasion with friends</td>
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<td>17. To forget about my problems</td>
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<td>18. Because it’s fun</td>
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<td>19. To be liked</td>
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<td>20. So I won’t feel left out</td>
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<td>21. To know my self better</td>
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<tr>
<td>22. Because it helps me be more creative and original</td>
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</tbody>
</table>
### Cannabis Use in Emerging Adulthood

Please consider all the times you have used marijuana and indicate how often you have used for each of the following reasons.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Almost never/Never (1)</th>
<th>Some of the time (2)</th>
<th>Half of the time (3)</th>
<th>Most of the time (4)</th>
<th>Almost always/Always (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To understand things differently</td>
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<tr>
<td>To expand my awareness</td>
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<td>To be more open to experiences</td>
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<td>To relax or relieve stress</td>
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<td>To help me with sleeping issues</td>
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<tr>
<td>To prevent or decrease nightmares or night terrors</td>
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<td>To focus on the present moment</td>
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<td>Because it is an affordable activity</td>
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<tr>
<td>To occupy my mind when I am bored</td>
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<tr>
<td>For self-medication</td>
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<tr>
<td>To help manage</td>
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</table>

<table>
<thead>
<tr>
<th>Q</th>
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<th>No</th>
<th>1</th>
<th>2</th>
<th>3</th>
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</tbody>
</table>

**WITHDRAW -**

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page.
or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes

MPS

The following are different types of problems you may have experienced as a result of using marijuana. Please indicate whether each item has been a problem for you in the PAST MONTH.

Has marijuana use caused you...

<table>
<thead>
<tr>
<th>No Problem</th>
<th>Minor Problem</th>
<th>Serious Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Problems between you and your partner</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Problems in your family</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>3. To neglect your family</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Problems between you and your friends</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>5. To miss days at work or miss classes</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>6. To lose a job</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7. To have lower productivity</td>
<td>☐</td>
<td>☑</td>
</tr>
</tbody>
</table>
8. Medical problems
9. Withdrawal symptoms
10. Blackouts or flashbacks
11. Memory loss
12. Difficulty sleeping
13. Financial difficulties
14. Legal problems
15. To have lower energy level
16. To feel bad about your use
17. Lowered self-esteem
18. To procrastinate
19. To lack self-confidence

WITHDRAW

Click Yes, if you’d like to withdraw from this study and exit the survey before clicking Next page.

or leave empty and click Next page at the bottom of the screen to continue with the survey.
Cannabis Use in Emerging Adulthood

Personal Use - Problematic?

To what extent do you think your marijuana use is problematic?

☐ It's a serious problem in my life
☐ It's a minor problem in my life
☐ In some ways it's problematic in my life, and in some ways it's not
☐ It's not a problem in my life at all

Withdraw

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page

or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes

SDS

During the Past Year...

Never/Almost never (0)  Sometimes (1)  Often (2)  Always/Nearly always (3)

Cannabis Use in Emerging Adulthood

1. Did you think your use of cannabis was out of control?  

2. Did the prospect of missing a dose of cannabis makes you anxious or worried?  

3. Did you worry about your use of cannabis?  

4. Did you wish you could stop the use of cannabis?  

During the **PAST YEAR**...

<table>
<thead>
<tr>
<th>Not difficult (0)</th>
<th>Quite difficult (1)</th>
<th>Very difficult (2)</th>
<th>Impossible (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. How difficult did you find it to stop, or go without cannabis?  

**WITHDRAW**

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page.

or leave empty and click **Next page** at the bottom of the screen to continue with the survey.
Cannabis Use in Emerging Adulthood

In the section that follows, you will be asked about this stage of your life - Emerging Adulthood.

Emerging adulthood is a developmental period that we now recognize as different from adolescence and adulthood. This stage typically occurs between the ages of 18 – 29 years old and describes a time when many people no longer feel that they are an adolescent, but also don’t yet feel like an adult. During this period, people work on a number of developmental tasks associated with fulfilling adult roles in society, such as role transitions (e.g., getting married), family capacities (e.g., developing the skills to be a parent/care for a family), norm compliance (e.g., obeying laws), individualistic transitions (e.g., being responsible for one’s self), as well as legal and biological transitions (e.g., reaching the age of the majority).

Do you think you are an Emerging Adult?

☐ Yes
☐ In some ways yes, in some ways no
☐ No

WITHDRAW -

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next.
IDEA

First, think about this time in your life. By “time in your life,” we are referring to the present time, plus the last few years that have gone by, and the next few years to come, as you see them. In short, you should think about a roughly five-year period, with the present time right in the middle.

For each phrase shown below, please indicate the degree to which you agree or disagree that the phrase describes this time in your life. For example, if you “Somewhat Agree” that this is a “time of exploration,” then on the same line as the phrase, you would click the option in the column headed by “Somewhat Agree.”

Is this period of your life a...

<table>
<thead>
<tr>
<th>Strongly disagree (1)</th>
<th>Somewhat disagree (2)</th>
<th>Somewhat agree (3)</th>
<th>Strongly agree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. time of many possibilities?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. time of exploration?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. time of confusion?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>4. time of</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Question</td>
<td>Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experimentation?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. time of personal freedom?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. time of feeling restricted?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. time of responsibility for yourself?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. time of feeling stressed out?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. time of instability?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. time of optimism?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. time of high pressure?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. time of finding out who you are?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. time of settling down?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. time of responsibility for others?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. time of independence?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. time of open choices?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. time of unpredictability?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. time of commitments to</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
19. time of self-sufficiency?
20. time of many worries?
21. time of trying out new things?
22. time of focusing on yourself?
23. time of separating from parents?
24. time of defining yourself?
25. time of planning for the future?
26. time of seeking a sense of meaning?
27. time of deciding on your own beliefs and values?
28. time of learning to think for yourself?
29. time of feeling adult in some ways but not others?
30. time of gradually becoming an
adult?

31. time of being not sure whether you have reached full adulthood?

W I T H D R A W -

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page

or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes

V I E W S o f E A

For each phrase shown below, please indicate the degree to which you agree or disagree that the phrase describes this period of your life that you are currently in.

Is this period of your life a...

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree (1)</th>
<th>Somewhat disagree (2)</th>
<th>Somewhat agree (3)</th>
<th>Strongly agree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. time to prepare to be a parent?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. time to start a family?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. time to</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cannabis Use in Emerging Adulthood

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Maybe</th>
<th>Withdraw</th>
</tr>
</thead>
<tbody>
<tr>
<td>experiment with drugs?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. time you wish would never end?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. time to focus on others?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6. time to volunteer and help on campus or in the community?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7. time to be sexually active?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8. time to have fun?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9. time to drink to get drunk?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. time to break the law a little bit?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11. time to prepare to marry?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12. time of not being sure who you are?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13. time of not knowing where you fit in society?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

WITHDRAW

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page.
or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes

MJ and EA

In the section that follows, you will be asked about your marijuana use during this time in your life - Emerging Adulthood.

Does your marijuana use relate (in any way - good or bad, etc.) to this time of your life - Emerging Adulthood (18-29 years)?

☐ Yes
☐ In some ways yes, and in some ways no
☐ No

WITHDRAW -

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page

or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes
### MJ and ID exploration

Please indicate the extent to which you agree that your marijuana use relates to this being a time in your life to explore your identity.

<table>
<thead>
<tr>
<th>Identity exploration</th>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree, nor disagree</th>
<th>Somewhat agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Please indicate the extent to which you agree that your marijuana use relates to the following:

<table>
<thead>
<tr>
<th>My marijuana use...</th>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree, nor disagree</th>
<th>Somewhat agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is part of my identity</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Helps me explore who I was, who I am and who I want to be</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Helps me change parts of my identity that I don't like</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Interferes with my identity exploration</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Is aligned with my personal values and beliefs</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Provides me with a community to</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Cannabis Use in Emerging Adulthood

**WITHDRAW**

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page

or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes

**MJ and Instability**

Please indicate the extent to which you agree that your marijuana use relates to this being a time of instability in your life.

<table>
<thead>
<tr>
<th>Instability</th>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree, nor disagree</th>
<th>Somewhat agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please indicate the extent to which you agree that your marijuana use relates to the following:

**My marijuana use...**
Cannabis Use in Emerging Adulthood

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree, nor disagree</th>
<th>Somewhat agree</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helps me cope with the instability of this time of my life</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Contributes to the instability of this time of my life</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Is possible because my life is MORE stable now than it was in adolescence</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Other, please describe:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

WITHDRAW -

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page

or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes

MJ and Focus on Yourself

Please indicate the extent to which you agree that your marijuana use relates to this being a time in your life to focus on yourself.
### Focus on yourself

- Strongly disagree
- Somewhat disagree
- Neither agree, nor disagree
- Somewhat agree
- Strongly agree

Please indicate the extent to which you agree that your marijuana use relates to the following:

#### My marijuana use...

- Is possible because I am not as responsible to other people as I was in adolescence or will be in adulthood
- Is possible because I have the resources (e.g., time and money) to spend on myself
- Serves my own interests and nobody else’s
- Helps me focus less on what others want and more on what I want to do
- Other, please describe: ___

#### WITHDRAW -
Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page.

or leave empty and click Next page at the bottom of the screen to continue with the survey.

☐ Yes

**MJ and Feeling In-between**

Please indicate the extent to which you agree that your marijuana use relates to this being a time in your life when you feel in-between.

<table>
<thead>
<tr>
<th>Feeling in-between</th>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree, nor disagree</th>
<th>Somewhat agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

Please indicate the extent to which you agree that your marijuana use relates to the following:

**My marijuana use...**

<table>
<thead>
<tr>
<th>Helps me cope with feeling “in-between” in my life, career, relationships</th>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree, nor disagree</th>
<th>Somewhat agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>
Cannabis Use in Emerging Adulthood

Helps me cope with feeling independent in some ways and not other ways

Is a way for me to hold onto my adolescence

Is motivated by reasons that are unique to this time in my life

Keeps me stuck in feeling in-between in my life

Other, please describe:

WITHDRAW

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page

or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes

MJ and Opt/Poss

Please indicate the extent to which you agree that your marijuana use relates to this being a time of optimism and possibilities in your life.

Strongly disagree Somewhat disagree Neither agree, nor disagree Somewhat agree Strongly agree

Please indicate the extent to which you agree that your marijuana use relates to the following:

**My marijuana use...**

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree, nor disagree</th>
<th>Somewhat agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helps me to access positive emotions</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Increases my optimism about the future</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Facilitates openness and exploration of opportunities</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Helps me cope with feeling overwhelmed or uncertain about the possibilities of this time in my life</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Has exposed me to business opportunities in the growing marijuana industry</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

**Withdraw**

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next.
Cannabis Use in Emerging Adulthood

Changes in MJ Use

At what age did you first try or use marijuana?

Please enter in numerical form (e.g., 14).

At what age did you begin using marijuana more regularly?

- Same age as entered above
- [ ] Please enter age:

Did your use change when you moved out of adolescence (younger than 18) into Emerging Adulthood (18-29 years)?

- Yes, it has increased
- Yes, it has decreased
- No change
- [ ] Other, please describe:
Cannabis Use in Emerging Adulthood

Has your use changed within Emerging Adulthood (from 18 to your current age)?

- Yes, it has increased
- Yes, it has decreased
- No change
- Other, please describe:

Do you think that your use will change as you move into adulthood (from your current age to older than 29)?

- Yes, I think it will increase
- Yes, I think it will decrease
- No, I don’t think it will change
- Other, please describe:

If marijuana is legalized, do you think that your use will change?

- Yes, I think it will increase
- I think it will increase temporarily, and then return to my current/pre-legalization use
- Yes, I think it will decrease
- No, I don’t think it will change
- Other, please describe:

WITHDRAW -
Cannabis Use in Emerging Adulthood

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page

or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes

Conclusion

Thank you for completing our online survey!

Before you go, we would appreciate knowing how you experienced this survey.

<table>
<thead>
<tr>
<th>Not at all</th>
<th>...</th>
<th>...</th>
<th>So-so</th>
<th>...</th>
<th>...</th>
<th>A lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How interesting did you find these study questions?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>2. How distressing did you find these study questions?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>3. How clear did you find these study questions?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>4. I gained something from filling out this questionnaire.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

5. Completing this questionnaire upset me more than I had expected.

6. Had I known in advance what completing this questionnaire would be like for me, I still would have agreed.

WITHDRAW -

Click Yes, if you'd like to withdraw from this study and exit the survey before clicking Next page

or leave empty and click Next page at the bottom of the screen to continue with the survey

☐ Yes

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Appendix D

Study One - Optional Email Entry

Email Entry

You are eligible to participate in a draw for one of four online $50 gift cards from Amazon.ca!

To participate in the draw, please enter your preferred email address and click the Submit button at the bottom of the screen.

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Appendix E

Study One - Share, Resource Sheet and Clear History

Please feel free to share this link to our survey on Facebook, Twitter, and/or Instagram and/or email to a friend!

Referrals are much appreciated!

WEBSITE LINK

******************************************************************************:
Check out the Dr. Abby L Goldstein Lab on Twitter (@DrAbbyGoldstein)
******************************************************************************:

Resource Sheet

ConnexOntario
Free provincial helplines through which Information and Referral Specialists provide confidential and anonymous support, health information, and referral services related to concerns about substance use and/or mental health over the telephone or via website chat.

Telephone:
Drug and Alcohol Helpline: 1-800-565-8603
Mental Health Helpline: 1-866-531-2600

Website(s):
https://connexontario.com/
Cannabis Use in Emerging Adulthood

http://www.connexontario.ca/
Drug and Alcohol Helpline:
http://www.drugandalcoholhelpline.ca/
Mental Health Helpline:
http://www.mentalhealthhelpline.ca/

Availability (for all the above): 24 hours/day, 7 days/week

MA - Marijuana Anonymous
Learn about the MA program and/or discuss your marijuana use with others experiencing problems related to their use online or in-person.

Website: https://www.marijuana-anonymous.org

SMART Recovery
Learn about the SMART Recovery program and/or discuss your marijuana use with others online or in-person.

Website: http://www.smartrecovery.org

Clear History Sheet

THANK YOU FOR PARTICIPATING IN OUR SURVEY!

To ensure confidentiality, we recommend doing the following, which will help remove any survey-related information from your computer.

1. Delete any survey-related emails
Delete the e-mail you sent and received from your ‘inbox,’ ‘sent’ and ‘trash’ folders of your e-mail.

2. Clear your ‘downloads’ folder
   - Open the ‘downloads’ folder on your computer
   - Locate the information you received with the Consent Form and Resource Sheet in the ‘downloads’ folder
   - Delete the file from the ‘downloads’ folder and trash.

* Please feel free to save the Consent Form and Resource Sheet to your computer for future reference if you prefer.
Appendix F

Correlation Matrices

Table i.

*Bivariate Correlations Between the IDEA Subscales and Specific Views of EA (N = 182)*

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. O/P</td>
<td>0.33**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Instab</td>
<td>0.00</td>
<td>-0.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Other</td>
<td>0.14</td>
<td>-0.08</td>
<td>0.19*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Self</td>
<td>0.36**</td>
<td>0.49**</td>
<td>-0.05</td>
<td>0.14*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. In-Bet</td>
<td>0.42**</td>
<td>0.14</td>
<td>0.31**</td>
<td>0.01</td>
<td>0.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Risk</td>
<td>0.11</td>
<td>0.37**</td>
<td>0.18*</td>
<td>0.05</td>
<td>0.20*</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Uncert</td>
<td>0.25**</td>
<td>0.11</td>
<td>0.63**</td>
<td>-0.01</td>
<td>-0.03</td>
<td>0.50**</td>
<td>0.19*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Role Prep</td>
<td>0.04</td>
<td>-0.17*</td>
<td>0.04</td>
<td>0.53**</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.01</td>
<td>-0.15*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Poss</td>
<td>0.25**</td>
<td>0.45**</td>
<td>-0.13</td>
<td>0.07</td>
<td>0.45**</td>
<td>-0.04</td>
<td>0.35**</td>
<td>-0.04</td>
<td>0.42**</td>
<td>0.42</td>
<td>0.07</td>
</tr>
<tr>
<td>11. Stress</td>
<td>0.17*</td>
<td>-0.07</td>
<td>0.71**</td>
<td>0.21**</td>
<td>0.03</td>
<td>0.25**</td>
<td>0.09</td>
<td>0.42**</td>
<td>0.42</td>
<td>0.07</td>
<td>-0.09</td>
</tr>
</tbody>
</table>

Note. O = significant correlation in the incomplete dataset only; I = significant correlation in the imputed dataset only; ID = IDEA-Identity Exploration; O/P = IDEA-Optimism/Possibilities; Instab = IDEA-Instability; Other = IDEA-Other-focused; Self = IDEA-Self-focused; In-Bet = IDEA-Feeling In-between; Risk = Risk behaviours; Uncert = Uncertainty; Role Prep = Role preparation; Poss = Possibilities; Stress = Stressful

*p ≤ 0.05, **p ≤ 0.01
Table ii.

**Bivariate Correlations Between the IDEA Subscales and Cannabis-specific Views of EA (N = 182)**

<table>
<thead>
<tr>
<th>Variable</th>
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<th>2.</th>
<th>3.</th>
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<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
<th>11.</th>
</tr>
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<tr>
<td>2. O/P</td>
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<tr>
<td>3. Instab</td>
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<td>4. Other</td>
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<tr>
<td>7. CAN-EA</td>
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<td>0.17*</td>
<td>-0.12</td>
<td>-0.15</td>
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<tr>
<td>8. CAN-ID</td>
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<td>0.18*</td>
<td>-0.04</td>
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<td>0.07</td>
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<td>9. CAN-Insta</td>
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<td>-0.04</td>
<td>0.13</td>
<td>0.06</td>
<td>0.02</td>
<td>0.02</td>
<td>0.03</td>
<td>-0.08</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10. CAN-Self</td>
<td>0.31**</td>
<td>0.27**</td>
<td>-0.03</td>
<td>-0.03</td>
<td>0.13</td>
<td>0.14</td>
<td>-0.00</td>
<td>0.33**</td>
<td>-0.07</td>
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<td></td>
</tr>
<tr>
<td>11. CAN-In-B</td>
<td>0.00</td>
<td>-0.01</td>
<td>0.28**</td>
<td>0.08</td>
<td>-0.01</td>
<td>0.19*</td>
<td>-0.02</td>
<td>0.00</td>
<td>0.14</td>
<td>-0.02</td>
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<td>12. CAN-O/P</td>
<td>0.14</td>
<td>0.21**</td>
<td>-0.10</td>
<td>0.05</td>
<td>0.17*</td>
<td>0.09</td>
<td>-0.09</td>
<td>0.14</td>
<td>-0.11</td>
<td>0.17*</td>
<td>-0.01</td>
</tr>
</tbody>
</table>

Note. O = significant correlation in the incomplete dataset only; I = significant correlation in the imputed dataset only; ID = IDEA-Identity Exploration; O/P = IDEA-Optimism/Possibilities; Instab = IDEA-Instability; Other = IDEA-Other-focused; Self = IDEA-Self-focused; In-Bet = IDEA-Feeling In-between; CAN-EA = Cannabis use*Emerging Adulthood; CAN-ID = Cannabis use*IDEA-Identity Exploration; CAN-Insta = Cannabis use*IDEA-Instability; CAN-Self = Cannabis use*IDEA-Self-focused; CAN-In-B = Cannabis use*IDEA-Feeling In-between; CAN-O/P = Cannabis use*IDEA-Optimism/Possibilities

*p ≤ 0.05, **p ≤ 0.01
### Table iii.

**Bivariate Correlations Between Specific Views of EA and Cannabis-specific Views of EA**  
\((N = 182)\)

<table>
<thead>
<tr>
<th>Variable</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
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<tbody>
<tr>
<td>1. Risk</td>
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<td></td>
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<td>2. Uncert</td>
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<td>3. Role Prep</td>
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<td>4. Poss</td>
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<td>5. Stress</td>
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<td>6. CAN-EA</td>
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<td>7. CAN-ID</td>
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<td>8. CAN-Insta</td>
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<td>0.02</td>
<td>0.07</td>
<td>-0.05</td>
<td>0.08</td>
</tr>
<tr>
<td>9. CAN-Self</td>
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<tr>
<td>10. CAN-In-B</td>
<td>0.10</td>
<td>0.28*</td>
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<td>-0.14</td>
<td>0.18*</td>
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<tr>
<td>11. CAN-O/P</td>
<td>-0.05</td>
<td>-0.11</td>
<td>-0.01</td>
<td>0.10</td>
<td>-0.06</td>
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</table>

*Note.* O = significant correlation in the incomplete dataset only; 1 = significant correlation in the imputed dataset only; Risk = Risk behaviours; Uncert = Uncertainty; Role Prep = Role preparation; Poss = Possibilities; Stress = Stressful; CAN-EA = Cannabis use*Emerging Adulthood; CAN-ID = Cannabis use*IDEA-Identity Exploration; CAN-Insta = Cannabis use*IDEA-Instability; CAN-Self = Cannabis use*IDEA-Self-focused; CAN-In-B = Cannabis use*IDEA-Feeling In-between; CAN-O/P = Cannabis use*IDEA-Optimism/Possibilities  
*p ≤ 0.05, **p ≤ 0.01*
Appendix G

Statistics for Checking the Assumption of Normality in Frequency of Cannabis Use

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Incomplete</td>
<td>157</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.38</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-1.50</td>
</tr>
<tr>
<td>Imputation 1</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Kurtosis</td>
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</tr>
<tr>
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<tr>
<td>Kurtosis</td>
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<tr>
<td>Kurtosis</td>
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<td>Skewness</td>
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</tr>
<tr>
<td>Kurtosis</td>
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</tr>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Incomplete</td>
<td>157</td>
</tr>
<tr>
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<tr>
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</tr>
<tr>
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<tr>
<td>Imputation 2</td>
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<tr>
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<tr>
<td>Imputation 3</td>
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</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Imputation 4</td>
<td>182</td>
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<tr>
<td></td>
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<td>Imputation 5</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001
Figure i. Histogram of cannabis use frequency in the preceding month, using the incomplete dataset ($n = 157$).
Appendix H

Descriptive Statistics and Past Month Cannabis Use According to Frequency of Cannabis Use Group Split using the Incomplete Dataset of Study One

<table>
<thead>
<tr>
<th>Variable</th>
<th>&lt; 25 days/month</th>
<th>Near daily – daily (i.e., ≥ 25 days/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (SD)</td>
<td>22.84 (3.68)</td>
<td>24.33 (3.36)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>&lt; 25 days/month</th>
<th>Near daily – daily (i.e., ≥ 25 days/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
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<td></td>
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<tr>
<td>Two spirited</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Female</td>
<td>33</td>
<td>28</td>
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<tr>
<td>Male</td>
<td>47</td>
<td>46</td>
</tr>
<tr>
<td>Number of Ethnicities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single race</td>
<td>72</td>
<td>69</td>
</tr>
<tr>
<td>Bi-racial</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Multi-racial</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Ethnicities</td>
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<tr>
<td>White</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>Other specified</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Participants were permitted to endorse multiple ethnicities and so the percentages presented in the table above will amount to more than 100%.

<table>
<thead>
<tr>
<th>Variable</th>
<th>&lt; 25 days/month</th>
<th>Near daily – daily (i.e., ≥ 25 days/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
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<td></td>
</tr>
<tr>
<td>Currently enrolled</td>
<td>43</td>
<td>25</td>
</tr>
<tr>
<td>Not currently enrolled</td>
<td>38</td>
<td>50</td>
</tr>
</tbody>
</table>

197
## Cannabis Use in Emerging Adulthood

### Variable | < 25 days/month | Near daily – daily (i.e., ≥ 25 days/month) | \( n \) | % yes | \( n \) | % yes
--- | --- | --- | --- | --- | --- | ---
**Employment** | | | | | | |
Full-time | 25 | 31.3 | 33 | 44.0 |
Part-time | 24 | 30.0 | 15 | 20.0 |
Unemployed | 21 | 26.3 | 12 | 16.0 |
Seasonal | 5 | 6.1 | 8 | 10.7 |
Other specified | 5 | 6.1 | 7 | 9.3 |
**Level of income** | (of employed participants) | | | | | |
< $20, 000 | 27 | 47.4 | 17 | 27.9 |
$20, 000 - $40, 000 | 13 | 22.8 | 20 | 32.8 |
$40, 000 - $60, 000 | 14 | 24.6 | 17 | 27.9 |
$60, 000 - $80, 000 | 1 | 1.2 | 5 | 8.2 |
$80, 000 - $100, 000 | - | - | 1 | 1.6 |
> $100, 000 | 2 | 3.5 | 1 | 1.6 |
**Housing - Living arrangement** | | | | | | |
Living with parents | 33 | 40.7 | 20 | 26.7 |
Living with roommate(s) | 14 | 17.3 | 14 | 18.7 |
Living with partner | 8 | 9.9 | 19 | 25.3 |
Living alone | 13 | 16.0 | 12 | 16.0 |
Living with spouse | 5 | 6.2 | 8 | 10.7 |
Living with other relatives | 2 | 2.5 | 1 | 1.3 |
University residence with roommate | 2 | 2.5 | - | - |
University residence single room | 2 | 2.5 | - | - |
Other specified | 2 | 2.5 | 1 | 1.3 |
**Lived independently and then moved back home to live with parents** | | | | | | |
No | 51 | 63.7 | 39 | 52.0 |
Yes | 29 | 36.3 | 36 | 48.0 |
## Cannabis Use in Emerging Adulthood

<table>
<thead>
<tr>
<th>Variable</th>
<th>&lt; 25 days/month</th>
<th>Near daily – daily (i.e., ≥ 25 days/month)</th>
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<tbody>
<tr>
<td></td>
<td>n</td>
<td>% yes</td>
</tr>
<tr>
<td>Number of places lived in past 5 years</td>
<td>80</td>
<td>75</td>
</tr>
<tr>
<td>One</td>
<td>15</td>
<td>18.8</td>
</tr>
<tr>
<td>Two</td>
<td>25</td>
<td>31.3</td>
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<tr>
<td>Three</td>
<td>17</td>
<td>21.3</td>
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<td>Four</td>
<td>11</td>
<td>13.8</td>
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<td>Five</td>
<td>7</td>
<td>8.8</td>
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<td>Six</td>
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<td>3.8</td>
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<td>7-10</td>
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<table>
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<th>Relationship status</th>
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<th>Near daily – daily (i.e., ≥ 25 days/month)</th>
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<td>% yes</td>
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<tr>
<td>Single</td>
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<td>In an exclusive relationship</td>
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<td>20.3</td>
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<td>Common law</td>
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<td>7.6</td>
</tr>
<tr>
<td>Casually dating</td>
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<td>11.4</td>
</tr>
<tr>
<td>Married</td>
<td>3</td>
<td>3.8</td>
</tr>
<tr>
<td>Engaged</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Polyamorous (1 male and 1 female partner)</td>
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<td>-</td>
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<table>
<thead>
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<th>Sexual orientation</th>
<th>&lt; 25 days/month</th>
<th>Near daily – daily (i.e., ≥ 25 days/month)</th>
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</thead>
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<td>% yes</td>
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<td>Heterosexual</td>
<td>55</td>
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<td>Bisexual</td>
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<td>Gay or Lesbian</td>
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<td>5.0</td>
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<td>Unsure</td>
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<td>5.0</td>
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<td>Asexual</td>
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<tr>
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### Cannabis Use in Emerging Adulthood

#### Frequency (days)

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<tr>
<td></td>
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<td>( % ) yes</td>
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<tr>
<td>Parenthood</td>
<td>80</td>
<td>78</td>
</tr>
<tr>
<td>No</td>
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<td>2</td>
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<tr>
<td>Yes</td>
<td>78</td>
<td>97.5</td>
</tr>
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</table>

#### Number of children living with participant

<table>
<thead>
<tr>
<th>Number of children living with participant</th>
<th>&lt; 25 days/month</th>
<th>Near daily – daily (i.e., ≥ 25 days/month)</th>
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</thead>
<tbody>
<tr>
<td>No children in household</td>
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<td>100</td>
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<tr>
<td>One</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Two</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Amount (g)/day

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (days)</th>
<th>Weighted frequency</th>
<th>Amount (g)/day</th>
<th>MPS Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n )</td>
<td>Mean (SD)</td>
<td>Range</td>
<td>( n )</td>
</tr>
<tr>
<td>Frequency (days)</td>
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<td>9.43 (6.96)</td>
<td>1.00 - 23.00</td>
<td>75</td>
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<tr>
<td>Weighted frequency</td>
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<td>21.20 (17.42)</td>
<td>1.00 – 80.00</td>
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<tr>
<td>Amount (g)/day</td>
<td>80</td>
<td>1.32 (3.01)</td>
<td>0.10 - 25.00</td>
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</tr>
<tr>
<td>MPS Total Score</td>
<td>76</td>
<td>3.71 (4.15)</td>
<td>0.00 – 19.00</td>
<td>70</td>
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## Appendix I

**Statistics for Checking the Assumption of Normality in Cannabis Use Problems**

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<th>Log10MPS Total Score</th>
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<td>SE</td>
<td>Statistic</td>
<td>SE</td>
</tr>
<tr>
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\( * p \leq 0.05, ** p \leq 0.01, *** p \leq 0.001 \)
Figure i. Histogram of cannabis use problems in the preceding month, using the incomplete dataset ($n = 157$).
Appendix J

Study Two - Recruitment Advertisement

Clear the Smoke
UNDERSTANDING MARIJUANA USE
DURING EMERGING ADULTHOOD

If you…
• Have used marijuana in the past 30 days (non-medicinal reasons)
  • Are 18 - 29 years old
  • Currently live in Ontario
  • Are fluent in spoken English

WE WANT TO HEAR ABOUT YOUR EXPERIENCES!

What will you be asked to do?
• You’ll be asked to participate in an interview (approx. 45 mins)
• You’ll be asked questions about your experiences with marijuana and this stage of your life

To learn more, please contact us:
Email: mallory.campbell@mail.utoronto.ca
or call: 416-978-0702

Please provide your first name and a private phone number at which a message can be left, if necessary
Replies to this ad are confidential

You will receive a $20 gift card from Amazon.ca for participating

amazon.ca

You can also find us on FACEBOOK and TWITTER
#clearthesmokestudy
Appendix K

Study Two – Telephone Screen

Thank you for your interest in this study.

We ask all interested people to answer a few questions to determine whether they are eligible for the study. You don’t need to give us any other identifying information.

Do you have 2 minutes now to answer these questions?

1. **How old are you?** ______________ (must be 18-29)

2. Do you currently reside in Ontario? (must be living in ON) [Added Sept. 27, 2016]

3. **How many days in the past month have you used cannabis?**
   ______________ (must be at least once)

4. **On any of those days, did you use cannabis for medicinal purposes?**
   YES    NO
   If so, how many days ______________
   (must have used at least once/past month for NON-medical purposes)

5. **DO NOT ASK, assess based on responses**
   Is the participant able to answer the questions or is there a language barrier?
   YES    NO
   (if language barrier, then not eligible)

6. **Where did you learn about our study?** ______________

If ineligible – Unfortunately, you don’t meet the eligibility criteria for the study. But thank you for taking the time to speak with us.

If eligible – You are eligible to participate in the study – the study involves a 45-minute (approximately) interview. You’ll be asked about this stage of your life, your personal cannabis use and your views on what constitutes normative/non-problematic, problematic and other patterns of cannabis use at this age. We can complete the interview now if you like and are in a private space, or if another time would be more convenient for you, we can schedule a time to speak in person, by phone or through videoconferencing. We will compensate you for your time – with an online $20 gift card from Amazon.ca sent to the email address through which you contacted us about the study. **Are you still interested?**

If yes – **Do you have time to complete the interview now or would you like to schedule another time to speak?**
If now – Ok great, the first step is for us to review the informed consent together. I’m going to email you some information about the study now. If you can let me know when you’ve received the email - we’ll review the information together and I’ll answer any questions you may have. Then, if you’d still like to participate, we’ll complete the interview now. **Sound OK?**

If later – **Ok no problem, when are you free to speak?** *Proceed with scheduling*

In the meantime, I’m going to email you some information about the study. We’ll review it together the next time we speak and I’ll answer any questions you may have. If you can or would prefer to take a read through it on your own, that’d be great. **Sound OK?** *Confirm date/time of interview.*
Appendix L

Study Two - Study Information Sheet, Informed Consent and Resource Sheet

Research title: Clearing the Smoke on Marijuana Use: Exploring Conceptions of Marijuana Use During Emerging Adulthood

Short title: Conceptions of Marijuana Use in Emerging Adulthood

Consent to participate in a research study:
The purpose of an informed consent form is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information so you have the opportunity to decide if you would like to participate in the study.

You must be between 18 - 29 years of age to participate in this study.

Investigator:
Mallory Campbell, M.A., Ph.D. Candidate in Clinical and Counselling Psychology
Applied Psychology and Human Development, OISE/University of Toronto

Supervisor:
Abby Goldstein, Ph.D., C. Psych., Associate Professor
Applied Psychology and Human Development, OISE/University of Toronto

Purpose:
• The purpose of this study is to better understand perceptions and patterns of marijuana use during emerging adulthood (i.e., 18 – 29 years old), the stage of development between adolescence and adulthood
• We hope to better understand what constitutes typical, problematic, and/or other patterns of marijuana use at this age
• By understanding emerging adults' perceptions of marijuana use, we can have a better understanding of the ways in which emerging adults use marijuana and some of this information could be used to better support those who are in fact experiencing problems with their use to reduce associated harms
• We hope to speak to 20 people

Procedure:
• If you agree to participate in this study, you will be asked to complete an interview (approx. 45 minutes) with the Investigator, Mallory Campbell, now or at a time that is more convenient for you
• This interview will be audio recorded and can be completed by phone, videoconference or in person – depending on your preference
During the interview, you’ll be asked questions about this stage of your life, your personal marijuana use and your views on what constitutes normative, problematic, and/or other patterns of marijuana use at this stage of your life compared to other stages.

Right to Refuse:

- Participation is completely voluntary, and you are under no obligation to agree to participate in this study.
- You may choose to not respond to any questions you find objectionable, without penalty.
- You have the right to withdraw at any time during the interview, without penalty, simply tell the Investigator this at any point during the conversation.
- Individuals who complete the interview will be able to withdraw their responses from the study up to the time that their interview has been transcribed (60 days following your interview), but it will not be possible to withdraw your interview after it has been transcribed, because we remove any identifying information from the transcribed interview and then delete the recording, which means we would not be able to identify your data after the interview is transcribed.
- You will have 60 days following your interview to withdraw your responses.
- If you wish to withdraw your responses prior to transcription, you can contact Mallory directly by email (mallory.campbell@mail.utoronto.ca) about having your interview removed. You will need to provide the number of your interview (this will be provided to you at the beginning and end of your interview) and the date that you completed the interview.

Risks:

- By contacting the Investigator about this study and/or participating in this study others can infer that you have used marijuana.
- There will be a brief period of time between your initial contact to the Investigator and confirmation of receipt of compensation during which your first name and contact information will remain in the email account associated with this study on personal marijuana use.
- There will also be a period of time (30-60 days) between completion of the interview and transcription when your digital recording will be on file.
- There is some risk associated with reporting on an illegal behaviour (marijuana use) due to possible external pressure to disclose identifiable information (e.g., a subpoena or in connection with a legal proceeding). If this situation were to arise, we would resist disclosing any information about you and would immediately contact our institutional supports and legal counsel.
• It is also possible that you may experience feelings of discomfort associated with disclosing personal information concerning your marijuana use and/or question your level of use.
• We will provide you with the contact information for resources that you may access if you would like to discuss any questions you may have about your marijuana use.

Benefits:
• By sharing your experiences, you may gain a better understanding of your opinions on marijuana use at this stage of your life.
• Your views will help us better understand how marijuana use is perceived among young people, when marijuana use is cause for concern and when it is not, how it may relate to this time in your life and how to support young people who might want to reduce their marijuana use.
• You will also receive a list of helpful contacts for future reference.

Compensation:
• In appreciation for your assistance with this study, you will be compensated with a $20 gift card from Amazon.ca.

Confidentiality:
• All information will be kept confidential.
• If you tell the Investigator that you are at risk of hurting yourself or others or she suspects child abuse or neglect is occurring, the Investigator will be required to report these events and breach confidentiality.
• We cannot guarantee complete anonymity because you were required to provide your first name, email address and telephone number, although this information will not be stored.
• However, there will be a brief period of time between your initial contact to the Investigator and confirmation of receipt of compensation during which your first name and contact information will remain in the email account associated with this study.
• Once you have received compensation, study emails with your name and contact information will be deleted and all digital recordings of the interviews will be deleted upon completion of transcription.
• All identifying information will be removed from transcribed interviews.
• Only research personnel affiliated with this study will have access to the encrypted and password-protected files in which the transcribed interviews are stored.
• Aggregate data (e.g., themes) and direct quotes will be included in the reporting of the results of the study, and your name will not appear in any reports or presentations that may arise from this study.
• Your age, gender and pattern of marijuana use may be included to contextualize your quote.
In addition, representatives from the University of Toronto research ethics program may have confidential access to your data to ensure participant protection procedures are being followed.

Other Information:
If you are interested in obtaining a brief report of the results, please feel free to contact the Investigator.

Questions:
Should you have any questions or concerns about this study, or if any issues arise because of your participation, please feel free to contact the Investigator or Faculty Supervisor.

Ms. Mallory Campbell, M.A., Ph.D. Candidate
Department of Applied Psychology and Human Development
Ontario Institute for Studies in Education, University of Toronto
252 Bloor Street West Toronto, Ontario, Canada M5S 1V6
Telephone: (416) 978 - 0702
E-mail: mallory.campbell@mail.utoronto.ca

Dr. Abby Goldstein, C. Psych. Faculty Supervisor
Department of Applied Psychology and Human Development
Ontario Institute for Studies in Education, University of Toronto
252 Bloor Street West Toronto, Ontario, Canada M5S 1V6
Telephone: (416) 978 - 0703
E-mail: abbyl.goldstein@utoronto.ca

Should you have any questions about your rights as a research participant, please feel free to contact the Office of Research Ethics at the University of Toronto.

Office of Research Ethics, University of Toronto
Telephone: (416) 946 - 3273
E-mail: ethics.review@utoronto.ca

I have read the above form and understand the conditions of my participation. My participation in this study is voluntary. If for any reason, up to the point that my interview has been transcribed, I wish to leave the study I may do so without having to give an explanation and with no penalty whatsoever. I am also aware that the data gathered in this study are confidential and efforts will be made to safeguard my personal identity. I realize that if a quote from my interview is chosen, my name will not appear in any reports or presentations; however, my age, gender and marijuana use may be included. I also confirm that I am between 18 – 29 years old.
Please print this screen if you would like a copy of this page for your own records.

Clicking the “I consent” button indicates that you have agreed to participate in the telephone interview and confirm the above.

☐ I consent and confirm the above.
Resource Sheet

ConnexOntario
Free provincial helplines through which Information and Referral Specialists provide confidential and anonymous support, health information, and referral services related to concerns about substance use and/or mental health over the telephone or via website chat.

Telephone:
- Drug and Alcohol Helpline: 1-800-565-8603
- Mental Health Helpline: 1-866-531-2600

Website(s):
- Drug and Alcohol Helpline: http://www.drugandalcoholhelpline.ca/
- Mental Health Helpline: http://www.mentalhealthhelpline.ca/

Availability (for all the above): 24 hours/day, 7 days/week

MA - Marijuana Anonymous
Learn about the MA program and/or discuss your marijuana use with others experiencing problems related to their use online or in-person.

Website: https://www.marijuana-anonymous.org

SMART Recovery
Learn about the SMART Recovery program and/or discuss your marijuana use with others online or in-person.

Website: http://www.smartrecovery.org
Clear History Sheet

THANK YOU FOR PARTICIPATING IN OUR INTERVIEW!

To ensure confidentiality, we recommend doing the following, which will help remove any survey-related information from your computer and telephone.

1. Delete any survey-related emails
   
   • Delete the email you sent and received from the ‘inbox,’ ‘sent’ and ‘trash’ folders of your email

2. Clear your ‘downloads’ folder
   
   • Open the ‘downloads’ folder on your computer
   
   • Locate the information you received with the Consent Form and Resource Sheet in the ‘downloads’ folder
   
   • Delete the file from the ‘downloads’ folder and trash

* Please feel free to save the Consent Form and Resource Sheet to your computer for future reference if you prefer

3. Clear the recent callers and/or callers list on your telephone or videoconference interface (if applicable)
Appendix M

Study Two - Semi-structured Interview

First, I’d like to talk to you about this period of your life…

1) Emerging adulthood

Emerging adulthood is a developmental period that we now recognize as different from adolescence and adulthood. This stage typically occurs between the ages of 18 – 29 years old and describes the time when you no longer feel that you are an adolescent, but also don’t yet feel like an adult. During this period, people work on a number of developmental tasks associated with fulfilling adult roles in society (Arnett, 1998; Arnett et al., 2001), such as role transitions (e.g., getting married), family capacities (e.g., developing the skills to be a parent/care for a family), norm compliance (e.g. obeying laws), individualistic transitions (e.g., being responsible for one’s self), as well as legal and biological transitions (e.g., reaching age of the majority). [Edited Sept. 06, 2016 – Asked all participants]

Do you think you are an EA? yes/no

Prompt to elaborate: Why/why not?

If so, how would you describe this period of your life?

Prompt with each Arnett (2005) features related to sub use:

There are a few things that others have related to this period:

…a time for ID exploration? If yes, why/how so? If not, why not? [Added Sept. 17, 2016]

… a time of instability? If yes, why? If not, why not?

…a time for you to focus on yourself? If yes, why? If not, why not?

…a time for feeling in-between adolescence and adulthood? If yes, why? If not, why not?

…a time for optimism and possibilities? If yes, why? If not, why not?

Now I’d like to ask you about your cannabis use…
2) Cannabis use

Tell me about your cannabis use…

Prompt:

How many days did you use cannabis in the past 30 days?

How much cannabis did you typically use per day in the past 30 days?

What types of cannabis products did you use in the past 30 days?

What method(s) of administration did you use in the past 30 days?

Prompt as necessary: smoke; vape; eat [Added Sept. 06, 2016 - Asked all participants]

If joint - Do you cut w tobacco? [Added Oct. 06, 2016]

What strain do you use? [Added Oct. 06, 2016]

Prompt as necessary

Was your cannabis use in the past 30 days typical for you?

If no,

Can you describe the change – do you typically use more…less…cannabis?

3) Conceptions of use

How would you describe your use [in comparison to others your age]?

Prompt to elaborate on different conceptions:

a) Do you think you [insert method - e.g., smoke] as much as others your age? What does typical cannabis use look like at your current age? [Edited Sept. 09, 2016 - Asked all participants]

b) Do you think your use is problematic? What does problematic cannabis use look like at your current age?

c) Would you describe your use in some other way?

d) Any other patterns? [Edited Sept. 13, 2016]
4) Cannabis use and emerging adulthood

Is there a connection between your cannabis use and this period of your life – emerging adulthood?

If so, can you explain the connection to me?

Does your cannabis use relate to any of the characteristics we went through in question #1?

…ID exploration? If yes, describe? If not, why not?

…time of instability? If yes, describe? If not, why not?

…focus on yourself? If yes, describe? If not, why not?

… feeling in-between adolescence and adulthood? If yes, describe? If not, why not?

… time for optimism and possibilities? If yes, describe? If not, why not?

[Edited Sept. 06, 2016 - Asked all participants]

5) Changes in cannabis use over time

a) At what age did you begin using cannabis?

(If participant initiated use during adolescence)

i) Has your use changed over time, since adolescence?

ii) If so, how has it changed? Why has it changed?

b) Do you imagine your use will change in the future (e.g., as an adult)?

i) If so, how will it change? Why will it change?

6) Stoner [Added Feb. 16, 2017]

7) Pros associated with use [Added Sept. 22, 2016]
8) Legal – will your use change? [Added Feb. 06, 2017]

9) Anything else you would like to add? Anything I missed that you think is important to mention? [Added Feb. 06, 2017]

10) Demographics

   a) How do you identify your gender?

   b) How do you identify your sexual orientation? [Added Feb 14, 2017]

   b) How do you identify your race and ethnicity? [Added Sept. 9, 2016 - Asked all participants]

   c) Are you currently in school? □ YES □ NO

      i) If yes, what grade level?

      ii) If you are not currently in school, what was the highest level of education you have completed?

      iii) Overall, what marks do/did you usually get in school?

         □ A (80% - 100%)
         □ B (67% - 79%)
         □ C (60% - 66%)
         □ D (50% - 59%)
         □ Less than D (below 50%)

   d) What is your employment status?

      Prompts:

      □ Full-time employment
      □ Part-time employment
      □ Seasonal
      □ Unemployed
      □ Other: ___________ (please enter)
i) **If employed, what is your yearly income?**

- Less than $20,000
- $20,000 - $40,000
- $40,000 - $60,000
- $60,000 - $80,000
- $80,000 - $100,000
- $100,000 +


e) **What is your current living situation?**

- University residence with roommate
- University residence single room
- Apartment with roommates
- Apartment alone
- Living with parents
- Living with other relatives
- Living with partner
- Living with spouse
- Other living arrangement: __________ (please enter)

f) **What is your relationship status?**

- Single
- Casually dating
- In an exclusive relationship
- Common Law
- Married
- Separated
- Divorced
- Widowed
- Other: __________ (please enter)


g) **Are you a parent?**  □ YES  □ NO

i) **If yes, how many children are currently living with you?** __________