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How are Motives of Marijuana Use Associated
with Symptoms of Depression, Symptoms of Anxiety,
and Overall Psychological Distress
in Young Adults of Los Angeles?

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Public Health

by

Helene Chokron Garneau

2018

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ABSTRACT OF THE DISSERTATION

How are Motives of Marijuana Use Associated
with Symptoms of Depression, Symptoms of Anxiety,
and Overall Psychological Distress
in Young Adults of Los Angeles?

by

Helene Chokron Garneau

Doctor of Philosophy in Public Health

University of California, Los Angeles

Professor Gilbert Chee-Leung Gee, Chair

Mental health in young adulthood is the strongest predictor of mental health in adulthood. Mental health vulnerabilities present in young adulthood can be exacerbated by marijuana use, thus potentially hindering or delaying a successful transition to adulthood. Considering motives of marijuana use may provide insight into the associations between marijuana use and mental health in young adults.

The purpose of this dissertation was to: 1) understand the associations between motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress in young adults, and 2) examine whether these associations vary by gender. Data come

from the Cannabis, Health and Young Adult Study (N=366), a longitudinal study of young adults, in Los Angeles, who use marijuana for medical and/or recreational purposes.

Exploratory and confirmatory analyses were performed to validate the factor structure of the instrument used to operationalize motives of marijuana use for the study. Multiple linear regressions were used to determine how motives of use are associated to mental health outcomes. Indirect effects between motives of use and mental health outcomes through frequency of use were also assessed. Finally, gender was tested as a moderator for both direct and indirect associations between motives of use and mental health outcomes.

Results validate the factor structure of the amended Comprehensive Marijuana Motive Questionnaire. Furthermore, results indicate that the coping motive of use is positively, significantly associated with mental health outcomes. The motives of conformity, pain, and attention are indirectly associated with symptoms of depression through frequency of use. Gender influences the association between the motive of social anxiety with symptoms of depression and overall psychological distress whereas women who endorse this motive of use report more symptoms of depression and overall psychological distress than men. None of the moderated mediation analyses were significant.

These results emphasize the importance of considering motive of use in the development of interventions targeting marijuana use and mental health in young adults. These findings also highlight the need for gender specific interventions as men and women engage in use differently, and with different consequences to their mental health.

The dissertation of Helene Chokron Garneau is approved.

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2018

DEDICATION

To

Andrew Ryan Straus

Ella Rachel Straus

Leon Aaron Straus

To

Rahma Chokron Chécoury *z"l*

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2011 Community Health Sciences Regents Stipend

Chapter 1

Introduction

As of January 2018, in California, all individuals ages 18 and over have access to some form of marijuana (Senate Bill 94, 2018). Increasing perceived approval of use and decreasing perceived risk of use coincided with an increase in daily consumption of marijuana, especially among young adults (Azofeifa et al., 2016; Schulenberg et al., 2017). Young adults have the highest lifetime, past year and past month prevalence of marijuana use (Center for Behavioral Health Statistics and Quality, 2016). They also have high rates of affective disorders, including anxiety and depression (Center for Behavioral Health Statistics and Quality, 2016b; Moitra, Anderson, & Stein, 2016). Experiencing such disorders in young adulthood can have devastating long-term consequences for the development of individuals as they may hinder or delay developmental goals associated with the transition to adulthood.

Although depression and anxiety are often comorbid, they manifest differently. Whereas depression can be characterized by emotions such as despair, anger, sadness and hopelessness, anxiety can be characterized by overwhelming worry or fear. Both depression and anxiety in young adulthood can be complicated by alcohol and drug use (Smith & Blackwood, 2004). There is a lack of consensus as to whether marijuana plays a causal role in the development of affective disorders but marijuana does appear to increase the risk of developing symptoms of affective disorders in the long term (Moore et al., 2007; Volkow, Baler, Compton, & Weiss, 2014a). Yet, this contradicts individuals who report benefiting from marijuana use as it alleviates their symptoms of depression and symptoms of anxiety (Moore et al., 2007; Walsh et al., 2017). However, these contradictions might be resolved by viewing individuals who use marijuana as

being heterogeneous. As I argue below, the reasons why people use marijuana might inform whether marijuana improves or worsens mental health.

Furthermore, gender needs to be considered when examining the association between marijuana use and mental health outcomes as depressive and anxious disorders are more common in women compare to men, whereas substance use disorders are more common in men than women (Center for Behavioral Health Statistics and Quality, 2016b) . It has also been demonstrated that women experience a telescoping effect whereas they progress from initiation of marijuana use to problematic use more quickly than men do (Cooper & Craft, 2018). Thus, the association between marijuana use and mental health may differ by gender.

Given that marijuana use is most prevalent among young people aged 18 to 25 (Center for Behavioral Health Statistics and Quality, 2016; National Academies of Sciences, Engineering, 2017) and that marijuana is the most widely used substance among individuals with depressive and anxious symptomatology and disorders (Aspis et al., 2015), it is imperative to understand the associations between marijuana use and symptoms of mental health.

Motives, hereby conceptualized as a cognitive explanation for a behavior (Newcomb, Chou, Bentler, & Huba, 1988), drive marijuana use. Previous work has established that motives of alcohol use are related to different patterns of alcohol use and associated outcomes (Cooper, 1994). Therefore, when motives of use are not considered in the association between marijuana use and mental health or other associated outcomes, it is assumed that use behavior is the same, regardless of why an individual uses marijuana. However, as indicated in the literature on alcohol motives of use, why people use lead to different use behaviors, which are driven by different needs with potentially different associated outcomes. Furthermore, in a study of cannabis using adolescents (Blevins, Banes, Stephens, Walker, & Roffman, 2016a), changes in

motives of use were associated with changes in patterns of use and a reduction of problematic outcomes. This reinforces not only the notion that different motives of marijuana use engender different use behaviors but also that motives of use may be an avenue of intervention in the association between marijuana use and mental health outcomes of young adults.

The literature on the topic of motives of marijuana use and mental health outcomes however fails to address certain gaps, namely: marijuana use in a context where medical marijuana is legal, validated instruments that combine both recreational and medical motives of use, gender differences in motives of use and associated mental health outcomes, and a focus on symptoms of but not diagnoses of depression and anxiety as mental health outcomes.

Therefore, the purpose of this dissertation to understand the associations between motives of marijuana use and mental health among young adults who use marijuana, and to examine whether these associations vary by gender.

This work will be guided by Cooper's Motivational Model of Alcohol Use (Cooper, 1994). As a central tenet of this model is the conceptualization that use behavior motivated by different needs constitutes phenomenologically distinct behaviors, and that these distinct use behaviors may be differently associated with mental health outcomes. Data will come from the Cannabis, Health and Young Adult (CHAYA) Study (2013-2018), with a sample size of 366 comprised of young adults, in Los Angeles, who use marijuana for recreational and/or medical reasons.

The **first aim** focuses on confirming and validating the instrument used to operationalize motives of marijuana use in young adults who use marijuana for recreational and/or medical reasons and to evaluate whether this factor structure varies by gender. The **second aim** investigates the associations between motives of marijuana use and symptoms of depression,

symptoms of anxiety, and overall psychological distress for young adults in the CHAYA study.

The **third aim** examines whether the associations between motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress differ by gender in this sample.

The Literature Review is presented in chapter 2, followed by Methods in chapter 3. Chapters 4 and 5 cover the Results and Discussion, respectively. Finally, a Conclusion and Future Directions are presented in chapter 6.

Chapter 2

Literature Review

Importance of Mental Health in Young Adulthood

Young adulthood. Emerging or young adulthood, the period between 18 and 25 years of age, is a distinct developmental phase with unique tasks and expectations. It is characterized by pervasive changes in autonomy, residence, identity, social roles, and career pursuits (Arnett, 2004; Riggs & Han, 2009). Successfully negotiating the transitions of young adulthood is associated with positive trajectories of mental health wellbeing and allows for optimal development during adulthood (Schulenberg, Sameroff, & Cicchetti, 2004). Emerging adulthood is a period that involves extensive and often concurrent contextual and social role changes, increased self-direction and opportunities for exploration flexibility (Schulenberg, Sameroff, et al., 2004). Emerging adulthood is also a period of increased mental health vulnerability (IOM, 1994). In young adulthood, symptoms of depression and symptoms of anxiety are the most common mental health concerns (Leadbeater, Thompson, & Gruppuso, 2012).

Mental health. Poor mental health in early adulthood has been shown to be a strong individual predictor of persistent and recurrent mental health problems into adulthood (Holden, Ware, & Lee, 2016). Mental health processes during these critical transitional years can however be positively influenced, given opportunities to do so (Masten, 2004; Schulenberg, O'Malley, Bachman, Johnston, & Laetz, 2004; Schulenberg, Sameroff, et al., 2004). Differently said, there are as many opportunities to disrupt and negatively influence mental health and the transition from young adulthood to adulthood as there are opportunities to positively impact mental health and promote a successful transition from young adulthood to adulthood.

*Depression*¹. As one of the most common health disorders in the United States (NIMH, 2015), depression is a leading cause of disability, diminished quality of life and heightened risk for physical health problems (McGee & Thompson, 2015; McKenna, Michaud, Murray, & Marks, 2005). Depression is a serious psychopathological disorder that can have a consequential economic drain on individuals, families, society, lead to long-term suffering, risk of suicide, occupational impairment, and interpersonal impairment in peer and family relationships (Cicchetti & Toth, 1998). Depressive disorders are characterized “by pervasive mood disturbances that involve feelings of sadness and loss of interest or pleasure in most activities in conjunction with disturbances in sleep, appetite, concentration, libido and energy” (Cicchetti & Toth, 1998, p.222). The chronicity of the disorder can remain burdensome for a significant period (Cicchetti & Toth, 1998).

Individuals between the ages of 15 and 24 experience the highest rates of depressive disorders in the United States (Gore et al., 2003; Kessler et al., 1994). The incidence of depression increases in adolescence and peaks in young adulthood (Child Trends Databank, 2015). Prevalence estimates place the rate for Major Depressive Disorders in young adults at 15.4% (Moitra et al., 2016). Between 2013 and 2015, the 12-month prevalence of a Major Depressive Episode, a period characterized by low mood and depression symptoms, among young adults ages 18 to 25 rose from 8.7% to 10.3% (NIMH, 2015). Furthermore, rates of Major Depressive Episodes are almost double for females compared to males ages 18 and over (8.5% versus 4.7%) (NIMH, 2015).

¹ Best efforts were made to report findings that pertain to symptoms of depression and symptoms of anxiety. When not possible, findings that pertain to diagnoses of depression and anxiety are presented.

Depressed mood, one of our outcomes of interest, is defined as a single symptom or group of symptoms that involve a dysphoric effect (Cicchetti & Toth, 1998). Between 2013 and 2015, approximately 5% of the 18-24 age group reported experiencing two or more symptoms of depression in the past 30 days (Child Trends Databank, 2015).

Anxiety. Anxiety disorders are often comorbid with depression and substance use disorders, and are associated with fear, nervousness, apprehension, and panic, but may also involve the cardiovascular, respiratory, gastro or nervous system, individually or in combination (Martin, 2003). Anxiety disorders are subdivided into panic disorder, social phobia, post-traumatic stress disorders, obsessive compulsive disorders, and generalized anxiety disorders (Martin, 2003). They tend to start early in life, and affect school and work performance as well as psychological functioning, and social relationships, and are persistent and chronic (Costello, Egger, & Angold, 2005; Martin, 2003). Anxiety disorders are a leading cause of disability among all psychiatric disorders (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012; Whiteford et al., 2013). Anxiety can be as disabling as chronic somatic disorders, and is associated with reduced productivity, absenteeism from school or work, suicide, increased likelihood of school dropout, marital instability, and poor career choices (Lépine, 2002), all of which are crucial to successfully transition from young adulthood to adulthood.

Young adulthood is a period of heightened risk for the onset of anxiety disorders (Kessler et al., 2012). Past year rates of anxiety amongst 18 to 29-year-old were elevated at 30.2% in 2005 (NIMHa, 2015). Rates of anxiety amongst young adults are as worrisome with the lifetime prevalence of any anxiety disorder in the 18 to 29 age bracket being 30.2% in 2005 (NIMHa, 2015), compared to a lifetime prevalence of 28.8% in the total United States population (Kessler

et al., 2005). Furthermore, past year prevalence of any anxiety disorder was higher for females than for males (23.4% versus 14.3%) (NIMH, 2015).

In addition to being a period marked by mental health vulnerabilities (IOM, 1994), young adulthood is also a period marked by increased drug use. Mental health vulnerabilities, such as those present in young adulthood, can be exacerbated by drug use, thus potentially hindering or delaying a successful transition to adulthood.

Marijuana Use Can Exacerbate the Mental Health of Young Adults

Marijuana use by young adults. Traditional risk factors associated with onset of marijuana use in adolescence and maintenance of use in young adulthood are being male, prior or concurrent alcohol and tobacco use, poor parental relationships, and peers who use marijuana (McLaren, Lemon, Robins, & Mattick, 2008; Stone, Becker, Huber, & Catalano, 2012).

Marijuana use is associated with poor academic achievement, lower expectations for success, family problems, and other drug use (Tucker, Ellickson, Orlando, Martino, & Klein, 2005). Marijuana use is also common among young adults and is on the rise. Rates of marijuana use by adults ages 18 to 29 have steadily risen from 10.5 percent to 21.1 percent since 2005 (NIAAA, 2015) and 19.8 percent of 18 to 25-year-olds report using marijuana in the past month (CBHSQ, 2016a; NASEM, 2017). Furthermore, between 1990 and 2002, rates of marijuana disorders increased from 25% to 32% amongst 18 to 29 year olds (de Dios et al., 2010).

There are gender differences in rates of marijuana use by young adults with 23.4% of males ages 18-25 reporting past month use of marijuana, and 16.2% of females of the same age group reporting past month use. Past year use was 36.0% for males and 28.4% for females ages 18-25 in 2015 (CBHSQ, 2016). These prevalence rates suggest that marijuana use varies across

gender and that there may be inherent differences in patterns of use and associated outcomes across groups.

Context of legalized marijuana. Thus far, research that has sought to disentangle the association between marijuana use and associated outcomes has largely been conducted in a context where marijuana use is illegal. As more states move forward with either the legalization of recreational or medical marijuana use, it is important to understand what the associations between motives of marijuana use and associated outcomes might be in such a context.

Prior work has demonstrated key differences between states that have moved toward legalization (recreational and/or medical) compared to those who have not. For instance, populations in states that have moved forward with legalization had higher rates of marijuana use to begin with and perceived marijuana use as not risky (Freisthler & Gruenewald, 2014; Wall et al., 2011). Marijuana use has also been found to be higher in states that allow medical use (Freisthler & Gruenewald, 2014; Wall et al., 2011). In these states, past month marijuana use as well as heavy marijuana use were higher than in states without legalized medical marijuana (Freisthler & Gruenewald, 2014; Pacula et al., 2013). Legalization of medical marijuana has also been associated with increases in reported marijuana use. Using Los Angeles County as an example, past year rates of marijuana use have increased for both men and women and across all racial and ethnic groups between 2005 and 2015 (Los Angeles County Department of Public Health & Office of Health Assessment and Epidemiology, 2018). Among those who reported marijuana use in Los Angeles County, adults between the ages of 18 and 29 are those that reported the highest rates of use compared to other age groups (Los Angeles County Department of Public Health & Office of Health Assessment and Epidemiology, 2018).

Other work by Pacula et al. (Pacula, Jacobson, & Maksabedian, 2016) has demonstrated a significant overlap between medical and recreational use, even in states where recreational use was not legal. In a different study, with regards to reasons of use, 89.5% of adults who report marijuana use report doing so mainly for recreational purposes, 10.5% uniquely for medical purposes, and 36.1% reported a mixed use (Schauer, King, Bunnell, Promoff, & McAfee, 2016).

In sum, it appears as though legalizing marijuana, whether only medical or both medical and recreational, has brought forth changes not only in the prevalence of use but also contributes to validating the perception of marijuana as a safe drug to use. Furthermore, for some individuals who use marijuana, there does not seem to be a clear divide between medical use and recreational use.

Marijuana use and mental health. There are three hypothesized ways in which marijuana and mental health are thought to be associated, and these may not be mutually exclusive. First, through a common risk factor such as family or individual characteristics (Fergusson & Horwood, 1997; McGee, Williams, Poulton, & Moffitt, 2000). This suggests that the relationship between marijuana use and mental health is non-causal, and explained by overlapping psychosocial risk factors (Fergusson, Lynskey, & Horwood, 1996). Second, via early self-medication and subsequent association with a subculture that uses drugs (McGee et al., 2000). Here, early use to alleviate symptoms encourages later use which can have an impact on anticonventional behaviors, increase of delinquency, and personal difficulties (Fergusson & Horwood, 1997). Third, marijuana use can bring about its own consequences by worsening mental health through direct effects on psychological and physiological functioning or related effects on interpersonal and role functioning (Fergusson & Horwood, 1997; McGee et al., 2000). This third point is reinforced by work that demonstrates clear and consistent associations

and dose-response relations between the frequency of adolescent marijuana use and all adverse young adult outcomes, which included decreased odds of high school completion, and degree attainment, increased odds of marijuana use disorder or alcohol and other use disorders, and suicide attempts (Silins et al., 2014).

Although there is increasing recognition that marijuana use could be associated to affect-based psychological susceptibility (Mitchell, Zvolensky, Marshall, Bonn-Miller, & Vujanovic, 2007), the evidence is inconclusive. Use of marijuana among young people has been inconsistently associated with co-morbid or concurrent mental health problems in cross sectional and longitudinal studies (McGee, Williams, Poulton, & Moffitt, 2000). Some studies have demonstrated that frequent marijuana use is associated with higher levels of anxiety (Degenhardt, Hall, & Lynskey, 2001). Other studies, have demonstrated that marijuana may not play a causal role in the development of anxiety (McLaren et al., 2008), or that the associations between marijuana use and mental health outcomes disappear after adjusting for confounders (Fergusson & Horwood, 1997; Hall & Degenhardt, 2009).

The directionality of the association between marijuana use and mental health outcomes also remains unclear. Although the anxiolytic effects of marijuana have been supported in cross-sectional studies (Walsh & al., 2017), longitudinal studies have demonstrated that frequent marijuana use preceded anxiety disorders (Hayatbakhsh et al., 2007; Zvolensky, Bernstein, & Marshall, 2008), while in others anxiety disorders preceded use (Wittchen et al., 2007). Other longitudinal studies have also demonstrated no associations between marijuana and anxiety disorders (McGee et al., 2000; Windle & Wiesner, 2004).

This illustrates the importance of choice and inclusion of confounders and intervening variables in the study of marijuana use and mental health.

Gender. Depressive and anxious disorders are more common in women compare to men whereas substance use disorders are more common in men than women (Center for Behavioral Health Statistics and Quality, 2016). Two possible explanations for these trends are gender socialization and the operationalization of mental health symptoms. Gender socialization is the process whereby both men and women learn of and conform to gender specific traits (Anderson, 1998). Illustrative of that are previously demonstrated gender differences in responses to stressors whereas men are more likely to externalize distress and turn to substance use and women are more likely to internalize stress and exhibit more symptoms of depression and anxiety (Cooper, Russell, Skinner, Frone, & Mudar, 1992).

Instruments used to operationalize mental health and symptoms of mental health rely heavily on women gendered symptoms. As a result, men may underreport or misreport their mental health distress or status because the indicators or symptoms assessed are not reflective of their experiences. Work by Martin et al. (Martin, Neighbors, & Griffith, 2013) has demonstrated that men who are depressed are more likely to endorse symptoms such as anger, self-destructive behavior, risk taking, and substance use over the more, traditionally women endorsed, symptoms of sadness, loss of interest, and hopelessness. In fact, in the same study by Martin et al. (2013), there were no differences in prevalence rates between men and women when symptoms of depression were assessed using a scale that combined both men and women specific symptoms.

The association between marijuana use and mental health also seems to vary by gender, although the evidence is inconsistent. We do however know that women move from initiation of cannabis use to problematic use much faster than men do. This is referred to as a telescoping effect (Cooper & Craft, 2018). This may suggest differences in both reasons for use and patterns of use (Cooper & Craft, 2018; Hawke, Koyama, & Henderson, 2018). In addition to rapid

progression to problematic use, it appears as though marijuana has a stronger mental health impact for women than men (Hawke et al., 2018). Women, but not men, previously diagnosed with depressive disorders and who use marijuana regularly had poorer SF-12 mental health scores compared to women who did not use marijuana (Aspis et al., 2015). And, in a study by Lev-Ran (2012a) looking at the association between mental health and quality of life in the general population, those who used marijuana had poorer mental health than those who did not, and reported experiencing lower levels of vitality and accomplishing less due to emotional problems. These differences were greater among women than men (Lev-Ran, Imtiaz, et al., 2012).

These findings highlight the importance of considering gender in the study of motives of marijuana use and mental health, as motives might provide additional insight into what drives gender differences in the association between marijuana use and mental health outcomes.

Frequency of use. Heavy marijuana use, operationalized as near daily use, has been demonstrated to be detrimental to the transition to adulthood as it has been associated with poorer educational and occupational outcomes (Kelly & Vuolo, 2018). Compared to young adults who do not use marijuana or to those who use infrequently, heavy users are the least likely to have transitioned to an adult role by the age of 28 (Kelly & Vuolo, 2018). Frequency of use also seems to play a role in the relationship between marijuana use in adolescence and adverse young adult outcomes, including depression and anxiety (Schuler, Vasilenko, & Lanza, 2015). However, Green and Ritter (2000) found no association between frequency of marijuana use and depression in young adult men. Furthermore, data from the Australian National Survey of Mental Health and Well-Being indicates a positive association between marijuana use and the occurrence of affective disorders, in addition to the fact that those who used marijuana more

often reported greater levels of psychological distress, greater limitations in their everyday lives due to emotional distress, and lower life satisfaction (Degenhardt, Hall, & Lynskey, 2000). Lev-Ran et al. (2012) reported that for those with anxiety disorders, regular, weekly use of marijuana was associated with a decrease in mental health quality of life compared to participants who did not use. This association was not present for participants who reported less than weekly use (Lev-Ran, Le Foll, McKenzie, & Rehm, 2012). Daily use of marijuana in young adult women has been associated with a fivefold increase in the odds of depression and anxiety (Patton et al., 2002). Here too, findings highlight the importance of considering frequency of use in the study of marijuana use and mental health outcomes, as frequency of use seem to influence the relationship between marijuana use and mental health outcomes.

Given that an association between marijuana use and depressive symptoms, and marijuana use and anxiety symptoms have at times been demonstrated, it is crucial to understand under which circumstances such associations are present.

Motives of marijuana use may be key to do so. Better understanding the nature of these associations is especially significant for young adults given their mental health vulnerability, the rising rates of affective disorders and of marijuana use, and that individuals suffering from comorbid substance use and symptoms of depression and anxiety have a worsened clinical course and outcomes and are at higher risk of suicide, impairments, and disability (Merikangas et al., 1998).

Motives of Use

Motives are cognitive explanations for a behavior, and provide insight into the context and circumstances of a behavior (Bern, 1972; Lee, Neighbors, & Woods, 2007; Newcomb et al., 1988). The behavior, marijuana use in our case, is thus cognitively generated and not simply a

response to a stimuli. Most of the foundational work on motives of use comes from the alcohol literature. This literature highlights the importance of understanding the motives that underlie an individual's use to develop effective interventions:

Motivational models of alcohol use assume that drinking behavior motivated by different needs constitutes phenomenologically distinct behavior. Thus, understanding the motives that underlie an individual's drinking should provide insight into the circumstances in which an individual is likely to drink, how much he or she is likely to drink, what the probable consequences are, and how to best intervene should therapeutic interventions be warranted. (Cooper, 1994, p.117)

Extending this to motives of marijuana use for young adults who use marijuana, the following assumptions can be made: 1) marijuana use is motivated by different needs, offering insight into the circumstances in which and individual uses marijuana, 2) the motives that drive use give rise to distinct use behaviors such as frequency of use, and 3) these distinct use behaviors driven by specific motives maybe differently associated with mental health outcomes.

Cooper's Motivational Model of Alcohol Use. Cooper's Motivational Model of Alcohol Use (1994) serves as the theoretical framework guiding this dissertation. Cooper's Motivational Model of Alcohol Use is illustrated in Figure 2.1. Developed and validated to give insight into the precursors of drinking behaviors in adolescents, Cooper's Motivational Model of Alcohol Use (1994) draws from Cox and Klinger's (Cox & Klinger, 1988) model in which positive and negative motives for drinking are aligned along two internal and external dimensions (Cox & Klinger, 1988; Lee et al., 2007). Both Cooper's (1994) and Cox and Klinger's (1988) models follow two assumptions: "that people drink to attain certain valued outcomes" (Cooper, 1994; p. 117), and "that drinking behavior motivated by different needs or

serving different functions is characterized by unique patterns of antecedents and consequences” (Cooper, 1994; p.117). In other words, the reasons that drive use lead to different use behaviors and that these different use behaviors are associated with different outcomes.

In her model, Cooper proposed four classes of motives generated by the interaction between the positive and negative motives for drinking and the internal and external dimensions along which these motives are aligned. As hypothesized by Cooper, each drinking motive was related to a unique pattern of antecedents and drinking related outcomes.

This model is deemed to be theoretically relevant to the purpose of this dissertation as, following the work of Cooper we: 1) conceptualize motives as distinct behaviors that reflect distinct needs; 2) categorize the purpose of motives as promoting positive experiences, for avoidance of negative experiences, or for medicinal use; and 3) argue that motives will be differentially associated with symptoms of depression and with symptoms of anxiety.

Conceptualization and Operationalization of Motives of Use

Alcohol Motives. As previously mentioned, foundational work on motives of use comes from the alcohol literature. Thus, the four most common motives discussed in the literature are borrowed from the alcohol literature. These are social motives, conformity motives, coping motives, and enhancement motives. **Social motives** are defined as externally generated positive reinforcement motives to obtain positive social rewards (Cooper, 1994). An example of a social motive is celebration. **Conformity motives** are also externally generated negative reinforcement motives to avoid social censure or rejection (Cooper, 1994). An individual’s use will be driven by a conformity motive either to fit in with a group or due to peer pressure because everyone else is using. **Coping motives** are conceptualized as internally generated negative reinforcement motives to reduce or regulate negative emotions (Cooper, 1994). As an example, an individual’s

use will be driven by a coping motive if he uses because he has had a bad day, or is frustrated.

Enhancement motives are internally generated positive reinforcement motives to enhance positive mood or wellbeing (Cooper, 1994). Examples of enhancement motives are enjoyment and altered perceptions. In work done by Cooper, there was a positive, significant association between enhancement, coping and social motives with quantity and frequency of drinking (Cooper, 1994). There was a negative, significant association between conformity motives and quantity of drinking (Cooper, 1994). Furthermore, coping, enhancement, and conformity motives were predictors of drinking problems, but social motives were not (Cooper, 1994). It is likely that social motives were not predictors of drinking problems as for this given motive, drinking is occasional and only occurs in social, celebratory situations.

Marijuana Motives. Although there is an overlap in motives of alcohol and marijuana use, some motives are specific to marijuana use (Newcomb et al., 1988; Simons et al., 1998). For the purposes of this dissertation, marijuana motives of use are: 1) motives that **promote positive experiences**, which are motives of celebration, altered perceptions, experimentation, enjoyment, alcohol, relative low risk, and availability; 2) motives for **avoidance of negative experiences**, which are motives of coping, conformity, sleep, boredom; and social anxiety; and 3) **medical** motives, which are motives of attention, substitution, natural remedy, pain, and nausea. Figure 2.2 details the reasons for use an individual might endorse for each of these motives.

Previous research has demonstrated that motives of use are associated with differing patterns of use and risk for marijuana use problems (Cooper, 1994; Simons, Gaher, Correia, Hansen, & Christopher, 2005). Past work around motives of marijuana use has mostly focused on problematic use as an outcome. Differential associations between motives of use and problematic use outcomes have been consistently documented (Bonn-Miller & Zvolensky, 2009;

Lee, Neighbors, Hendershot, & Grossbard, 2009). With regards to problematic use outcomes, enhancement, expansion, coping and social motives of marijuana use have been uniquely associated with greater frequency of marijuana use in the past 30 days (Bonn-Miller & Zvolensky, 2009; Bonn-Miller, Zvolensky, & Bernstein, 2007; Simons et al., 1998). When examining whether there were differences between severity of use and motives endorsed, Bonn-Miller & Zvolensky (Bonn-Miller & Zvolensky, 2009) demonstrated that individuals with marijuana dependence endorsed motives of expansion and enhancement more frequently than those who used marijuana only occasionally or regularly. Individuals with cannabis dependence endorsed more social motives than those who used occasionally, those who used regularly, and those who abused marijuana. Individuals with dependence to marijuana also endorsed more conformity motives than those who abused marijuana. With regards to coping motives, those with dependence endorsed more coping motives than those suffering from abuse or reporting regular, occasional use. These findings demonstrate that those with marijuana dependence are more likely to use marijuana to adjust their affective states and rely on marijuana to cope with life stressors.

However, with regards to mental health as an outcome, the differential association between motives of use with both diagnoses and symptoms of depression and anxiety as outcomes has yielded inconsistent findings. For a given motive and associated outcome, findings have differed across studies. One consistency however, is the association of coping related motives of use with poor or worse outcomes. For instance, Green & Ritter (2000) found that individuals between the ages of 30 and 40 who endorsed coping related motives reported more symptoms of depression than those who endorsed non-coping related motives of use. With regards to anxiety symptoms, Bonn-Miller, Zvolensky & Bernstein (Bonn-Miller et al., 2007)

found that anxiety sensitivity (fear of anxiety) was incrementally associated with coping and conformity motives, whereas enhancement was negatively associated with it. However, Moitra, Christopher & Stein (Moitra, Christopher, Anderson, & Stein, 2015) found that only coping motives, and not conformity motives, were significantly associated with negative affect. When considered as a moderator, only those who reported using to cope showed poorer mental health, increased symptoms of psychopathology, more psychosocial distress, and more life events than those who did not use (Brodbeck, Matter, Page, & Moggi, 2007).

Focusing on symptoms of depression and symptoms of anxiety, which are precursors to diagnoses is not trivial. Subclinical symptoms of depression and anxiety have been associated with an increased likelihood of full blown disorders in adulthood (Klein, Shankman, Lewinsohn, & Seeley, 2009; Leadbeater et al., 2012; Shankman et al., 2009). Most of the research reviewed has focused on clinically diagnosed depression and anxiety. It is not clear however, if these findings generalize to less severe symptoms. The generalizability is important because clinical disorders may be contraindicated with marijuana use, whereas less severe symptoms may not.

Gender. Gender differences have also been observed in the association between motives of marijuana use and mental health outcomes. These differences may be due to differences in motives of use endorsed as well as ensuing patterns of use. With regards to gender, expectancies for marijuana use mediated the association between coping motivated use and anxiety in women, but not men (de Dios et al., 2010). In work done by Buckner, Zvolensky & Schmidt (Buckner, Zvolensky, & Schmidt, 2012a) social anxiety was associated with marijuana related problems, coping, and conformity motives. In women, social anxiety was related to social motives but not marijuana use related problems (Buckner, Zvolensky, et al., 2012a). However, existing work has seldom considered potential gender differences in endorsed motives for use and in the

association between motives of use and symptoms of depression, symptoms of anxiety, and overall psychological distress.

For this dissertation, gender is included as a moderator in Cooper's Motivational Model of Alcohol Use (Figure 2.3) as motives of use endorsed, patterns of use, and ensuing outcomes are likely to differ by gender. Thus, it is important to understand the role of gender in the association between motives of use and mental health to develop successful, gender specific prevention and intervention programs, should need be.

Although work has been done to understand marijuana motives of use and associated outcomes, there are some gaps particularly relevant to a context with legal access to marijuana, that this dissertation seeks to address.

Identified Gaps in the Literature

There is however much that remains to be understood about the associations between motives of marijuana use and mental health outcomes in young adults who use marijuana, particularly in a context of facilitated access to marijuana.

First, samples used in research thus far have mostly been identified as individuals who use marijuana for medical reasons only or as individuals who use marijuana for recreational reasons only, thus reporting an illegal behavior in this latter group. Until now, work has yet to be done that considers motives of marijuana use and associated mental health outcomes in a sample of young adults comprised of individuals who use marijuana exclusively for medical reasons, exclusively for recreational reasons or for both medical and recreational reasons, in a context with a longstanding history of legalized medical marijuana.

Second, current instruments used to operationalize motives of marijuana use have been validated using college samples which are not representative of the marijuana using population at

large. Furthermore, these instruments do not include motives specific to medical marijuana use when it has been demonstrated that medical and recreational marijuana use overlap significantly (Pacula et al., 2016). There is a need for an instrument that operationalizes marijuana motives of use, to include both recreational as well as medical motives of use given the significant overlap in use (Pacula et al., 2016). Furthermore, this instrument needs to be validated in a diverse sample of young adults who use marijuana for recreational and/or medical reasons. The sample to be used in this dissertation addresses this shortcoming.

Third, in the limited literature that presents research done on motives of marijuana use and mental health outcomes, the focus is often on diagnoses of depression and/or anxiety. A better understanding of the association between motives of use and symptoms of depression and motives of use and symptoms of anxiety is a primordial precursor not only to detangling the association between marijuana use and diagnoses of depression and anxiety, but also, because symptoms are an avenue ripe for intervention. This is particularly salient for young adults as we want to be able to intervene early, should need be, to maximize the likelihood of a successful transition into adulthood.

Fourth, even less is known about potential gender differences in the association between motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress. Gender matters when examining the association between substance use and mental health outcomes, not only because prevalence rates of depression, anxiety, and substance use differ by gender (Center for Behavioral Health Statistics and Quality, 2016b), but also because what drives individuals to use might differ by gender as well as the ensuing use behaviors. Additionally, although differences in use prevalence continue to differ by gender, the gap in prevalence of use between genders is decreasing (Cooper & Craft, 2018). There is also an

argument to be made that thus far, most of the work around men who use marijuana, making women marijuana users a minority, understudied population.

Finally, prior studies conducted in states where marijuana is illegal may not generalize to states like California, where marijuana is legal. Individuals who use marijuana in the latter contexts may have fewer concerns about social desirability, and thus be more forthcoming about their attitudes, behaviors, and use practices.

Research Aims & Hypotheses

The following research aims and hypotheses are therefore proposed *to fill this research gap and understand the associations between motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress in young adults who use marijuana for recreational and/or medical reasons, in Los Angeles, and to examine whether these associations vary by gender.*

AIM 1. To confirm the factor structure of the 17-factor model of the amended Comprehensive Marijuana Motives Questionnaire for young adults who use marijuana for recreational and/or medical reasons, and to evaluate whether this factor structure varies by gender.

Hypothesis 1a: The factor structure of the amended Comprehensive Marijuana Motives Questionnaire will be confirmed for young adults who use marijuana for recreational and/or medical reasons.

Hypothesis 1b: The factor structure of the amended Comprehensive Marijuana Motives Questionnaire will not vary by gender.

AIM 2. To investigate the associations between motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress in young adults who use marijuana for recreational and/or medical reasons.

Hypothesis 2a: Motives that promote positive experiences will not be associated with symptoms of depression, symptoms of anxiety, and overall psychological distress.

Hypothesis 2b: Motives for avoidance of negative experiences will be associated with higher levels of symptoms of depression, symptoms of anxiety, and overall psychological distress.

Hypothesis 2c: Motives focused on medicinal use will be associated with lower levels of symptoms of depression, symptoms of anxiety, and overall psychological distress.

AIM 3. To examine whether the associations between motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress in young adults who use marijuana for recreational and/or medical reasons differ by gender.

Hypothesis 3a: Among those who endorse motives for avoidance of negative experiences, females will have more severe symptoms of depression, symptoms of anxiety, and overall psychological distress than males.

Hypothesis 3b: Among those who endorse motives that promote positive experiences, there will be no gender differences in symptoms of depression, symptoms of anxiety, and overall psychological distress.

Hypothesis 3c: Among those who endorse motives focused on medicinal use, there will be no gender differences in symptoms of depression, symptoms of anxiety, and overall psychological distress.

Chapter 3

Methods

A description of the sample and variables used to address the research aims are first presented in this chapter followed by their respective analytical strategy.

Cannabis, Health and Young Adult (CHAYA)

Data from the Cannabis, Health and Young Adult (CHAYA) study were used for the purposes of this dissertation. The Cannabis, Health and Young Adult study is a five-year, mixed method study designed to understand the impact of medical marijuana policies on the physical and psychological health of young adults residing in Los Angeles, as well as the influence of medical marijuana dispensaries on individual and community health. It is the first study funded by the National Institute on Drug Abuse to specifically examine medical marijuana use among a young adult population in the United States.

Data collection for the first wave of the study occurred between February 2014 and April 2015. To be eligible for enrollment, participants had to: 1) be between the ages of 18 and 26; 2) have used marijuana at least four times in the past 30 days; 3) currently reside in the Los Angeles Metro area; and 4) speak and read English. Participants were identified as medical marijuana users or patients if they had a medical marijuana recommendation issued in California within the last three years. Participants were identified as non-patient users if they had never received a recommendation for medical marijuana in any state.

Targeted and chain referral sampling were used to recruit young adults, between the ages of 18 and 26, who use marijuana in the Los Angeles Metro area. These two recruitment methods have been proven to be successful to recruit hard to reach populations such as substance using individuals (Clatts, Davis, & Atillasoy, 1995; Lankenau, Sanders, Hathazi, & Bloom, 2010;

Lankenau et al., 2012; Watters & Biernacki, 1989). This sampling methodology allowed control of screening and enrollment so that the sample is stratified to have specified gender, race, and age diversity (Lankenau et al., 2012). The targeted sampling used mapped data of medical marijuana dispensaries in the Los Angeles metro area to target surrounding locations containing the population of interest such as dispensaries, parks, and college campuses. Interviewers at these locations approached potential participants to present the study, and to screen potential participants should they manifest interest in participating. Chain-referral sampling, a non-random sampling approach, utilized currently enrolled participants to refer others within their network to join the study. Chain referral sampling was used in addition to targeted sampling to avoid biasing the sample towards those living in proximity to dispensaries. Flyers posted in public location across Los Angeles and adds on Craigslist, a classified advertisement website, were also used as recruitment strategies. Individuals screened for the study were compensated with a \$3 gift card.

Out of 710 individuals 436 screened eligible (61%) and 366 (84%) were enrolled in the study (Lankenau et al., 2017). Attempts were made to sample from multiple networks, socioeconomic and geographically diverse areas of Los Angeles to increase the diversity of the sample. Although, this is not a representative sample, it is the only sample we know of recruited in a city where medical marijuana is legal, that includes young adults who use marijuana exclusively for recreational reasons, young adults who use marijuana exclusively for medical reasons, and young adults who use marijuana for recreational and medical reasons. Furthermore, it is also the only study we know of that contains information that pertains both to motives of marijuana use as well as to symptoms of depression, symptoms of anxiety, and overall psychological distress.

Data collection. The study instrument was developed using Research Electronic Data Capture (REDCap), a secure web application for building and managing online surveys and databases. Interviews, lasting between 60 to 90 minutes, were conducted in private or semi-private locations in the neighborhoods where participants were recruited or lived. Most questions were administered face-to-face except for psychometric scales and sensitive questions involving sexual behavior, which were self-administered. Participants were compensated with a \$25 cash incentive for the interview. Study procedures were approved by the Institutional Review Boards at Children’s Hospital Los Angeles and at Drexel University.

Key variables and Measures (Table 3.1)

Dependent variables. Three continuous dependent variables were studied separately: symptoms of *depression*, symptoms of *anxiety*, and *overall psychological distress*. These dependent variables were operationalized by the depression subscale, the anxiety subscale, and the Global Severity Index of the Brief Symptom Inventory-18 (BSI-18) (Table 3.2) (Derogatis, 2000; Derogatis & Melisaratos, 1983). A shortened version of the Brief Symptom Inventory (Derogatis & Spencer, 1982), the BSI-18, is an 18 item self-report symptom checklist designed to measure three dimensions of psychological distress in clinical and non-clinical populations: depression, anxiety and somatization. A Global Severity Index, an indicator of overall psychological distress, can also be derived from the BSI-18. Using a five-point Likert scale that ranges from “Not at all” to “Extremely”, participants were asked to rate how much they were distressed by each symptom listed during the past seven days. Examples of symptoms listed include: faintness or dizziness, feeling blue, feelings of worthlessness, and nausea or upset stomach. Each of the previously mentioned subscales, depression, anxiety, and somatization is comprised of six items and the range of possible scores for each is 0 to 24. The Global Severity

Index (GSI) is calculated by summing the 18 items. The range of possible scores for the GSI is 0 to 72. Higher scores correspond to higher psychological distress.

A prior study of the BSI-18 among drug using individuals ages 18 and over showed high Cronbach alpha values of the subscales: 0.84 for somatization, 0.86 for depression, 0.88 for anxiety, and 0.93 for the Global Severity Index (Wang et al., 2010). Given its high internal consistency and test-retest reliability (Derogatis, 2000), as well as its usefulness for mental health screenings of substance using individuals (Royse & Drude, 1984), the BSI and BSI-18 are common measures of mental health in substance use research (Wang et al., 2010).

Independent variables. The independent variables of interest for the purpose of this dissertation, are *motives of use* as operationalized by an amended version of Lee et al. (2009) Comprehensive Marijuana Motives Questionnaire (CMMQ) (Table 3.3). Lee et al. (2009) original questionnaire is comprised of 36 items representing 12 subscales of motives of marijuana use with high Cronbach alphas ranging from 0.78 to 0.89 (Lee et al., 2009). The 12 motive subscales and their respective Cronbach alphas are: enjoyment (0.89), conformity (0.84), coping (0.89), experimentation (0.88), boredom (0.88), alcohol (0.84), celebration (0.87), altered perception (0.83), social anxiety (0.88), relative low risk (0.80), sleep (0.84), and availability (0.78). For the purposes of the CHAYA study, 15 items were added to the original 36 for a total of 51 items, to create the five medical use subscales. The five medical subscales are: natural medicine, pain, nausea, substitution, and attention. Examples of the added items are: to lessen the intensity of my pain, so that I don't feel sick to my stomach, and as a natural alternative to prescription or over the counter drugs.

Participants were asked to respond to “Thinking of all the times you have used marijuana; how often would you say that you use for each of the following reasons” using a five-point

Likert scale ranging from “Almost Never/Never=1” to “Almost always/Always=5.” Examples of reasons listed are: to make you feel more confident, because you were drunk, to help you sleep, because you were experimenting, and because you were depressed. The mean weighted range of possible scores for each subscale is 1= Almost never/Never, to 5= Almost always/Always. For this dissertation, the subscales were kept continuous. Higher scores indicate a stronger endorsement for any given motive of use.

Mediator variables. Frequency of use was tested as a mediator using two commonly used, self-reported indicators of use: past 90 days marijuana use and daily number of marijuana hits. *Past 90 days marijuana use.* To gather frequency of use data, participants were asked “how many days have you used marijuana in the past 90 days.” The possible range of answers was 0-90 days. *Daily number of marijuana hits.* Frequency of use was also recorded as “How many hits (pull off of a bowl, joint, bong, etc.) PER DAY did you typically do in the past 90 days?” The possible range of answers here was a number from 0-100, or >101. Higher scores indicate greater frequency of daily number of marijuana hits.

Moderator variables.

Gender. Participants were asked “What is your internal gender identity.” Possible answer choices were: male, female, transgender male to female, transgender female to male, other (asked to specify), or don’t know. Gender was dummy coded for analyses and male was used as the reference category.

Control variables.

Age. Age in years was recorded by the question “How old are you today?” and was controlled for in analyses.

Race and ethnicity. Race and ethnicity were recorded as a categorical variable.

Participants were asked what they considered to be their primary racial or ethnic group. Possible answer choices were: Non-Hispanic Black/African American, Non-Hispanic White/Caucasian, Non-Hispanic Asian/Pacific Islander, Non-Hispanic Native American, Non-Hispanic Multiracial or Hispanic/Latino. Race/ethnicity was dummy coded for analyses and Non-Hispanic White/Caucasian was used as the reference category. Non-Hispanic White/Caucasian was used as the reference category as they represent the majority of participants in much of the research to date on motives of marijuana use (Buckner, Shah, Dean, & Zvolensky, 2016).

User group. User group was operationalized and controlled for as follows: participants who have never received a recommendation for medical marijuana in any state were categorized as non-medical users (non-patient), while participants who currently have or ever had a recommendation for medical marijuana were categorized as medical marijuana users (patient).

Although traditionally included as a control variable, socioeconomic status was not included as a control variable here due to the lack of variance for this variable in our sample.

Analytic Strategy

Data Screening. The distributions of our key variables of interest were slightly skewed and kurtotic but the respective values for skewness and kurtosis, for a sample size greater than 300, fell within acceptable range of below |2| for skewness and below |7| for kurtosis (Kim, 2013). Thus, the assumption of normality was not violated and no transformations were needed for subsequent analyses.

Variance inflation factors were calculated to test for multicollinearity. Variance inflation factors all had values well below 10, meaning that multicollinearity is not an issue in our dataset (UCLA: Statistical Consulting Group.).

Missing Data. Table 3.4 indicates the number of missing cases for key variables of interest. Number of missing cases for key variables ranges between 0 and 8. Given that the missing data accounts for less than 10% of our dataset, analyses were performed using listwise deletion for participants with missing data on key variables to maximize sample size for each analysis. This is deemed to be an acceptable strategy to avoid biased statistical analyses because the number of missing cases in our sample is small (Bennett, 2001). Performing multiple imputations to replace missing variables would have not been appropriate here given that it is unlikely that variables were missing at random (Dong & Peng, 2013).

Sample size for various analyses therefore range from 346 to 364 depending on the variables being tested in each model. The breakdown of sample sizes is as follows. In Aim 1, n=364. In Aim 2, n=355 for multiple linear regression analyses performed without control variables, and n=350 for multiple linear regression analyses done with control variables. The sample sizes remain the same for mediation analyses performed using past 90 days marijuana use as a mediator. For daily number of marijuana hits as a mediator, n=351 when no control variables are entered in the model, and n=346 with control variables present in the model. In Aim 3, n=355 for moderation analyses and conditional process analyses without control variables and n=350 for moderation analyses and conditional process analyses with control variables.

Aim 1

To confirm the factor structure of the amended Comprehensive Marijuana Motive Questionnaire (Lee et al., 2009) in a sample of young adults who use marijuana for recreational and/or medical reasons, an exploratory factor analysis, a confirmatory factor analysis, and a reliability analysis were performed. Next, a multigroup confirmatory factor analysis was

conducted to test for gender invariance of the factors. All analyses were conducted using Mplus Version 8 (Muthén & Muthén, 2017) and IBM SPSS Statistics 24.

Exploratory Factor Analysis. The purpose of an exploratory factor analysis is to explore which observed variables relate to factors to achieve a model that fits the data and has theoretical support (Schumacker & Lomax, 2010). As such, an exploratory factor analysis was performed using wave 1 data to determine a plausible model for the factor structure of motives of marijuana use for young adults who use marijuana for recreational and/or medical reasons in Los Angeles. Using a geomin (oblique) rotated solution, seventeen alternative models were requested along with a Scree plot. Oblique rotation was favored over orthogonal rotation as it allows for factors to covary (Kline, 2016). Maximum likelihood estimation was used as it can account for missing data, generates unbiased parameter estimates and standard errors, allows for significant testing, and provides fit estimates (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

Confirmatory Factor Analysis. Confirmatory factor analysis, is used to determine how a hypothesized factor model fits a new sample from a different population by examining factor variances (heterogeneity of a population) and covariances (strength of association between factors) (Muthén & Muthén, 2017).

I thus proceeded with confirmatory factor analyses to evaluate the fit of the most theoretically and conceptually sound models generated by the exploratory factor analysis as well as the fit of the original 17 factors hypothesized model. Separate confirmatory factor analyses were also conducted for the motives from the Comprehensive Marijuana Motive Questionnaire (Lee et al., 2009) only and medical use motives only. Confirmatory factor analyses were also conducted using wave 2 data for the retained factor structure as well as for the CMMQ items and the MM items to test for factor consistency across waves. Except for two factors in Models 16

and 17, all latent variables were specified with three indicators as it is recommended in the literature (Costello & Osborne, 2005; Kenny, 1979). Figures 3.1 to 3.4 depict the models that were confirmed using a confirmatory factor analysis.

Reliability Analysis. Reliability analyses, using Cronbach's alpha were performed with wave 1 and 2 data to assess the internal consistency of the final motive structure.

Multigroup Confirmatory Factor Analysis. To establish measurement invariance of the final motives between gender groups, a multigroup confirmatory factor analysis was performed using wave 1 data. Given the small sample size for women and the number of indicators, multigroup confirmatory factor analyses were performed separately for the Comprehensive Marijuana Motive Questionnaire items (Lee et al., 2009) and for the medical use motives. To establish measurement invariance, configural invariance was tested, followed by metric invariance. The fit of both models were then compared using the Comparative Fit Index where delta CFI should be ≤ 0.01 (Chen, 2007; Cheung & Rensvold, 2002).

Aim 2

The purpose of the second aim was to investigate the associations between motives of marijuana use and symptoms of depression and symptoms of anxiety, as well as overall psychological distress in young adults who use marijuana. We hypothesized that: a) motives that promote positive experiences would not be associated with symptoms of depression, symptoms of anxiety, or overall psychological distress; b) motives for avoidance of negative experiences would be associated with higher levels of symptoms of depression and symptoms of anxiety, or overall psychological distress; c) motives focused on medicinal use would be associated with lower levels of symptoms of depression and symptoms of anxiety, or overall psychological distress; and d) there would be no association between motives of boredom, relative low risk,

and availability with depression or anxiety symptoms of depression and symptoms of anxiety, or overall psychological distress.

As a first step, multiple linear regression analyses were used to investigate the associations between motives of marijuana use and symptoms of depression and symptoms of anxiety as well as overall psychological distress in our sample. Variables were entered in two blocks using the “enter” function for regressions in SPSS. The first block consisted of the 17 motives of use and the second block entered contained the control variables: age, race/ethnicity, user group, and gender. Given the number of variables entered in the model and the number of comparisons to be made, Bonferroni corrections were used to counteract potential Type I errors. Thus, the Bonferroni corrected alpha value of 0.003 was used to assess significance. Post hoc power analyses, or the probability of finding a statistical difference from zero, were also performed.

Second, mediation analyses using a non-parametric bootstrapping approach were conducted to assess whether past 90 days marijuana use or daily number of marijuana hits influenced the association between motives of marijuana use and mental health in our sample. The mediation analyses followed PROCESS Model 4 (Figure 3.4) (Hayes, 2018). A cross product test of the coefficients (Preacher & Hayes, 2004, 2008) was favored over causal step mediation (Baron & Kenny, 1986) as it is a superior method to detect indirect effects and assess their significance (MacKinnon, Fritz, Williams, & Lockwood, 2007; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). The cross product of the coefficients test provides a single test for the relation between the independent variable, the mediator, and the dependent variable by multiplying coefficients for a ($X \rightarrow M$) and b ($M \rightarrow Y$) paths, therefore directly assessing the statistical significance of the indirect effect (Lundgren, Dahl, & Hayes, 2008) using bootstrapped

confidence intervals. Testing the cross product of coefficients using a nonparametric bootstrapping method is advantageous as it does not require for the assumption of normality to be met, and is appropriate for smaller to moderate sample sizes (Preacher & Hayes, 2004, 2008).

To assess for significant indirect effects, 95% bias corrected confidence intervals were calculated using 10,000 bootstraps. Indirect effects were considered significant if the 95% bias corrected confidence intervals for *ab* point estimates did not contain zero (Gaudiano, Herbert, & Hayes, 2010; Preacher & Hayes, 2004, 2008). To further correct for Type I errors, a supplemental analysis using 99% bias corrected confidence intervals were also calculated using 10,000 bootstraps.

To better quantify and compare the effect size of each indirect effects, completely standardized effects were calculated (Hayes, 2018). Completely standardized effects express the indirect effects as the change in the standard deviation for the dependent variable between two cases of the independent variable that differ by one standard deviation (Hayes, 2018).

Analyses were conducted using Version 3 of the PROCESS macro in SPSS Version 24, first without any control variables and subsequently controlling gender, age, user group, and race/ethnicity. Men, non-patient users, and Non-Hispanic Whites were used as reference categories for gender, user group, and race/ethnicity respectively.

Aim 3

The purpose of this third aim was to determine whether associations between motives of use and our mental health outcomes of interest varied by gender. First, moderation analyses were performed to examine whether the associations between motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress differ by gender in young adults who use marijuana. Second, conditional process analyses were done to test for gender

differences for the significant indirect associations between motives of marijuana use and mental health outcomes uncovered in aim 2. Men was used as the reference category for all moderation and conditional process analyses. Analyses were performed using the PROCESS Version 3 macro in SPSS Version 24.

PROCESS Model 1 was used to assess moderation (Figure 3.5). Per Hayes (2018), a moderation is deemed significant if the coefficient for the interaction term between the independent variable and the moderator is significant. In this scenario, the coefficient will properly estimate the moderation of the independent variable's effect by the moderator (Hayes, 2018). An interaction term was deemed significant if $p \leq 0.05$.

Conditional process analyses, also called moderated mediation, were conducted to determine whether gender influences the indirect effects found to be significant in aim 2. In these moderated mediation models, the strength of the relationship between motives of marijuana use on symptoms of depression, symptoms of anxiety, or psychiatric distress is conditional on the value of the moderator; gender. Given that our interest was to test the effect of gender on the three paths of the mediated model $X \rightarrow M$, $M \rightarrow Y$, $X \rightarrow Y$, Hayes' (2018) PROCESS Model 59 was used for the conditional process analyses (Figure 3.6). By using this model, a test of moderation for each path is available in the form of the regression coefficients for the products along with their tests of significance. PROCESS also generates tests of significance and bootstrapped confidence intervals for the conditional direct and indirect effects. PROCESS also automatically conducts a test of the difference between the indirect effects in the two groups called the index of moderated mediation, with a bootstrapped confidence interval. The index of moderated mediation and its bootstrap confidence interval therefore act as an inferential test for the conditional process analysis of the indirect effect (Hayes, 2018).

In summary, by conducting conditional process analyses using PROCESS Model 59, we were able to determine which path, if any, was significantly moderated, and whether the indirect effect was moderated. Bootstrapped confidence intervals for the conditional indirect effects were calculated (95%) using 10,000 bootstraps. Using bootstrapped confidence intervals can help avoid power problems introduced by asymmetric and other non-normal distributions of an indirect effect (MacKinnon et al., 2007, 2002).

Chapter 4

Results

Sample description

Descriptive statistics for the sample (n=364) are presented in Table 3.4. Two cases were eliminated from the original dataset (n=366) as their gender identity was defined as “other”. Participants were on average 21 years old and mostly men (66%). Forty-five percent of respondents identified as Hispanic/Latino, 26% as Non-Hispanic White, and 19% as Non-Hispanic African American/Black, 4% as Asian/Pacific Islander, and 6% as multi-racial. This racial/ethnic distribution is somewhat comparable to that of Los Angeles County (U.S. Census Bureau, 2016). Past year annual income was relatively low with 83% of the sample falling in the \$1-\$25,000 bracket. Most participants reported part-time employment. With regards to education, about half of the sample reported having completed some college and/or being currently enrolled in either a four year or community college.

Marijuana was the most frequently used drug in the past 90 days. On average, participants reported using marijuana 69 out of the past 90 days. This means that, on average, participants used marijuana between on 5 to 6 days per week, thus classifying their use as heavy (Buckner, Crosby, Silgado, Wonderlich, & Schmidt, 2012; Hughes et al., 2014). Use of heroin was only reported by one participant over the past 90 day period. The average daily number of marijuana hits was 23.5. There was no difference between men and women with regards to either past 90 days use or daily number of hits. Overwhelmingly, participants reported smoking buds/flowers as the primary form and way of marijuana use. On about 26 of the past 90 days, marijuana was used with other drugs, primarily alcohol about 43% of the time. Fifty-seven

percent of the sample had a valid medical marijuana recommendations and thus identified as medical marijuana patients or medical marijuana users.

With regards to motives of use, the motive of enjoyment was the motive with the highest mean score indicating that “most of the time” participants in the sample used marijuana for enjoyment purposes (Table 3.4, Figure 4.1). This is followed by motives of sleep and relative low risk. When examining the mode of motives (Figure 4.2), “always” is the most frequent answer for motives of sleep, relative low risk, pain, and enjoyment. Motives of altered perceptions, availability and celebration follow with “most of the time”. There was a significant difference in mean scores of reported motives of use between men and women for motives of attention, celebration, enjoyment, natural remedy, nausea, pain, sleep and social anxiety (Figure 4.3). For all these motives, women scored higher than men.

Brief Symptoms Inventory-18 scores averaged between 3 and 4 out of a possible 24 for both symptomatology of depression and symptomatology of anxiety, indicating that participants in our sample endorsed some symptoms of depression or anxiety. For the Global Severity Index, which is used to operationalize psychological distress, the average score for the sample was 9.89 out of a possible 72. Only for the symptomatology of anxiety and psychological distress scales was there a significant difference of scores by gender (Figure 4.4).

Aim 1

Exploratory factor analysis. Scree plots, eigenvalues, model fit statistics, and parameter estimates were considered in the analysis of results. Eigenvalues (Table 4.1 and Figure 4.5), which indicate the variance of a factor, were examined. Eleven factors had an eigenvalue above one, accounting for 34.5% of the variance. However, given the arbitrary nature of relying on

eigenvalues and Scree plots to determine the number of factors to be included in a solution, model fit statistics and parameter estimates were examined next.

The following fit indices and their respective cutoff scores were used to assess model fit: 1) a chi-square test (χ^2) of model fit, where the χ^2 value should be < 5 and its p value > 0.05 to indicate good fit (Hu & Bentler, 1999; Muthén & Muthén, 2017); 2) the Comparative Fit Index (CFI), where a chi-square comparison of the target model to the baseline model is considered great when ≥ 0.95 , acceptable at ≥ 0.90 , and sometimes permissible at 0.80 (Hu & Bentler, 1999; Muthén & Muthén, 2017); 3) the Tucker-Lewis Index (TLI), which measures relative fit, should be ≥ 0.95 (Muthén & Muthén, 2017); 4) the root-mean-square error of approximation (RMSEA), a test of close fit where values ≤ 0.05 are considered a good fit, values between 0.05 and 0.08 an adequate fit, and values between 0.08 and 0.10 a mediocre fit, and values > 0.10 are not acceptable (Schermele-Engel, Moosbrugger, & Müller, 2003). Hu and Bentler (1999) suggest an RMSEA of less than .06 as a cutoff criterion. Model fit results for the exploratory factor analysis are reported in Table 4.2. Bolded values in Table 4.2 indicate fit indices that meet the aforementioned acceptable fit criteria. Based on these results, I focused my attention on models 13 to 17. Parameter estimates were examined for each of these models to generate factor structures to be assessed for theoretical support and plausibility. Items were selected onto factors when the loading was ≥ 0.30 and statistically significant at $p \leq 0.05$. For items that were significant and cross loaded on multiple factors, the strongest loading was retained.

Factors were then studied to ensure that they were comprehensible and made theoretical sense prior to proceeding with confirmatory factor analysis. Models 13 and 14 were set aside as the factor structure generated was not comprehensible nor had theoretical support. Models 15 to 17 (Tables 4.3 to 4.5) were more theoretically sound and comprehensible but with some

weaknesses. For instance, in the 15 factors solution, “cravings” and “forgetting about using alcohol and other drugs” loaded on the conformity motive, which does not make theoretical or intuitive sense, yet indicators of marijuana being “there” and “free” loaded on to the boredom motive, which is comprehensible. Both models 16 and 17 had factors with only two items loading on to them, which is not ideal as this produces factors that are weak and unstable (Costello & Osborne, 2005; Kenny, 1979). Given that, even considering their weaknesses, models 15 to 17 were more theoretically sound and comprehensible, they were retained for confirmatory factor analysis.

Confirmatory factor analysis. Model fit results from the confirmatory factor analysis are presented in Table 4.6. Unstandardized and standardized parameter estimates and covariances for Waves 1 and 2 are presented in Tables 4.7 to 4.24. Figures 4.6 to 4.17 illustrate the measurement model of the confirmatory factor analyses with unstandardized and standardized parameter estimates for the retained model. Results indicate that the best fitting, most theoretically sound, and most comprehensible model is the originally hypothesized 17 factor model, which combines all of the Comprehensive Marijuana Motive Questionnaire (Lee et al., 2009) motives as well as the medical motives of attention, substitution, natural remedy, pain and nausea, that were added by CHAYA.

Fit statistics for this model meet the previously discussed criteria for model fit and suggest good fit for both wave 1 ($\chi^2(1088) = 2234.350$, RMSEA = .054, CFI = .941, TLI=0.931) and wave 2 ($\chi^2(1088) = 1965.710$, RMSEA = .049, CFI = .946, TLI=0.936). As highlighted in the covariance tables, only with some exceptions, correlations among factors were all significant at $p \leq 0.05$. Tables 4.25 to 4.30 present R-squared values for Waves 1 and 2, for the final model as well as for the Comprehensive Marijuana Motives Questionnaire motives and the medical

motives separately. As demonstrated in the parameter estimates tables and on the R-squared tables, model parameters were all significant and explained substantial amounts of item variance: $R^2 = 0.35$ to 0.90 in wave 1 and $R^2 = 0.32$ to 0.92 in wave 2.

Reliability analysis. Results of the reliability analyses are presented in Table 4.31. Cronbach alpha's equal to or above 0.7 are considered acceptable (Tavakol & Dennick, 2011). All motives except for the substitution motive in wave 2 had Cronbach's alphas greater or equal to 0.7 that were stable over time. The substitution motive in wave 2 had a Cronbach's alpha of 0.6 and although removing "it makes me feel better than using alcohol or other drugs" could have increased the Cronbach's alpha to 0.7, it was left as is.

Gender invariance. *Comprehensive Marijuana Motives Questionnaire.* Table 4.32 displays the fit indices for the models that tested gender invariance. Parameter estimates are presented in Tables 4.33 and 4.34 for configural invariance. The initial model that assessed configural invariance (Model A) resulted in an acceptable fit ($\chi^2(1152) = 1738.200$, RMSEA = .053, CFI = .956). The second step, testing full metric invariance (Model B), also yielded an acceptable fit ($\chi^2(1188) = 1729.599$, RMSEA = .050, CFI = .959). Parameter estimates are presented in Tables 4.35 and 4.36 for measurement invariance. The difference between the CFIs of both models was well below 0.01 ($0.959 - 0.956 = 0.003$). Measurement invariance between gender can therefore be established for motives of the Comprehensive Marijuana Motives Questionnaire (Lee et al., 2009).

Medical motives. Tables 4.37 to 4.40 display the fit indices for the models that tested measurement invariance. The initial model that assessed configural invariance (Model C) resulted in an acceptable fit ($\chi^2(200) = 500.808$, RMSEA = .091, CFI = .969). The second step, testing full metric invariance (Model D), also yielded an acceptable fit ($\chi^2(215) = 460.182$,

RMSEA = .079, CFI = .975). The difference between the CFIs of both models was well below 0.01 (0.975-0.969=0.006). Measurement invariance between gender can therefore be established for the medical motives of use.

Thus, the seventeen motives factor structure which combines Lee's (2009) twelve recreational motives of use and CHAYA's five medical motives of use is valid for both men and women in our sample.

Aim 2

Symptoms of Depression

Motives of use & Symptoms of Depression. Table 4.41 presents the regression estimates of symptoms of depression on motives of marijuana use without and with control variables. Motives of use account for 22% of the variance in symptoms of depression. At $p \leq 0.05$, motives of celebration, coping and pain were significantly associated with symptoms of depression in the analyses without control variables. After controlling for age, gender, race/ethnicity, and user group, only coping remained significantly associated with symptoms of depression.

At a Bonferroni corrected alpha of ≤ 0.003 ., only coping was positively, significantly associated with symptoms of depression in models without and with control variables. None of the control variables included in the model were significantly associated with symptoms of depression. The association between the coping motive of marijuana use with symptoms of depression is positive indicating that the more often marijuana use is motivated by coping, the higher the score for symptoms of depression. The magnitude of changes in symptoms of depression for a one unit increase in motives of use is of almost 2 points. Post hoc power analyses indicate that the statistical power is greater than 0.9.

Mediation by past 90 days marijuana use. Results from the mediation analysis with past 90 days marijuana use as a mediator are presented in Tables 4.42a-d. From a simple mediation analysis without control variables (Tables 4.42a and 4.42b), marijuana use motives of availability, conformity, pain, and social anxiety indirectly influenced symptoms of depression through their effect on past 90 days marijuana use. For motives of availability and conformity, the indirect association through past 90 days use is positive ($ab=0.087$ for availability and $ab=0.153$ for conformity), whereas it is negative for motives of pain and social anxiety ($ab= -0.082$ for pain and $ab= -0.081$ for social anxiety). For each of these indirect effects, a 95% bootstrap confidence interval based on 10,000 bootstraps did not contain zero (Table 4.42b). For motives of conformity, coping, and social anxiety, there is also evidence of a direct effect with symptoms of depression independent of their effect on past 90 days marijuana use (Tables 4.42a and 4.42c). The effect is positive for motives of coping and social anxiety with symptoms of depression whereas the direct effect between conformity and symptoms of depression is negative.

After controlling for age, gender, race/ethnicity, and user group (Tables 4.42c and 4.42d), the indirect effect of motives of availability on symptoms of depression ($b = -0.08$, $CI= -0.0067$ to 0.2015) and social anxiety on symptoms of depression ($b = -0.0076$, $CI= -0.189$ to 0.0017) through past 90 days use were no longer significant. Significant indirect effects remained for the motives of conformity and pain with symptoms of depression. For each of these indirect effects, a 95% bootstrap confidence interval based on 10,000 bootstraps did not contain zero (Table 4.42d). The completely standardized effect for the motive of pain was of -0.26 and of 0.22 for the motive of conformity. Evidence of a direct effect remained for the motive of social anxiety with symptoms of depression but not for the availability motive.

The *a* path from motive of conformity to past 90 days marijuana use was negative, indicating that the more use is driven by conformity (Figure 4.18), the less days one is likely to use. However, for motive of pain (Figure 4.19) the association was positive, indicating that the more use is driven by this motive, the more days of use is reported. Motives of use accounted for 19% of the variance of past 90 days marijuana use.

Past 90 days of marijuana use (*b* path) was significantly, yet negatively, associated with symptoms of depression. However, although significant, the magnitude of the *b* coefficient here was almost 0. For each of these indirect effects, a 95% bootstrap confidence interval based on 10,000 bootstraps did not contain zero (Tables 4.42b and 4.42d).

Supplemental analyses using a 99% bootstrapped confidence interval yielded no significant indirect effects.

Mediation by daily number of marijuana hits. Results from the mediation analysis with number of daily marijuana hits as a mediator are presented in Tables 4.43a-d. From a simple mediation analysis without (Tables 4.43a-b) and with (Tables 4.43c-d) control variables, only the motive of attention indirectly influenced symptoms of depression through its effect on daily number of hits.

The indirect association between the motive of attention and symptoms of depression through daily number of hits is negative ($ab = -0.121$). As can be seen in Figure 4.20, the *a* path from attention to daily number of hits is positive, indicating that the more use is driven by attention the greater the number of daily hits. Motives of use account for 11% of the variance for daily number of marijuana hits. Daily number of hits is negatively, significantly associated with symptoms of depression (*b* path). However, although significant, the magnitude of the β coefficient here is almost 0. A 95% bootstrap confidence interval for the indirect effect

based on 10,000 bootstraps did not contain zero (Tables 4.43b and 4.43d). The completely standardized effect for the motive of pain was of -0.26 and of 0.22 for the motive of conformity.

For motives of celebration, coping, and conformity, there was evidence of direct effects with symptoms of depression independent of their effect on number of daily hits when control variables are excluded from the analyses (Table 4.43a). After controlling for gender, age, user group, and race/ethnicity, there is evidence of a direct effect for motives of coping, conformity, and social anxiety with symptoms of depression, independent of their effect on number of daily hits (Table 4.43c).

Supplemental analyses using a 99% bootstrapped confidence interval yielded no significant indirect effects.

Symptoms of Anxiety

Motives of use & Symptoms of Anxiety. Table 4.44 presents the multiple linear regression estimates without and with control variables. Motives of use account for approximately 18% of the variance in symptoms of anxiety. Motives of celebration, coping, and social anxiety are significantly associated with symptoms of anxiety at $p \leq 0.05$. Only coping remains significantly associated with symptoms of anxiety using the Bonferroni corrected $p \leq 0.003$.

Coping is positively and significantly associated with symptoms of anxiety whereas the more often marijuana use is motivated by coping, the higher the score for symptoms of anxiety. The magnitude of the association of motives of coping with symptoms of anxiety is of almost 1 indicating that for any one unit change in the strength of coping motive there is almost a one-point change in scores of symptoms of anxiety. Post hoc power analyses indicate that the statistical power greater than 0.99.

Mediation by past 90 days marijuana use. Results from the mediation analysis with past 90 days marijuana use as a mediator are presented in Tables 4.45a-d. There is no evidence of any indirect effects of motives of marijuana use on symptoms of anxiety through past ninety days marijuana use. All 95% bootstrap confidence interval for the indirect effect, based on 10,000 bootstraps, include zero. There is however evidence of a positive direct effect with symptoms of anxiety for motives of coping and social anxiety, independent of past 90 days use.

Mediation by daily number of marijuana hits. Results from the mediation analysis with daily number of hits as a mediator are presented in Tables 4.46a-d. There is no evidence for any indirect effects of motives of marijuana use on symptoms of anxiety through daily number of hits. All 95% bootstrap confidence interval for the indirect effect, based on 10,000 bootstraps, include zero. There is, however, evidence of a negative direct effect with symptoms of anxiety for motive of celebration and a positive direct effect for motives of coping and social anxiety. After controlling for age, gender, user group, and race/ethnicity, there is a negative direct effect between motives of marijuana use and symptoms of anxiety for motives of celebration and sleep, and a positive direct effect for motives of coping and social anxiety.

Psychological distress

Motives of use & Psychological distress. Table 4.47 presents the regression estimates without and with control variables. Motives of marijuana use account for approximately 24% of the variance of overall psychological distress. Motives of celebration, coping, conformity and social anxiety are significantly associated with overall psychological distress at $p \leq 0.05$. Only coping remains significantly associated with overall psychological distress using the Bonferroni corrected $p \leq 0.003$.

Coping is positively, significantly associated with overall psychological distress whereas the more often marijuana use is motivated by coping the higher the score for psychological distress. The magnitude of the association of motives of coping with psychological distress is of approximately 3 indicating that for any one unit change in the strength of coping motive there is almost a three-point change in scores of symptoms of anxiety. Post hoc power analyses indicate that the statistical power greater than 0.99.

Mediation by past 90 days marijuana use. Results from the mediation analysis with past 90 days marijuana use as a mediator are presented in Tables 4.48a-d. There is no evidence of any indirect effects of motives of marijuana use on overall psychological distress through past 90 days marijuana use. All 95% bootstrap confidence interval for the indirect effect, based on 10,000 bootstraps, include zero. There is however evidence of a positive direct effect with overall psychological distress for motives of coping and social anxiety, and evidence of a negative direct effect for motives of celebration and conformity. The negative direct effect with celebration is no longer significant after controlling for gender, age, user group, and race/ethnicity.

Mediation by daily number of marijuana hits. Results from the mediation analysis with daily number of hits as a mediator are presented in Tables 4.49a-d. There is no evidence of any indirect effects of motives of marijuana use on overall psychological distress through daily number of hits. All 95% bootstrap confidence interval for the indirect effect, based on 10,000 bootstraps, include zero. There is however evidence of a negative direct effect with psychological distress for motives of celebration and conformity, and a positive direct effect for motives of coping and social anxiety. When controlling for age, gender, user group, and race/ethnicity, the negative direct effect between motives of marijuana use and psychological

distress for motives of celebration and conformity remains as well as the positive direct effect for motives of coping and social anxiety.

Aim 3

Moderation Analyses

Symptoms of depression (Table 4.50, Figure 4.21). Gender was found to moderate the association between social anxiety motives of use and symptoms of depression when tested with and without control variables. The addition of the interaction term between the motive of social anxiety and gender explained a significant increase in variance for symptoms of depression $\Delta R^2 = 0.012$, $p < 0.05$ for the model without control variables, and $\Delta R^2 = 0.014$, $p < 0.05$ for the model with control variables. The interaction was probed by testing the conditional effect of the social anxiety motive of use on symptoms of depression for both men and women. For women, but not men, the motive of social anxiety was significantly associated with more symptoms of depression (men $b = 0.105$, CI= -0.544, 0.754; women $b = 1.047$, CI= 0.347, 1.748). Furthermore, the slope of the interaction term indicates that women scored higher on symptoms of depression than men at the average level of the social anxiety motive.

Symptoms of anxiety (Table 4.51, Figures 4.22 and 4.23). When analyzed with and without control variables, gender was found to moderate the associations for the motives of experimentation and availability with symptoms of anxiety. The addition of the interaction term between the motive of experimentation and gender explained a significant increase in variance for symptoms of anxiety: $\Delta R^2 = 0.012$, $p < 0.05$. The addition of the interaction term between the motive of availability and gender explained a significant increase in variance for symptoms of anxiety: $\Delta R^2 = 0.01$, $p < 0.05$. Probing of the interactions, for both motives of experimentation and availability, however yielded no significant conditional effect for neither

men or women. Conditional effects for motives of experimentation are as follows: (men $b = 0.232$, CI= -0.268, 0.731; women $b = -0.588$, CI= -1.245, 0.683). Conditional effects for motives of availability are as follows: (men $b = 0.257$, CI= -0.283, 0.798; women $b = -0.468$, CI= -1.116, 0.181). This could therefore indicate a crossover interaction where there is no overall effect of either motives of use or gender on symptoms of anxiety. In both cases, the effect of gender on symptoms of anxiety is opposite, depending on the value of motives of use.

Although gender was initially found to moderate the association between motives of boredom and symptoms of anxiety, the interaction was no longer significant following the addition of control variables.

Overall psychological distress (Table 4.52, Figure 4.24). When analyzed with and without control variables, gender was found to moderate the association for the motive of social anxiety with overall psychological distress. The addition of the interaction term explained a significant increase in variance for psychological distress $\Delta R^2 = 0.010$, $p < 0.05$.

The interaction was probed by testing the conditional effect of social anxiety for both men and women. For women, but not men, the motive of social anxiety was significantly associated to overall psychological distress (men $b = 0.842$, CI= -0.562, 2.247; women $b = 2.623$, CI= 1.111, 4.134). Furthermore, the slope of the interaction term indicates that women score higher on psychological distress than men at the average level of social anxiety motive.

Although gender was initially found to moderate the association between motives of boredom and psychological distress, and motives of availability with psychological distress, these interactions were no longer significant following the addition of control variables.

Conditional Process Analyses

Past 90 days marijuana use (Tables 4.53 and 4.54). None of the significant indirect

effects found in the second aim for motives of pain and conformity with symptoms of depression were significantly moderated by gender. The indexes of moderated mediation and their respective bootstrap confidence intervals are as follow: conformity $b = -0.229$ (CI= -0.632, 0.084); and pain $b = 0.1352$ (CI= -0.053, 0.409).

Daily number of hits (Table 4.55). The significant indirect effect found in the second aim for the motive of attention with symptoms of depression was not significantly moderated by gender. The index of moderated mediation and its bootstrap confidence interval is as follows: $b = 0.019$ (CI= -0.235, 0.222).

In summary (Tables 4.56 to 4.61), only the motive of coping is positively, significantly associated with symptoms of depression, symptoms of anxiety, and overall psychological distress. Motives of pain and conformity are indirectly associated to symptoms of depression through past 90 days marijuana use. The motive of attention is indirectly associated with symptoms of depression through daily number of marijuana hits. Finally, women whose marijuana use is driven by the motive of social anxiety endorse more symptoms of depression and overall psychological distress, compared to men whose marijuana use is driven by the social anxiety motive of use.

Chapter 5

Discussion

Summary of Findings

The purpose of this dissertation was to determine the associations between motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress in a sample of young adults who use marijuana for medical and/or recreational reasons. Furthermore, I sought to establish whether these associations differ by gender. As marijuana use is common and on the rise amongst young adults (CBHSQ, 2016a; NIAAA, 2015), and as young adulthood is a period of increased mental health vulnerabilities (Disorders, 1994), it is urgent to disentangle the potential effects of marijuana use on the mental health of young adults, particularly because mental health in young adulthood is the strongest predictor of mental health in adulthood (Holden et al., 2016).

Recreational and medical motives of marijuana use. The work presented in this dissertation advances our understanding of motives of marijuana use as well as the associations between motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress in young adults who use marijuana for medical and/or recreational reasons.

The purpose of the first aim was to confirm the factor structure of the motives of marijuana use questionnaire used to study motives of marijuana use in young adults of Los Angeles who use marijuana for medical and/or recreational reasons. It was hypothesized that from the fifty-one-item questionnaire, seventeen motives of marijuana use would emerge. Twelve of these motives would replicate those found by Lee et al. (2009) in their study to develop and validate a comprehensive marijuana motive questionnaire. The other five motives to

be confirmed would be the medical use motives drafted by the CHAYA team. Furthermore, it was hypothesized that there would be no gender differences in the factor structure of motives of marijuana use.

The best fitting and most psychometrically sound factor structure for motives of marijuana use for this sample was the originally hypothesized seventeen factor structure composed of Lee et al.'s (2009) twelve motives and the five medical motives drafted by the CHAYA team. The final twelve non-medical items are: boredom, availability, coping, conformity, experimentation, alcohol, celebration, altered perceptions, social anxiety, relative low risk, and sleep. The final five medical motives are: pain, nausea, substitution, natural remedy, and attention. Following and extending Cooper's Motivational Model of Use (Cooper, 1994), these motives can be conceptualized as motives promoting positive experiences, motives to avoid negative experiences, and medical use motives. Motives that promote positive experiences are motives of celebration, altered perceptions, experimentation, enjoyment, alcohol, relative low risk, and, availability. Motives for avoidance of negative experiences are motives of coping, conformity, sleep, boredom, and social anxiety. Medical motives are motives of attention, substitution, natural remedy, pain, and nausea.

These seventeen motives proved to be consistently well fitting, stable over time, and gender invariant when tested using both wave 1 and 2 data. Although these findings need to be replicated using a random sample, the Amended Comprehensive Marijuana Motive Questionnaire, is the first to integrate both recreational and medical motives of use. Given the high rates of overlap between recreational and medical use (Pacula et al., 2016), the validation of such an instrument, and its stability over time and across gender, will allow for a more accurate assessment of motives of marijuana use.

To date, neither gender invariance for the motives from the Comprehensive Marijuana Motive Questionnaire (Lee et al., 2009) nor endorsement of motives by gender had been examined. Interestingly, in this sample, except for the motives of experimentation and boredom, the reporting trend was higher for women compared to men. There were also significant differences in mean scores of reported motives of use between men and women for motives of attention, celebration, enjoyment, natural remedy, nausea, pain, sleep and social anxiety. This indicates that women endorse any given motive more strongly than men do. As discussed in Chapter 2, the gap in marijuana use prevalence between men and women is closing (Cooper & Craft, 2018). Additionally, in line with gender socialization and changing gender norms, whereas marijuana use was considered acceptable for men but less so for women, it is now increasingly considered acceptable behavior for women (Hernandez-Avila, Rounsaville, & Kranzler, 2004). These changes in norms and behaviors may be starting to reflect in data collected. With that said, it is important to note that these preexisting differences between genders may be a confounding factor for causal inferences and reflect the unbalanced nature of our sample due to it being non-random rather than a true reflection of patterns within the population.

Motives of use and Mental Health. The work presented in this dissertation also advances our understanding of the associations between motives of marijuana use and mental health outcomes in a sample of young adults who use marijuana heavily for medical and/or recreational reasons. It does so by: 1) replicating previous findings for the coping motive of use whereas the more an individual endorses coping motives of use, the poorer the associated outcomes are; 2) extending knowledge with regards to indirect effects of motives on mental health outcomes through frequency of use; and 3) establishing that some of the associations between motives of use and mental health outcomes vary by gender.

The second and third aims of this dissertation were to investigate the associations between motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress, and to determine whether these associations varied by gender in a sample of young adults who use marijuana for medical and/or recreational reasons in a context of legalized medical marijuana. It was hypothesized that: 1) motives that promote positive experiences would not be associated with symptoms of depression, symptoms of anxiety, or overall psychological distress; 2) motives for avoidance of negative experiences would be associated with higher symptoms of depression, symptoms of anxiety, or overall psychological distress; 3) that medical motives of use would be not be associated with higher symptoms of depression, symptoms of anxiety, or overall psychological distress. Furthermore, it was hypothesized that gender would influence some of these associations. As discussed below, these hypotheses were only partially supported by our findings.

Motives of marijuana use to promote positive experiences

For motives of marijuana use to promote positive experiences, none of the motives were directly, significantly associated with any of our outcomes of interest. This finding is consistent with the hypothesis as well as with what has previously been documented in the literature. Social motives, as well as motives of enhancement and expansion, which can also be conceptualized as motives of use to promote positive experiences have not previously been found to be associated with psychological distress (Moitra et al., 2015). Furthermore, in a study by Brodbeck et al. (Brodbeck et al., 2007), no differences were found between young adults who use marijuana for social motives and young adults who do not use marijuana with regards to psychological distress.

Although no indirect associations between motives of marijuana use and psychological symptoms were found, there was a direct, significant association between the motive of

celebration and past 90 days use. The association between the motive of celebration and use, but its lack of association with problematic outcomes has previously been documented in the alcohol literature (Cooper, 1994) and the marijuana literature (Zvolensky et al., 2007). This would therefore imply that some motives of marijuana use are associated with increases in use but are not associated with mental health outcomes. Tying back to the underlying assumptions driving this work, when marijuana use is motivated by a desire to celebrate, the use behavior it gives rise to is not associated with mental health outcomes. This suggests that, in this sample, there may not be any mental health consequences resulting from celebratory driven use. Other motives of use, namely those to avoid negative experiences, are more relevant to the associations between motives of marijuana use and mental health.

Motives for avoidance of negative experiences

Results from the multiple linear regressions indicate that only the coping motive of use is significantly associated with symptoms of depression, symptoms of anxiety, and overall psychological distress. The association is such as that the more use is driven by coping, the more severe the symptoms of depression, symptoms of anxiety and psychological distress. This finding replicates what has previously been documented in the literature. Previous work has, in fact, demonstrated that a coping motive of marijuana use predicted anxious arousal and anhedonic symptoms of depression in a sample of young adults (Zvolensky et al., 2007), as well as internalizing and externalizing symptoms in a sample of high school students (Blevins et al., 2016a; Bohnert et al., 2018), and was negatively associated with mental health functioning, whereas mental health functioning decreased with an increase in coping motives, in a sample of middle age individuals who use marijuana for medical purposes (Bohnert et al., 2018).

The significant, direct, association between coping motives of marijuana use and symptoms of depression, symptoms of anxiety, and overall psychological distress fits with the concept of avoidance coping which includes both cognitive and behavioral strategies (Lazarus & Folkman, 1984; Taylor & Stanton, 2007) and is “oriented towards denying, minimizing, or otherwise avoiding dealing directly with stressful demands” (Holahan, Moos, Holahan, Brennan, & Schutte, 2005). In other words, avoidance coping can be summed as behaviors one engages in to avoid dealing with a stressor. Although avoidance strategies may seem desirable because they engender reductions in stress and prevent paralyzing anxiety (Roth & Cohen, 1986), avoidance coping is maladaptive and is not associated with desirable long-term outcomes. Avoidance coping has been associated with lower likelihood of remission in depressed patients and increased distress among other outcomes (Taylor & Stanton, 2007).

The coping motive of use has also previously been associated with increased past thirty days use and progression to problematic cannabis use (Bonn-Miller & Zvolensky, 2009; Bonn-Miller et al., 2007; Zvolensky et al., 2007). Work done on coping and marijuana use in adolescents has demonstrated higher levels of depressive symptoms (Seiffge-Krenke & Klessinger, 2000) and greater lifetime and past 12 months marijuana use as well as increases in negative mood for those who engaged in avoidant coping through marijuana use (Lee-Winn, Mendelson, & Johnson, 2018).

The conformity motive was negatively associated to past 90 days marijuana use, which was in turn negatively associated with symptoms of depression, generating positive indirect effect for the motive of conformity on symptoms of depression through past 90 days use. That conformity was negatively associated with past 90 days marijuana use is surprising. It was expected that the conformity motive of use would be associated with use given that use is a

common behavior in our sample and that it is the least endorsed motive by the participants in the sample, or to be positively associated with marijuana use as the desire to conform would engender use. Previous work done on motives of marijuana use that included the conformity motive found conformity to be positively associated with use (Lee et al., 2009), not associated with use (Bonn-Miller et al., 2007), or to be a negative predictor of use (Zvolensky et al., 2007). Clearly, there is no consensus on the association between motive of conformity and marijuana use, let alone its relationship with mental health outcomes. It is possible that this finding is a Type I error, as there is no logical or theoretical way to explain it.

Gender was found to moderate the associations between the motive of social anxiety with symptoms of depression and overall psychological distress. For both outcomes, the effect is worse for women compared to men. The more women endorse social anxiety as a motive for marijuana use, the worse of their mental health is as it pertains to symptoms of depression and overall psychological distress. Endorsing the social anxiety motive of use seems to have no effect on the mental health of men with regards to symptoms of depression and overall psychological distress. This is contrary to what has thus far been documented in the literature. As previously discussed, for men, the social anxiety marijuana motive of use is akin to a social avoidance coping motive compared to a more social/celebratory motive for women (Buckner, Heimberg, & Schmidt, 2011; Buckner, Zvolensky, & Schmidt, 2012b; Crane, Langenecker, & Mermelstein, 2015). Social anxiety motive of use has therefore been tied to greater severity of problematic marijuana use in men but not women (Buckner et al., 2011). Thus, it was expected that the association between social anxiety motive of marijuana use and symptoms of depression or psychological distress would be worse for men compared to women.

Surprisingly, there was no finding of significant gender differences in the associations between motives of marijuana use and symptoms of depression. As illustrated in Figure 4.25, using the coping motive as an example, plotting the trends for men and women reveals an interaction effect where the effect of the coping motive of use on symptoms of depression appears to be worse for men than women. However, the lack of a significant interaction term in this association is likely due to insufficient power resulting from the small sample size.

Medical use motives

Interestingly, given the make-up of our sample, none of the medical motives of use were significantly directly associated with any of the mental health outcomes of interest. It is plausible that this is the case because using as a natural remedy, or using to combat nausea can be conceptualized as a form of coping. In a study of individuals who use marijuana for medical reasons, where no medical motives of marijuana use were specified, coping was significantly associated with greater health functioning but poorer mental health functioning (Bohnert et al., 2018). Furthermore, there was no finding that mediation or gender effect for the coping motive of marijuana use and associated outcomes, only direct effects indicating that the association is strong and not gender dependent.

The marijuana motive of use for pain was positively associated with past 90 days use, which was in turn negatively associated with symptoms of depression, thus generating a negative indirect effect. There is some evidence that marijuana use might be beneficial for pain (Volkow, Baler, Compton, & Weiss, 2014b). It is therefore plausible that an individual might be driven to use for pain relief purposes and that, in turn, relief from pain might be associated with alleviated symptoms of depression.

The association between the marijuana use motive of attention to daily number of hits is positive and the association between daily number of hits and symptoms of depression is negative, thus generating a negative indirect effect between the attention motive of marijuana use and symptoms of depression through daily number of hits. Work done as it pertains to attention and marijuana use has typically investigated whether marijuana use negatively affects attention. Yet, in work done by Gruber et al. (Gruber et al., 2016), medical marijuana patients demonstrated some improvements on measures of executive functioning post consumption of cannabinoids (CBD) but not post tetrahydrocannabinols (THC) consumption. This points to potentially beneficial effects of CBD but not THC consumption for attention. This effect is hypothesized to occur as CBD use could lessen symptoms of sleep disturbance, symptoms of depression, and impulsivity, thus resulting in improved cognitive functioning (Gruber et al., 2016). Therefore, in our sample, use might be motivated by a desire to improve attention with the expectation that use will help alleviate distracting factors such as pain, and in turn, help alleviate symptoms of depression. This is however contradicted by other studies that have demonstrated impairments in attention and concentration post THC administration (Crane, Schuster, Fusar-Poli, & Gonzalez, 2013).

Surprisingly, there was a small, negative, significant association between past 90 days marijuana use and symptoms of depression, and daily number of marijuana hits and symptoms of depression. However, the magnitude of the effect is somewhat negligible, being almost zero. Furthermore, this finding is contrary to previous work in the literature exploring the associations between marijuana use and (symptoms of) depression as regular use of marijuana has previously been associated with an increased risk of depression and anxiety (Volkow et al., 2014b). Although user group, as a control variable, was not significantly associated with depressive

symptomatology for either mediators, it is plausible to speculate that given the medical nature of use reported by participants in the sample, it could account for this association. If in fact use alleviates the burden of a medical condition, then one could report feeling less depressed.

Implications

The findings discussed above have implications for both the literature and prevention/intervention strategies. Although not representative of the young adult population at large, this sample differs in its composition than those most currently published in the literature. This is a sample of young adults that use marijuana very heavily, both with regards to past 90 days use and to daily number of marijuana hits. On average, this sample reported using marijuana 69 out of 90 days. Participants also reported a daily average of 23 hits. This is a significant departure compared to other samples considered to be composed of heavy users where, for example, participants reported using marijuana approximately 6 days per week (approximately 72 out of 90 days) but with an average of 4 hits per day (Hughes et al., 2014).

This sample also distinguishes itself from others in the literature as it is composed of young adults who use marijuana solely for medical reasons, young adults who use marijuana solely for recreational reasons, and young adults who report using marijuana for both medical and recreational reasons. This sample, although non-random, does provide us with a wide range of individuals who use marijuana for different reasons in a context of legalized medical marijuana. Work on marijuana use has predominantly been conducted in settings where marijuana use is not legal and although such behavior is illegal for about half of our sample, it is a legal behavior for the other half. Although the data come from a convenience sample, they provide preliminary evidence regarding the associations between motives of marijuana use and mental health outcomes.

This sample also differs from most with regards to sociodemographic characteristics. For instance, most of the other samples in the literature on motives of marijuana use and associated outcomes are under 21 years of age. This is relevant as it has been hypothesized that individuals can mature out of drug use whereas marijuana use declines as adult responsibilities increase (Mariani, Brooks, Haney, & Levin, 2011; Sifaneck & Kaplan, 1995). Furthermore, this sample is not composed primarily of Whites as has been the case to date in the literature, nor is it solely composed of undergraduate students. Only about half of the individuals in this sample report some form of college level education. This latter point is especially relevant when we consider that marijuana use is associated with limited academic achievement (Maggs et al., 2015). However, not unlike college samples, individuals in our sample primarily report using marijuana for enhancement purposes (Pearson, Liese, & Dvorak, 2017), in addition to health/medical motives.

Conceptualization and operationalization of motives of marijuana use. When examining the indicators that compose each motive (Figure 3.4) and while considering our definition and conceptualization of motives of use, it could be argued that some of the factors generated by the confirmatory factor analyses do not completely fit with some of the conceptualization of motives of use found in the literature. As a reminder, for the purposes of this dissertation, motives were conceptualized as cognitive explanations for a behavior that provides insight into the *context and circumstances* of a behavior (Bern, 1972; Lee et al., 2007; Newcomb et al., 1988). However, in line with Cooper's Motivational Model of Alcohol Use (1994) which is based on Cox and Klinger's model (Cox & Klinger, 1988), use of alcohol and/or other drug is motivated by certain *valued outcomes*. Taken together, the seventeen motives of use generated by the confirmatory factor analyses fit one but not both conceptualization of motives.

Some of the motives only provide insight into the context and circumstances of a behavior, and do not say anything about the valued outcomes or incentive or desired end state for use (Cooper, Kuntsche, Barber, & Wolf, 2014). It can however, be argued that, although these motives may not fit Cooper (1994) and Cox and Klinger's (1988) conceptualization that motives should give insight into the desired end state or valued outcomes an individual wishes to achieve, they do provide us with contextual and circumstantial insights for a behavior, which is relevant in understanding why individuals use and were therefore be retained as motives of marijuana use. As an example, the motive of availability is composed of the following items: because it is there, because you can get it for free, and because it is readily available. Although this motive of use does not ascertain anything about the valued outcome or desired end state one wishes to achieve through use, it gives us insight into the context and circumstances of use. This also applies to the motives of relative low risk and alcohol.

Whereas previous work had relied on instruments which did not include medical motives of marijuana use, nor had been validated in a diverse sample of young adults who use marijuana with regards to education and use (medical/non-medical), work presented in this thesis establishes the validity of a motive of marijuana use scale which combines both recreational and medical motives of use. This is significant as, as previously documented, although young adults who use marijuana may identify their use as either medical or recreational, there is a significant overlap in use. Recently, Lee's twelve motives of marijuana use have also been confirmed in a sample of medical cannabis patients who were twenty-one years or older (Bohnert et al., 2018). This further confirms that young adults who report using marijuana for medical reasons also use for non-medical reasons and validates the need for a scale that contains both recreational and medical motives of use.

The work in this first aim builds on and extends work done by Simmons et al. (1998) and Lee et al. (2009) on motives of marijuana use as it: 1) validates the factor structure of existing motives of marijuana use in a new population; 2) establishes new motives of marijuana use that pertain specifically to medical use, and 3) confirms that neither medical nor non-medical motives of use differ by gender. This therefore means that the amended Comprehensive Marijuana Motives scale is stable over time and can be used indiscriminately for both men and women. Furthermore, it also implies that for any given motive on that scale, the motive is conceptually the same for both men and women.

Given the evolving context of marijuana legalization, this study contributes to laying the groundwork for the study of motives of marijuana use and medical motives of marijuana use. These findings indicate that there are key, non-overlapping, non-gender specific recreational and medical reasons that drive use in a sample composed of young adults who use marijuana for medical and/or recreational reasons. These findings reinforce the notion that marijuana use is motivated by differing needs, offering insight into the circumstances in which an individual uses marijuana. The amended questionnaire, can therefore be used for ensuing analyses in our sample of young adults who use marijuana, regardless of how they identify their use. However, to use this amended questionnaire with confidence in any group of young adults who use marijuana, it would need to be further validated using a random sample of young adults who use marijuana.

Motives of use and mental health outcomes. Ensuing work in this dissertation focused on investigating whether motives that drive use give rise to distinct use behaviors and whether these distinct use behaviors driven by specific motives may be differentially associated with mental health outcomes, while accounting for gender. The outcomes, namely symptoms of depression, symptoms of anxiety, and overall psychological distress are all important precursors

of diagnoses of depression and anxiety, thus providing insight into opportunities for interventions to ensure a successful transition from adolescence to adulthood for marijuana using young adults.

To our knowledge, this is the first study that focuses on motives of marijuana use and mental health outcomes of young adults who use marijuana in a context of facilitated access to marijuana. This is significant as the decreasing perceptions of risks associated with marijuana use and the increase in marijuana use, especially in young adults in a context where marijuana is easily accessible, creates a perfect storm that might interfere with assuming the roles and responsibilities of adulthood. Understanding these associations provides us with tools to develop potentially helpful interventions to help enable progression to adulthood by targeting specific motives of use. As demonstrated by Blevins et al. (Blevins, Banes, Stephens, Walker, & Roffman, 2016b) motives of use are amenable to change, and changes in motives of use can engender changes in use patterns which can then result in changes in associated outcomes.

Findings from this dissertation indicate that, as previously demonstrated in the alcohol and marijuana literature, coping motivated use is associated with poor outcomes. This suggests that focusing prevention and intervention strategies on developing adaptive coping mechanisms may be an avenue to improve the mental health of young adults who use marijuana to cope. Furthermore, the findings also ascertain that gender specific interventions with regards to the social anxiety motive of use are also necessary.

Although these results generally replicate and extend our understanding of the associations between motives of marijuana use and symptoms of depression, symptoms of anxiety, and psychological distress there are, as with any research endeavor, a few limitations to this work that should not outweigh its strength.

Limitations and Strengths

Limitations. First, although targeted sampling and chain referral sampling are two recruitment methods that have proven to be successful to recruit hard to reach populations (Clatts, Davis, & Atillasoy, 1995; Lankenau, Sanders, Hathazi, & Bloom, 2010; Lankenau et al., 2012; Watters & Biernacki, 1989), they generate non-random samples and thus, our findings are not generalizable. We are also not able to evaluate the potential of sampling bias because there is no population-level data available on the target population. However, this is the first study to include a sizeable sample of young adults who use marijuana for medical reasons as well as detailed questions about their motives of use.

Second, there are limitations of reporting biases. Participants may have unwillingly, due to recall bias or to social desirability bias, underreported or misreported things such as motives of use, frequency of use, severity of dependence, mental health history, mental health symptoms, and other drugs used.

Third, a minimum sample size of 200 is usually recommended to obtain appropriate statistical power when employing confirmatory factor analysis (Crockett, 2012; Kline, 2016). Our sample included 240 men and 124 women. Although the male sample size was sufficient for our analyses, the female sample size was smaller than recommended. This may have led to Type 2 error in testing moderation.

Fourth, it is usually not recommended to run a confirmatory factor analysis on the same sample that was used to conduct an exploratory factor analysis. However, it was possible to replicate the findings from the confirmatory factor analysis using wave 2 data. This allowed the ability to demonstrate the stability of the factors generated using Wave 1 data.

Fifth, given the number of motives of use tested as independent variables, in concordance with the sample size, there are potential issues with Type I errors or false positive findings. As such, great care was taken to limit the number of additional variables to be entered in the model to minimize the number of comparisons being made as, in multiple linear regressions, the likelihood of Type I errors increases with the number of comparisons made. Thus, the more variables in a model, the more comparisons are made. Therefore, control variables were limited to age, sex, user group, and race/ethnicity. Furthermore, to assess significance of the multiple linear regression associations, a Bonferroni corrected p value of 0.003 was used. Although useful to reduce potential Type I errors, Bonferroni corrections are at times considered to be overly conservative. It is therefore possible, that in our attempt to prevent Type I error, Type II errors occurred and findings that should have been identified as significant were not.

Finally, with regards to limitations, this study is limited by the availability and appropriateness of the available variables. For instance, past 90 days marijuana use and daily number of hits were used to operationalize frequency of use. Although these two variables do give insight into how often an individual uses, it says little, if nothing about how incapacitated they are from this use. For instance, an individual may use once a day every day and be able to carry on with daily activities, versus someone who may only use forty-five out of ninety days, but uses heavily in these forty-five days to the point of not being able to carry on with daily activities. As such, a variable that would operationalize intoxication and/or use and interference with daily activities may be more appropriate to assess as a mediator for use.

In the same vein, strain and concentration of cannabis used were not available for these analyses. Given the difference in the composition of products available as well as the resulting intoxication (or lack of), there may be potential differences in associated mental health

outcomes. Hypothetically, the differences could be due to the presence and concentration of Δ^9 -tetrahydrocannabinol (THC), the psychoactive compound in cannabis as Cannabidiol (CBD), on the other hand is non-psychoactive. Understanding how different compounds are tied to mental health outcomes may be more relevant than understanding whether or how the user group plays a role in the associations between motives of marijuana use and mental health outcomes.

Strengths. Despite these limitations, the work presented in this dissertation advances the knowledge about the influence of motives of marijuana use on mental health outcomes in a sample of young adults who use marijuana for medical and/or recreational reasons. Of note, is the fact that the sample is composed of individuals residing in the Los Angeles Metro area. This is significant because marijuana, even if only for medical purposes, has been legal in California since 1996. This means that the participants in this sample may have less reservation and be less inclined to social desirability bias with regards to marijuana use than participants who might have not been recruited in an area with a long history of marijuana, in some form, being legal. This may also be true because part of the sample use for medical reasons and therefore feel their use is legitimate and not an illegal behavior.

Furthermore, the amended Comprehensive Marijuana Motives Questionnaire (Lee, Neighbors, Hendershot, & Grossbard, 2009) was validated and tested for measurement invariance both by gender and across time. This means that: 1) existing motives of use might be useful for studying recreational and medical marijuana use, although it is cautioned again that the sample is not representative; 2) attention, pain, nausea, substitution, and natural remedy can be used when studying medical motives of use; 3) this amended questionnaire and resulting motives are applicable to both men and women; and 4) motives of marijuana use are stable across time.

Finally, with regards to strengths, the outcomes of interest in this dissertation are symptoms of depression and symptoms of anxiety. Although this may seem less interesting or exciting to study than actual diagnoses of depression and anxiety, it provides both researchers and practitioners with valuable information that can help inform intervention efforts to reduce such distress and prevent reliance on the drug for future mood regulation (e.g., learning alternate coping strategies beyond using marijuana to address depressed or anxious mood). It also provides valuable, gender specific, information for pre-diagnosis intervention and what may exacerbate symptoms.

Contributions to the Literature

Although there is much that remains to be elucidated about motives of marijuana use and the associations between motives of marijuana use and mental health outcomes in young adults, results presented in this dissertation contribute to the literature by starting to close some of the literature gaps identified in the introduction of this dissertation.

Norms and attitudes around marijuana use are rapidly changing. What was an illegal behavior not so long ago, became a legal behavior for some approximately twenty-two years ago, and is now a legal behavior for all in some states and countries. With that said, although for some individuals marijuana use may be purely medical or purely recreational, for many, medical and recreational use of marijuana overlaps (Pacula et al., 2016). This study considers motives of marijuana use and associated mental health outcomes in a sample of young adults comprised of individuals who use marijuana exclusively for medical reasons, exclusively for recreational reasons or for both medical and recreational reasons, in a context with a longstanding history of legalized medical marijuana. It does so using an instrument that operationalizes marijuana motives of use to include both recreational as well as medical motives of use, which is a

departure from motives of use questionnaires found thus far in the literature. Moreover, a better understanding of the association between motives of use and symptoms of depression and motives of use and symptoms of anxiety might allow one to detangle the association between marijuana use and diagnoses of depression and anxiety, and provides an avenue ripe for intervention.

Finally, most of the work around marijuana use has not examined gender differences. But, as the gap in use prevalence between gender is decreasing and gender norms are changing, (Cooper & Craft, 2018; Hernandez-Avila et al., 2004), it is imperative to better understand how marijuana use affects women differently than men. This work confirms that gender matters when examining the association between marijuana use and mental health outcomes, and begins to lay the groundwork to better understand how motives of use may influence mental health outcomes differently for men and women.

Chapter 6

Conclusion & Future Directions

Taken together, the findings presented in this dissertation contribute to the literature on motives of marijuana use and associated outcomes by demonstrating that there is a differential effect of motives of marijuana use on symptoms of mental health in young adults of Los Angeles who use marijuana for medical and/or recreational reasons. Whereas marijuana use driven by a coping motive is significantly associated with increases in symptoms of depression, symptoms of anxiety, and overall psychological distress, marijuana use driven by other motives does not appear to be directly associated with these mental health outcomes. However, when considering frequency of marijuana use, it becomes apparent that motives of pain, conformity and attention also influence mental health outcomes. Finally, associations for some of the motives, namely social anxiety, play out differently based on gender.

These findings also have concrete implications for the development of interventions targeting marijuana use and mental health in young adults. Mainly, by targeting maladaptive coping practices. The findings also highlight the need for gender specific interventions as men and women engage in use differently, particularly in social settings.

Given the exploratory nature of this work, these findings set forth an avenue of research on motives of marijuana use and mental health outcomes in young adults who use marijuana for medical and/or recreational reasons. First and foremost, although beyond the purposes of this dissertation, these associations should be compared between user groups (medical users, recreational users, and those who use for both medical and recreational purposes), and looked at longitudinally. These findings should also be replicated using a larger, randomly selected sample. To address some of the previously mentioned limitations, work should be pursued

considering whether the strain of marijuana and concentration of cannabinoids (CBD) versus tetrahydrocannabinol (THC) used play a role in the association between motives of marijuana use and symptoms of depression, symptoms of anxiety, and psychological distress. Finally, more work should be done to better understand and capture motives of marijuana use at time of use in order to eliminate the recall bias and get a better understanding of the associations between motives of marijuana use and mental health outcomes.

As of January 2018, marijuana, in all its forms, is legal in California to over seventy five percent of its population. This comes after twenty-two years of medical marijuana being legal in California. Being only one of nine states to legalize all forms of marijuana, but being the more populous one, California has become the site of a large social experiment. The legalization of marijuana in all its forms, comes with little knowledge of what the social and health implications of what such an endeavor might be. In a context of legalized marijuana, there is an urgency to continue to detangle the associations between marijuana use and mental health in young adults to help ensure a successful transition to adulthood.

Tables and Figures

Tables and figures are organized by chapter. The first number refers to the chapter and subsequent numbers and letters refer to their sequence in their respective chapter.

Figure 2.1. Cooper's Motivational Model of Alcohol Use (1994)

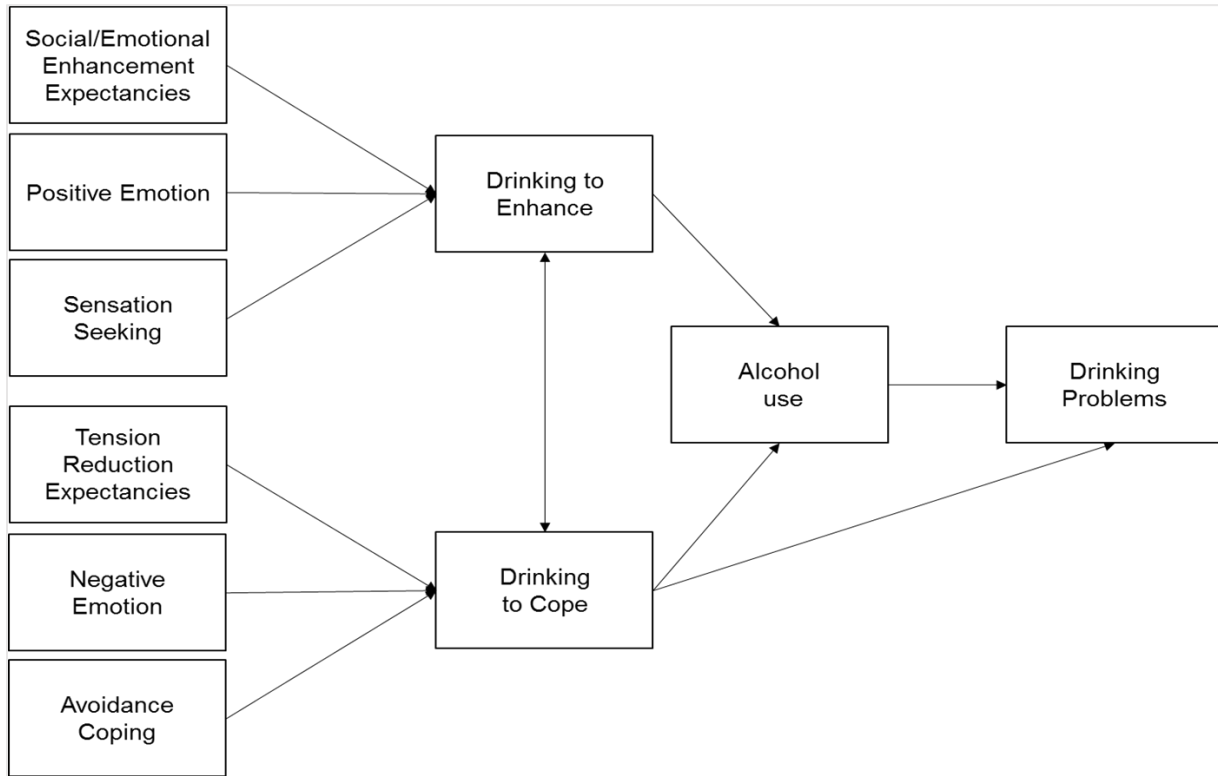


Figure 2.2. Seventeen Original Hypothesized Factors Model Tested with Confirmatory Factor Analysis.



Figure 2.3. Cooper's Model Adapted for the Study of Motives of Marijuana Use, Gender and Symptoms of Depression, Symptoms of Anxiety, and Overall Psychological Distress.

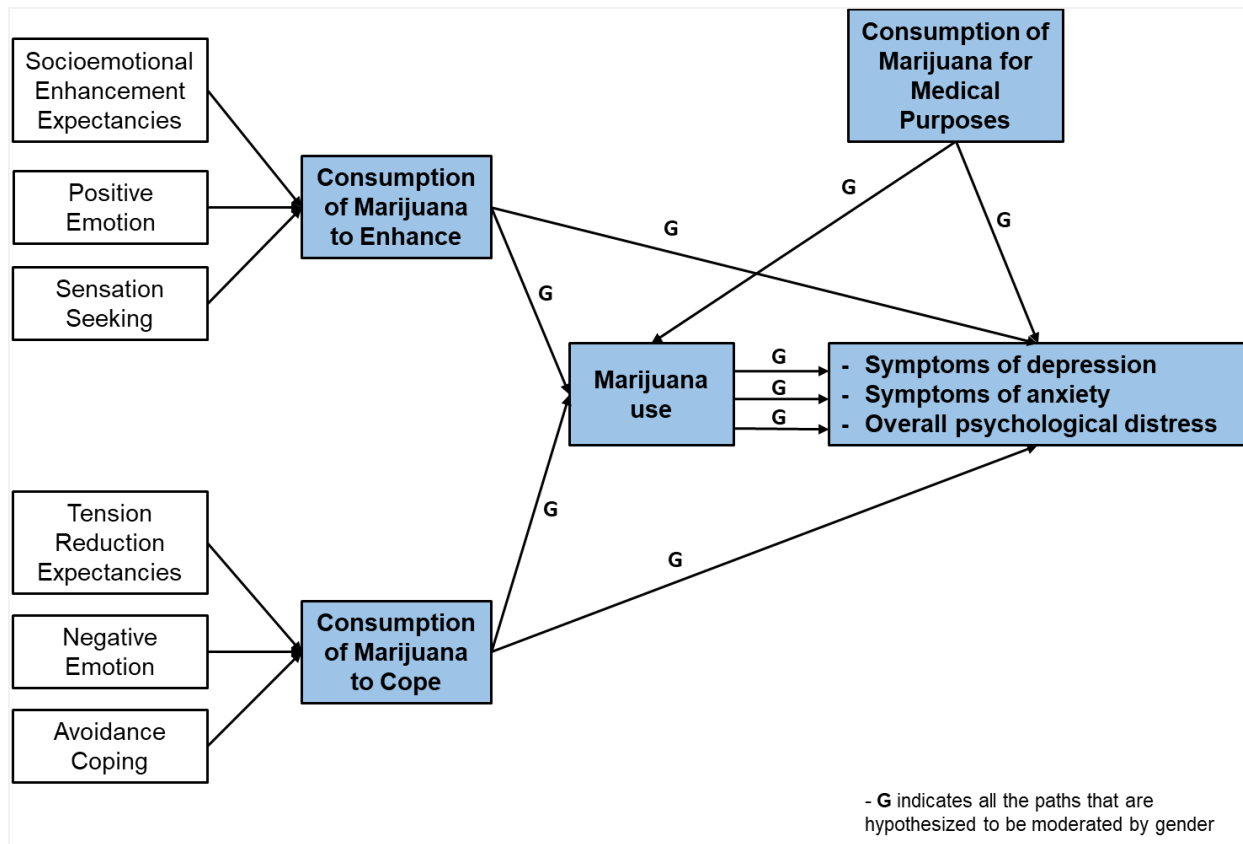


Table 3.1. Summary of Variables and Instruments

Variables	Instrument	Subscales (where applicable)	Question asked	Response scale	Nature
<i>Independent variable</i>					
Motives of use	Marijuana Motives Questionnaire (modified) (Lee et al., 2009)	Original subscales are: enjoyment, conformity, coping, experimentation, boredom, alcohol, celebration, altered perception, social anxiety, relative low risk, sleep/rest, and availability. Added subscales are: natural medicine, substitution, attention, nausea, pain	This is a list of reasons people sometimes give for using marijuana. Thinking of all the times you have used marijuana; how often would you say that you use for each of the following reasons?	1, Almost Never/Never 2, Some of the time 3, Half of the time 4, Most of the time 5, Almost Always/Always 88, Refuse to answer	Continuous
<i>Dependent variable</i>					
Mental Health (Symptoms of Depression, Symptoms of Anxiety, Overall Psychological Distress)	Brief Symptom Inventory-18 (Derogatis, 2000)	Depression, anxiety, somatization, Global Severity Index (GSI)	Here is a list of problems that people sometimes have. As you read each one, indicate how much that problem has distressed or bothered you during the past 7 days, including today. During the past 7 days, how much were you distressed by:	0, Not at all 1, A little bit 2, Moderately 3, Quite a bit 4, Extremely 88, Refuse to answer	Continuous
<i>Mediators</i>					
Past 90 days marijuana use	Recent drug use		How many days have you used marijuana in the past 90 days?	0 to 90	Continuous
Daily number of hits	Recent drug use		How many hits (pull off of a bowl, joint, bong, etc.) PER DAY did you typically do in the past 90 days?	1-100 More than 100 777, Don't know 888, Refuse to answer	Continuous
<i>Moderator</i>					
Gender (Aims 1&3)	Demographics		What is your internal gender identity?	1, Male 2, Female 3, Transgender, female to male 4, Transgender, male to female 5, Other 77, Don't know 88, Refuse to answer	Categorical
<i>Control variables</i>					
Gender (Aim 2)	Demographics		What is your internal gender identity?	1, Male 2, Female 3, Transgender, female to male 4, Transgender, male to female 5, Other 77, Don't know 88, Refuse to answer	Categorical

Table 3.1. Summary of Variables and Instruments (continued)

Variables	Instrument	Subscales (where applicable)	Question asked	Response scale	Nature
Ethnicity	Demographics		Do you consider yourself to be part of any of the following groups: Latino, Chicano, Mexican American, or Hispanic?	0, Hispanic or Latino 1, NOT Hispanic or Latino 2, Unknown / Not Reported	Categorical
Race	Demographics		What do you consider your primary racial or ethnic group?	0, American Indian/Alaska Native 1, Asian 2, Native Hawaiian or Other Pacific Islander 3, Black or African American 4, White 5, More Than One Race 6, Unknown / Not Reported	Categorical
Age	Demographics		Age	Years	Continuous
Patient/Non-Patient (Medical Marijuana Patient/Non-patient user)	Screeners		Have you ever had a doctor's recommendation for medical marijuana?/Do you have a current or valid doctor's recommendation for medical marijuana?	0, NMU 1, MMU	Categorical

Table 3.2. Brief Symptom Inventory-18 (Derogatis, 2000)

Here is a list of problems that people sometimes have. As you read each one, indicate how much that problem has distressed or bothered you during the past 7 days, including today. During the past 7 days, how much were you distressed by:	0 Not at all	1 A little bit	2 Moderately	3 Quite a bit	4 Extremely
Faintness or dizziness (S)					
Feeling no interest in things (D)					
Nervousness or shakiness inside (A)					
Pains in the heart or chest (S)					
Feeling lonely (D)					
Feeling tense or keyed up (A)					
Nausea or upset stomach (S)					
Feeling blue (D)					
Suddenly scared for no reason (A)					
Trouble getting your breath (S)					
Feelings of worthlessness (D)					
Spells of terror or panic (A)					
Numbness or tingling in parts of your body (S)					
Feeling hopeless about the future (D)					
Feeling so restless you couldn't sit still (A)					
Feeling weak in parts of your body (S)					
Thoughts of ending your life (D)					
Feeling fearful (A)					

Table 3.3. Amended Comprehensive Motives of Marijuana Use Questionnaire

<p>This is a list of reasons people sometimes give for using marijuana. Thinking of all the times you have used marijuana; how often would you say that you use for each of the following reasons?</p>	Never	Some of the time	Half of the time	Most of the time	Always
Because you were under the influence of alcohol					
Because it is readily available					
To relieve boredom					
Because it was a special day					
Because you felt peer pressure from others who do it					
Because you were depressed					
Because it is fun					
To be cool					
Because there are low health risks					
To allow you to think differently					
Because it is there					
Because you had nothing better to do					
To celebrate					
To forget your problems					
To enjoy the effects of it					
Because you were curious about marijuana					
Because you want to alter your perspective					
Because you can get it for free					
Because you wanted something to do					
Because you didn't want to be the only one not doing it					
To escape from your life					
To see what it felt like					
Because it is not a dangerous drug					
To help you sleep					
Because it was a special occasion					
Because you were experimenting					
Because it makes you more comfortable in an unfamiliar situation					
Because you had gotten drunk and weren't thinking about what you were doing					
Because it is safer than drinking alcohol					
Because you are having problems sleeping					
Because it relaxes you when you are in an insecure situation					
Because you were drunk					
So you can look at the world differently					
To feel good					
Because it helps make napping easier and enjoyable					
To make you feel more confident					
To make my headaches go away					
To replace cravings for alcohol or other drugs					
As a natural alternative to prescription or over-the-counter drugs					
So that I don't feel sick to my stomach					
To help me feel more alert					
To avoid the side effects of prescription drugs					
It makes me feel better than using alcohol or other drugs					
To lessen the intensity of my pain					
To help me keep food down when I'm sick					
So that I can concentrate better					
To use a more natural remedy for my health condition					
To keep me from vomiting					
To make me forget about using alcohol or other drugs					
To relieve aches and pains					
To keep me focused when I'm distracted					

Table 3.4. Descriptive Characteristics of the Sample (N=364)

	Mean or Percent	SD	Min	Max	Missing cases
Age (M)	21.25	2.47	18.00	26.00	0
Gender (%)					0
<i>Male</i>	66.20	-	-	-	
<i>Female</i>	33.80	-	-	-	
Race/Ethnicity (%)					6
<i>Non-Hispanic African American/Black</i>	19.00	-	-	-	
<i>Non-Hispanic White</i>	25.70	-	-	-	
<i>Non-Hispanic Multi-racial</i>	6.10	-	-	-	
<i>Non-Hispanic Asian Pacific Islander</i>	3.90	-	-	-	
<i>Hispanic/Latino</i>	45.30	-	-	-	
Past Year Annual Income (\$)					8
<i>0.00</i>	6.70	-	-	-	
<i>1-25000</i>	83.10	-	-	-	
<i>25001-50000</i>	9.60	-	-	-	
<i>50001-75000</i>	0.30	-	-	-	
<i>>100000</i>	0.30	-	-	-	
Employment Status (%)					0
<i>Currently employed</i>	52.70	-	-	-	
<i>Full-time</i>	35.40	-	-	-	
<i>Part-time</i>	64.60	-	-	-	
Highest Level of Education Completed (%)					1
<i>8th grade or lower</i>	0.60	-	-	-	
<i>9th grade</i>	0.60	-	-	-	
<i>10th grade</i>	1.70	-	-	-	
<i>High school or GED</i>	17.90	-	-	-	
<i>Some college</i>	57.30	-	-	-	
<i>Associates Degree</i>	6.30	-	-	-	
<i>Bachelor degree</i>	7.40	-	-	-	
Current Education (%)					0
<i>High school or GED</i>	8.20	-	-	-	
<i>College (four year or community)</i>	54.70	-	-	-	
<i>Graduate school</i>	0.80	-	-	-	
<i>Trade/Technical school</i>	5.50	-	-	-	
Ever Experienced (%)					0
<i>Chronic Pain or Discomfort</i>	55.50	-	-	-	
<i>Nausea</i>	34.10	-	-	-	

	Mean or Percent	SD	Min	Max	Missing cases
<i>Drug or Alcohol Dependence</i>	11.80	-	-	-	
<i>Insomnia</i>	79.70	-	-	-	
<i>Depression</i>	56.30	-	-	-	
<i>Anxiety</i>	64.00	-	-	-	
<i>ADD</i>	24.10	-	-	-	
Status (%)					0
<i>Patient</i>	57.70	-	-	-	
<i>Non Patient</i>	42.30	-	-	-	
Primary Form of Marijuana Used (past 90 days) (%)					0
<i>Buds/Flowers</i>	91.50	-	-	-	
<i>Concentrates</i>	7.10	-	-	-	
<i>Edibles</i>	1.40	-	-	-	
Primary Way Marijuana Used (past 90 days) (%)					0
<i>Pipe/Bowl</i>	31.32	-	-	-	
<i>Bong</i>	17.03	-	-	-	
<i>Vaporizer</i>	1.65	-	-	-	
<i>Joint</i>	10.44	-	-	-	
<i>Blunt</i>	29.40	-	-	-	
<i>Edible form</i>	1.37	-	-	-	
<i>Electronic vaporizer</i>	3.30	-	-	-	
<i>Other</i>	0.55	-	-	-	
<i>Skiff or Spliff</i>	1.37	-	-	-	
<i>Oil rig</i>	3.57	-	-	-	
Daily number of hits (M)	23.47	26.72	1.00	101.00	4
Past 90 Days Use (M)					
<i>Marijuana</i>	69.37	26.35	4.00	90.00	0
<i>Cigarettes</i>	38.17	35.93	1.00	90.00	0
<i>Electronic cigarettes</i>	16.51	24.89	1.00	90.00	0
<i>Alcohol to intoxication</i>	17.42	21.48	1.00	90.00	0
<i>LSD</i>	1.62	1.40	1.00	8.00	0
<i>Mushrooms</i>	1.81	1.00	1.00	4.00	0
<i>MDMA</i>	2.29	1.72	1.00	9.00	0
<i>Heroin²</i>	40.00	-	40.00	40.00	0
<i>Cocaine</i>	4.20	4.54	1.00	20.00	0
<i>Crack³</i>	1.00	-	1.00	1.00	0
<i>Methamphetamines</i>	5.80	8.11	1.00	20.00	0

² Heroin use was only reported by one participant

³ Use of crack was only reported by one participant

	Mean or Percent	SD	Min	Max	Missing cases
<i>Synthetic Cannabis</i>	5.18	8.42	1.00	30.00	0
<i>Salvia</i>	2.14	1.68	1.00	5.00	0
<i>Prescription opioids</i>	5.84	13.88	1.00	80.00	0
<i>Prescription tranquilizers</i>	3.52	3.79	1.00	15.00	0
<i>Marijuana with other drugs</i>	26.31	31.00	1.00	90.00	5
Motives of use (M)					
<i>Boredom</i>	2.42	1.20	1.00	5.00	3
<i>Availability</i>	2.79	1.14	1.00	5.00	3
<i>Celebrate</i>	3.07	1.17	1.00	5.00	3
<i>Coping</i>	2.26	1.14	1.00	5.00	1
<i>Altered Perceptions</i>	3.05	1.25	1.00	5.00	2
<i>Conformity</i>	1.33	0.64	1.00	5.00	2
<i>Sleep</i>	3.39	1.29	1.00	5.00	4
<i>Experimentation</i>	2.06	1.10	1.00	5.00	3
<i>Enjoyment</i>	3.72	1.06	1.00	5.00	2
<i>Alcohol</i>	1.71	0.86	1.00	5.00	1
<i>Attention</i>	2.52	1.30	1.00	5.00	1
<i>Substitution</i>	2.25	1.10	1.00	5.00	2
<i>Natural remedy</i>	2.74	1.36	1.00	5.00	3
<i>Pain</i>	3.03	1.34	1.00	5.00	3
<i>Nausea</i>	2.18	1.30	1.00	5.00	1
<i>Social Anxiety</i>	2.75	1.28	1.00	5.00	2
<i>Relative Low Risk</i>	3.14	1.26	1.00	5.00	4
Brief Symptoms Inventory-18 (M)					
<i>Symptoms of depression</i>	3.95	4.54	0.00	23.00	4
<i>Symptoms of anxiety</i>	3.26	3.74	0.00	24.00	4
<i>Somatization</i>	2.68	3.27	0.00	23.00	4
<i>Global Severity Index</i>	9.89	9.82	0.00	69.00	4

Figure 3.1. Fifteen Factor Model Derived from Exploratory Factor Analysis Tested with Confirmatory Factor Analysis.

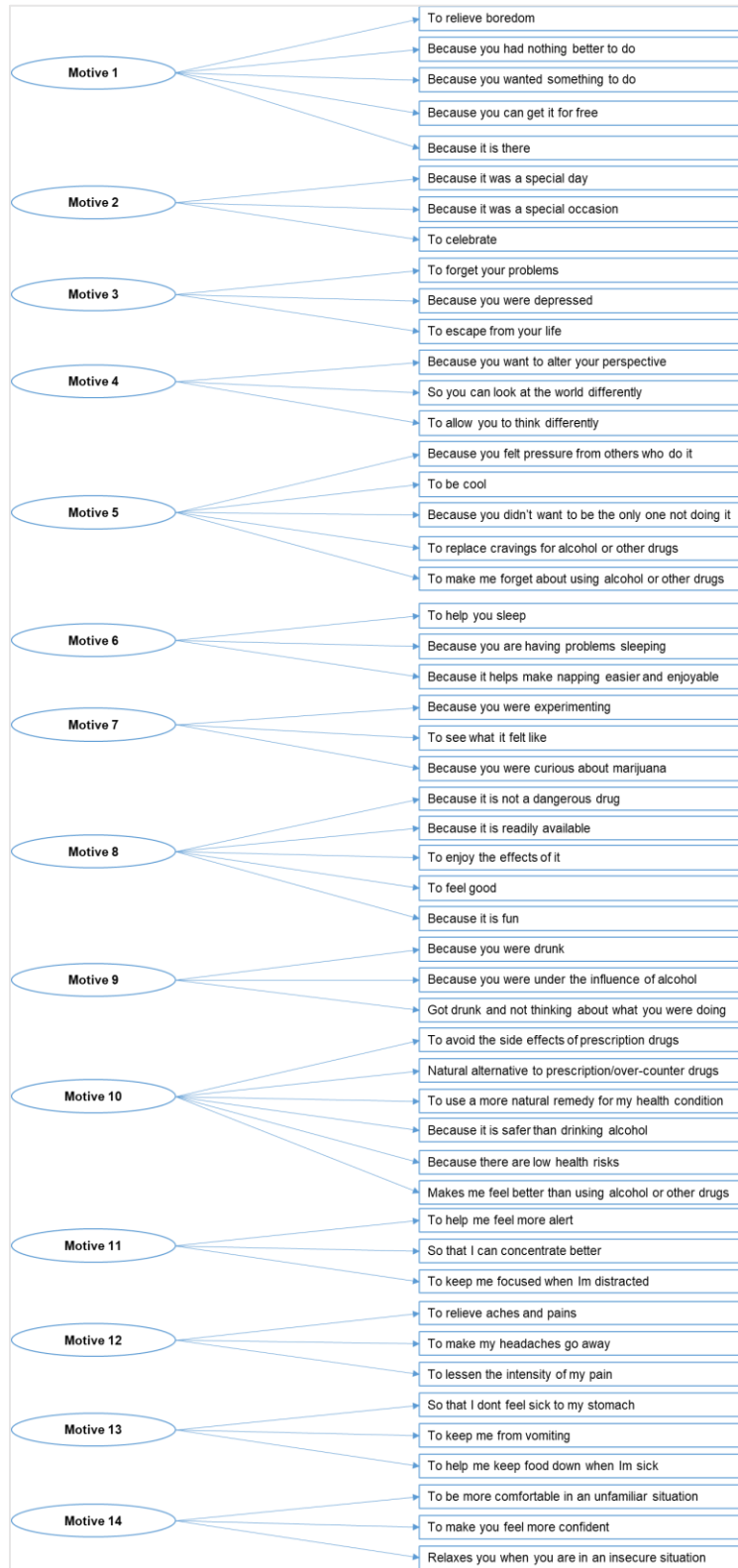


Figure 3.2. Sixteen Factor Model Derived from Exploratory Factor Analysis Tested with Confirmatory Factor Analysis.

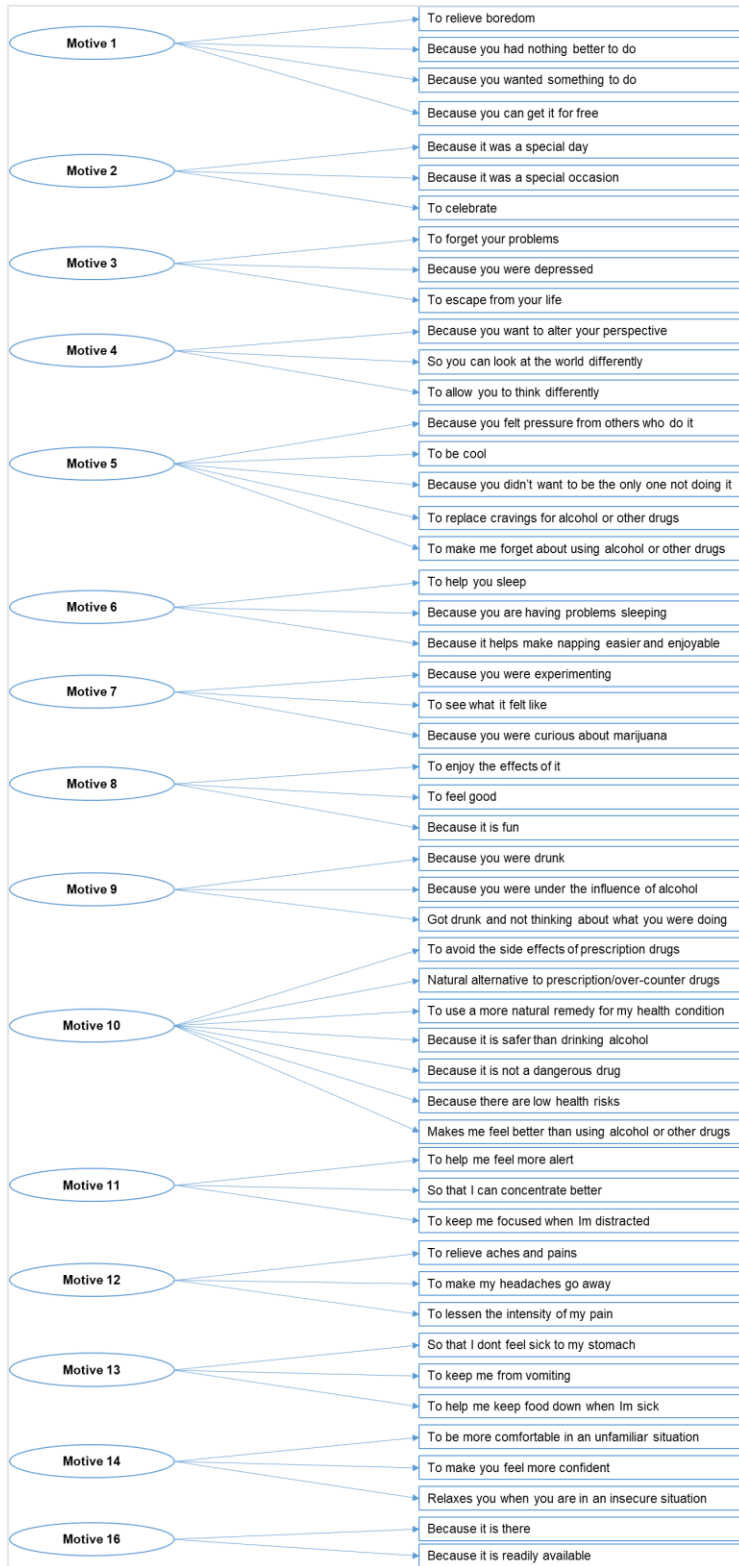


Figure 3.3. Seventeen Factor Model Derived from Exploratory Factor Analysis Tested with Confirmatory Factor Analysis.

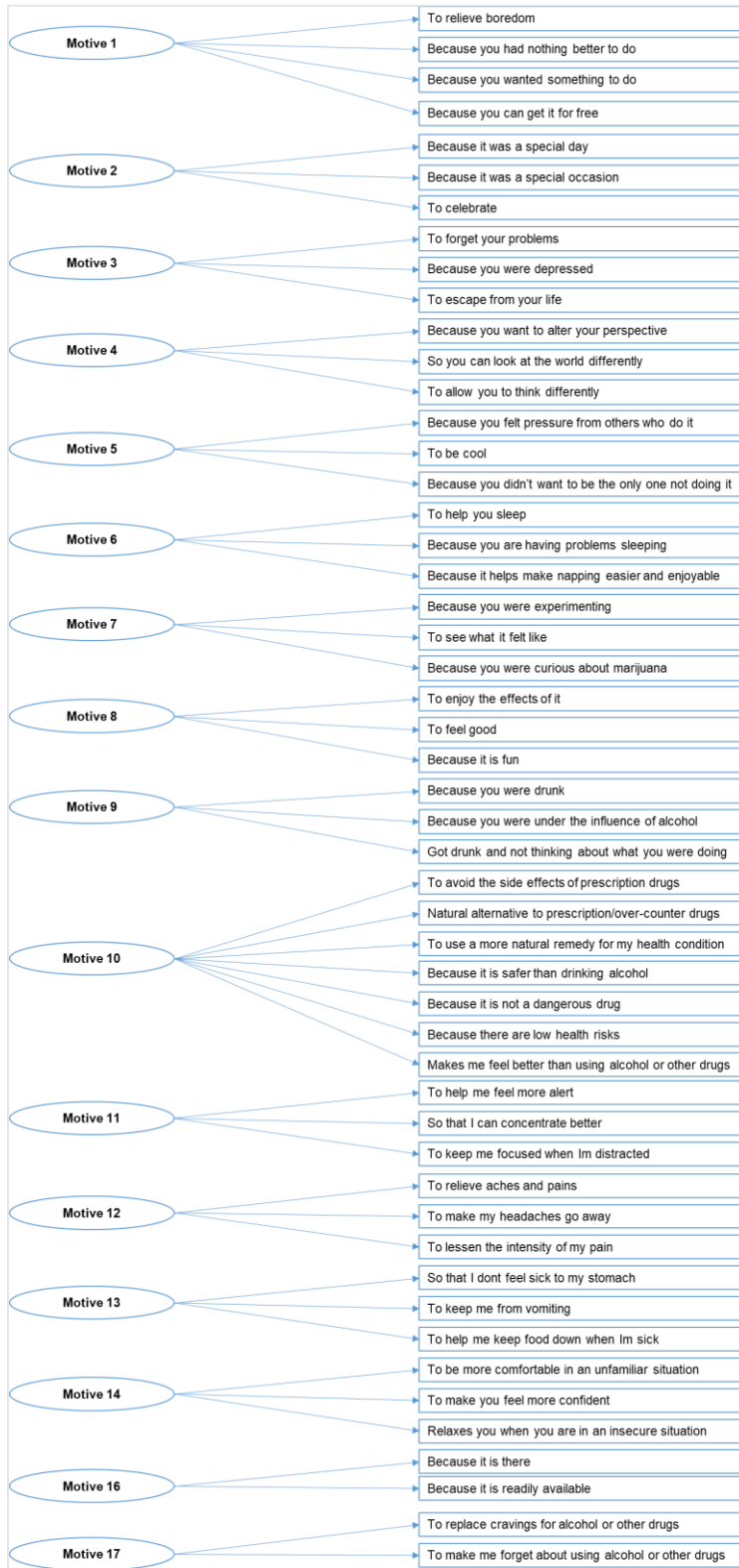


Figure 3.4. PROCESS Model 4, Conceptual and Statistical Model

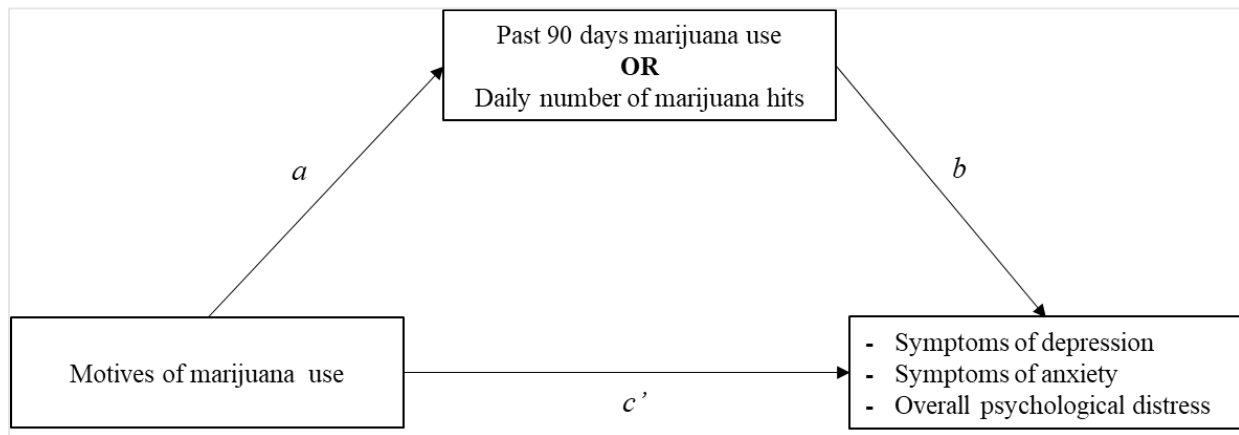
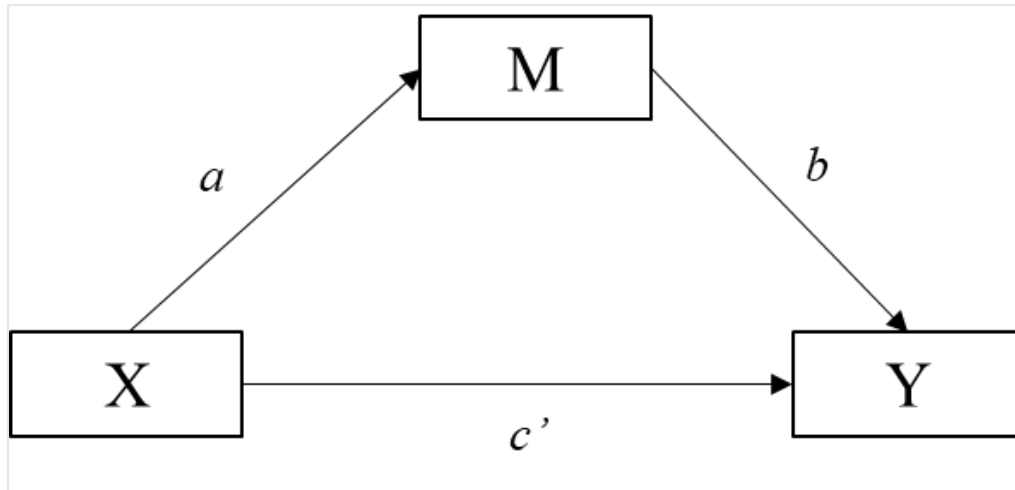


Figure 3.5. PROCESS Model 1, Conceptual and Statistical Model

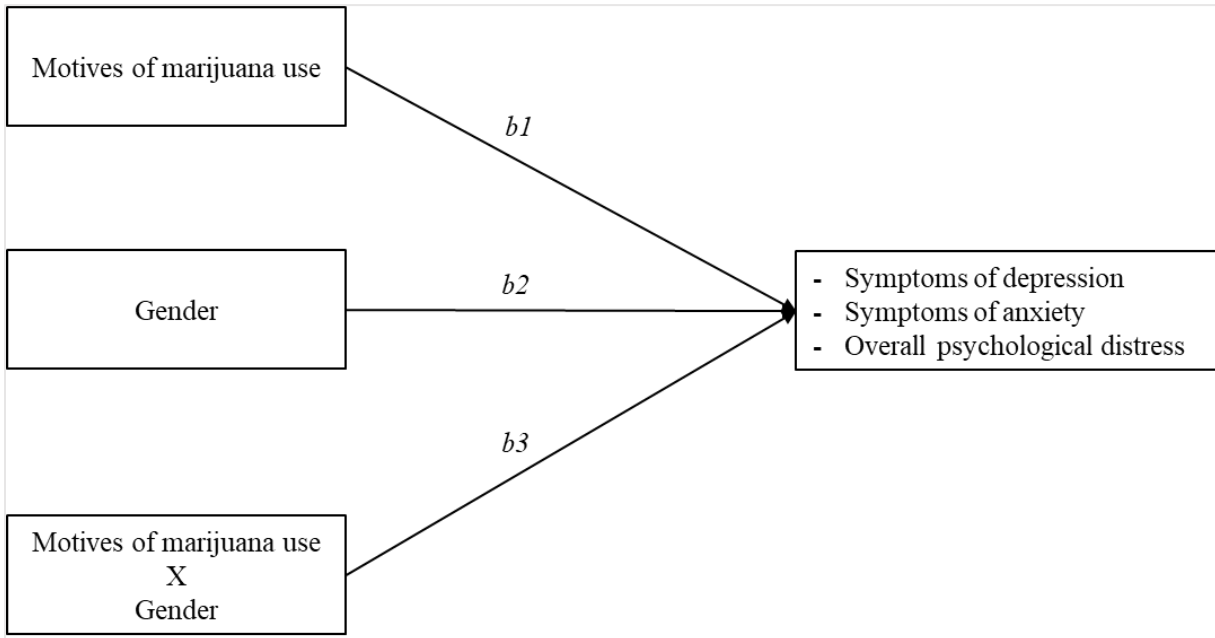


Figure 3.6. PROCESS Model 59, Conceptual and Statistical Model

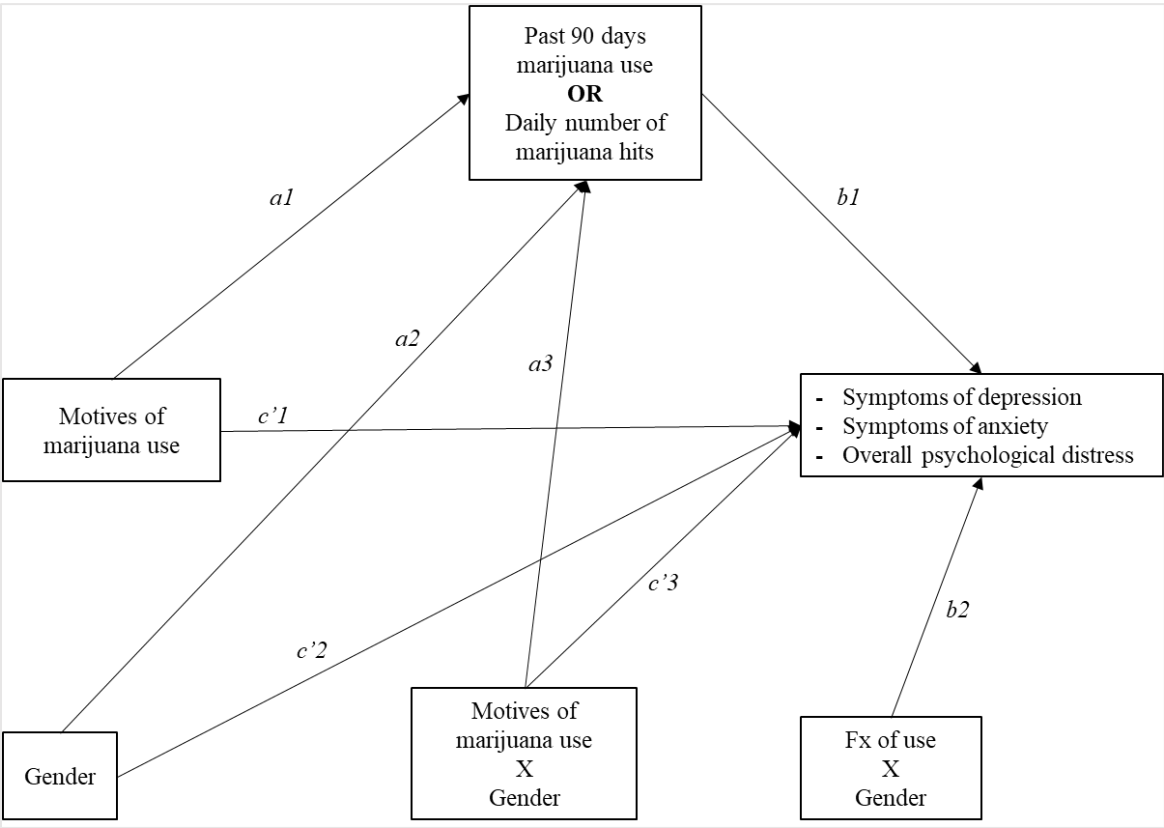


Figure 4.1. Mean Score of Reported Motives of Use (N=364)

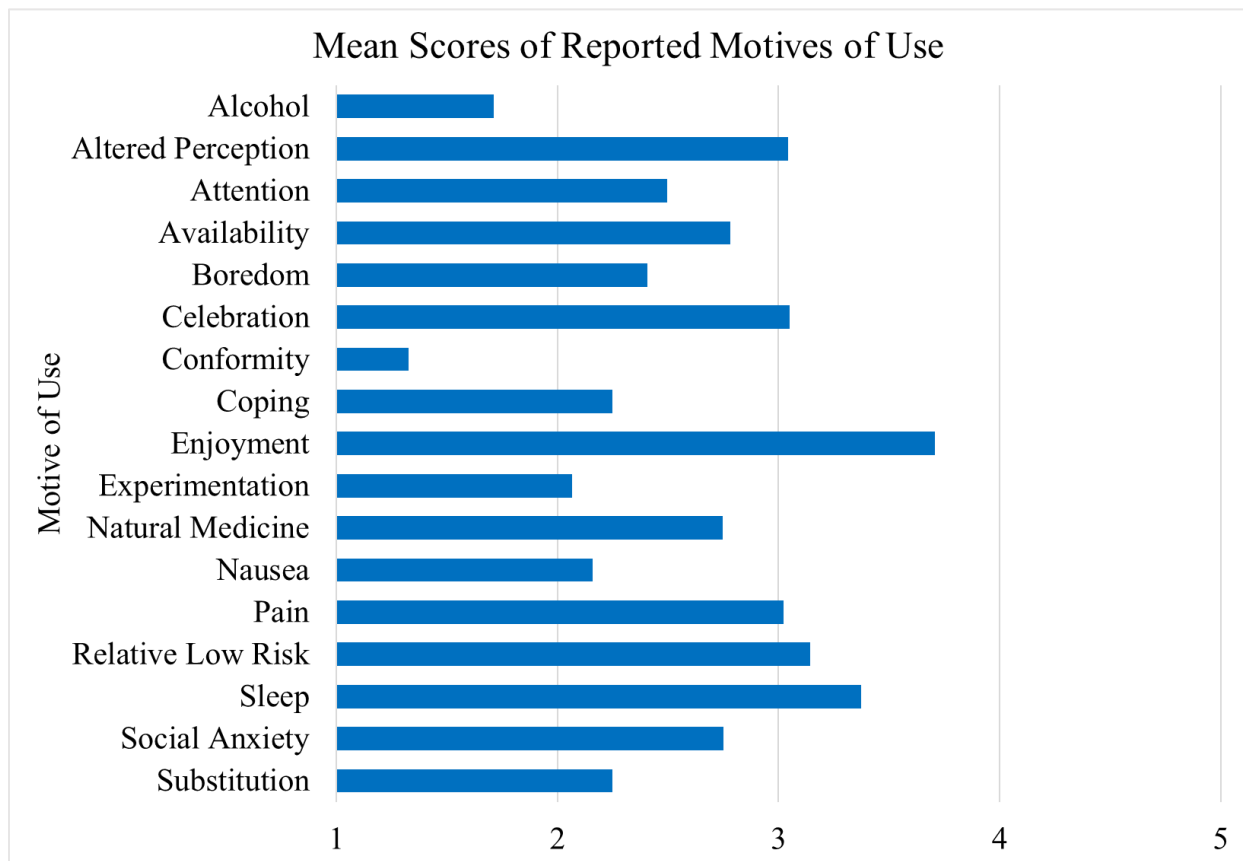


Figure 4.2. Mode of Reported Motives of Use (N=364)

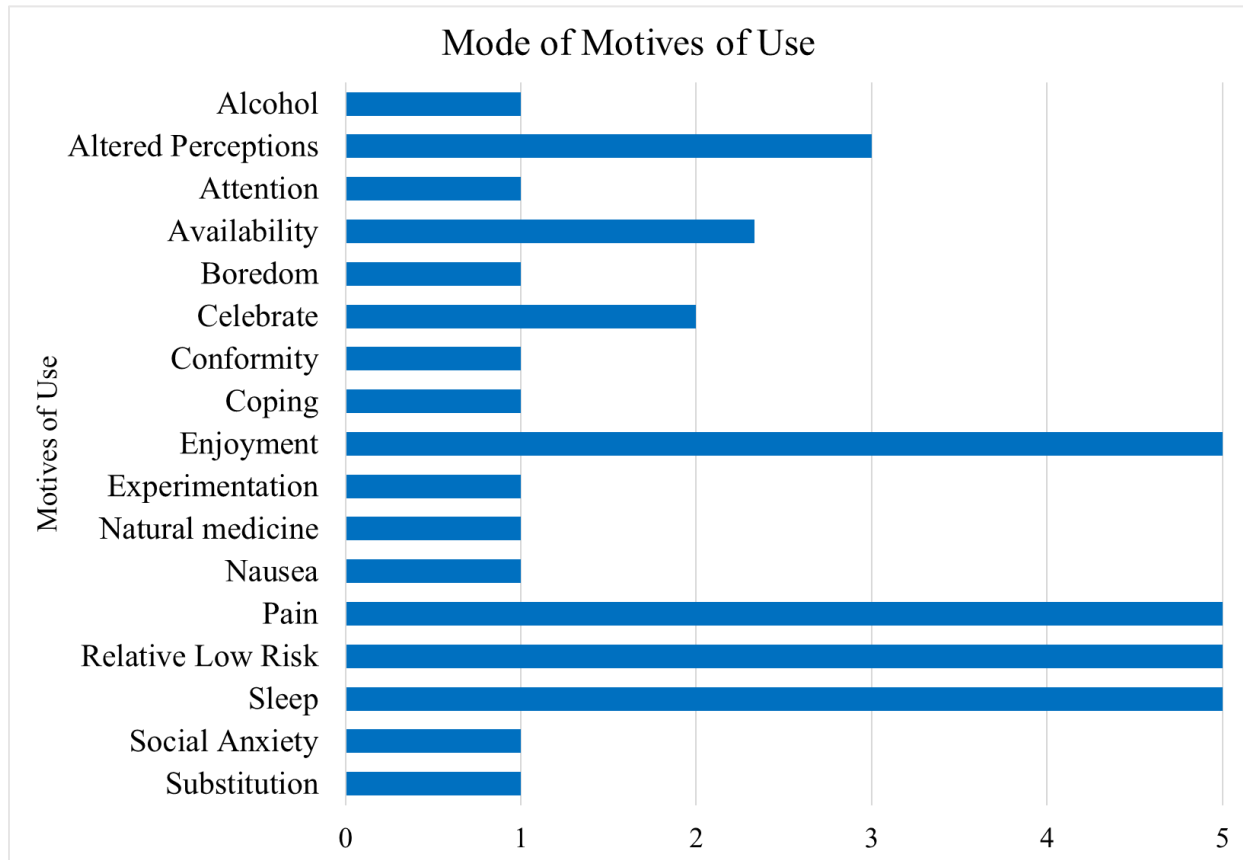


Figure 4.3. Mean Score of Reported Motives of Use by Gender (N=364)

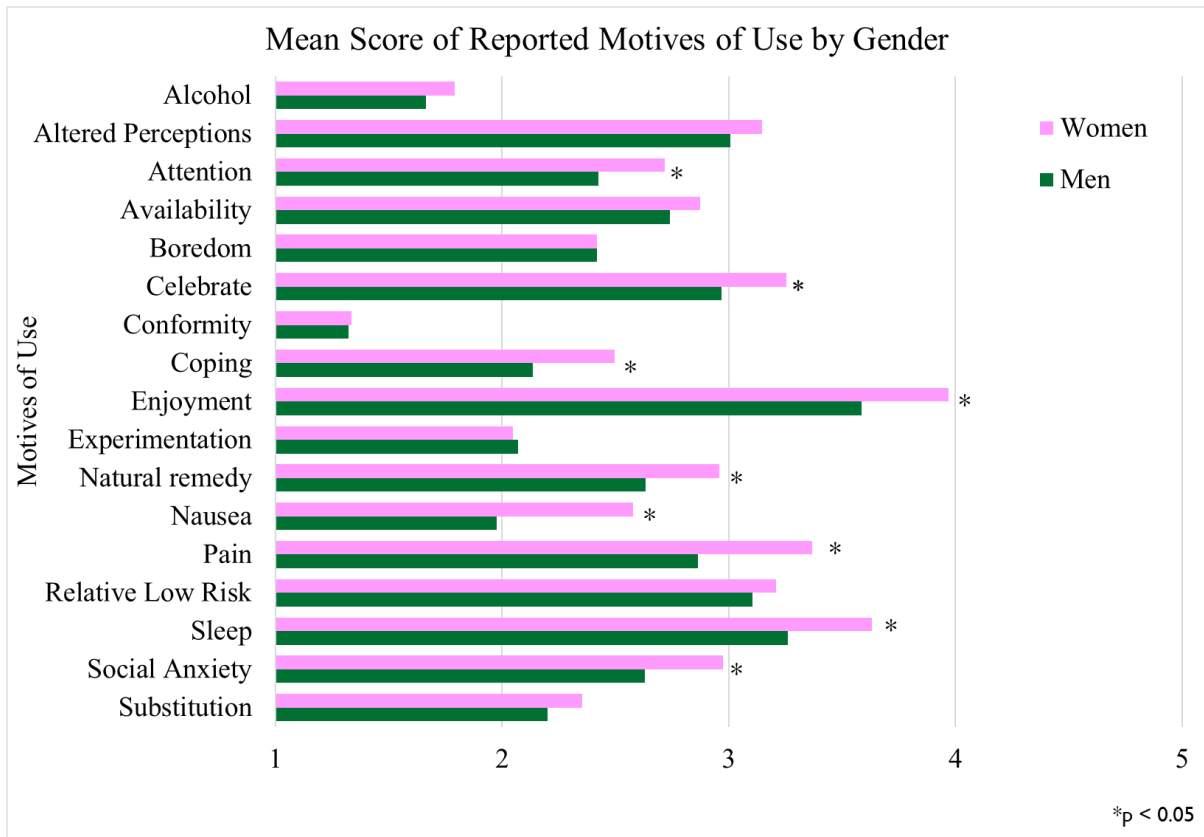


Figure 4.4. Brief Symptoms Inventory-18 Scores by Gender (N=364)

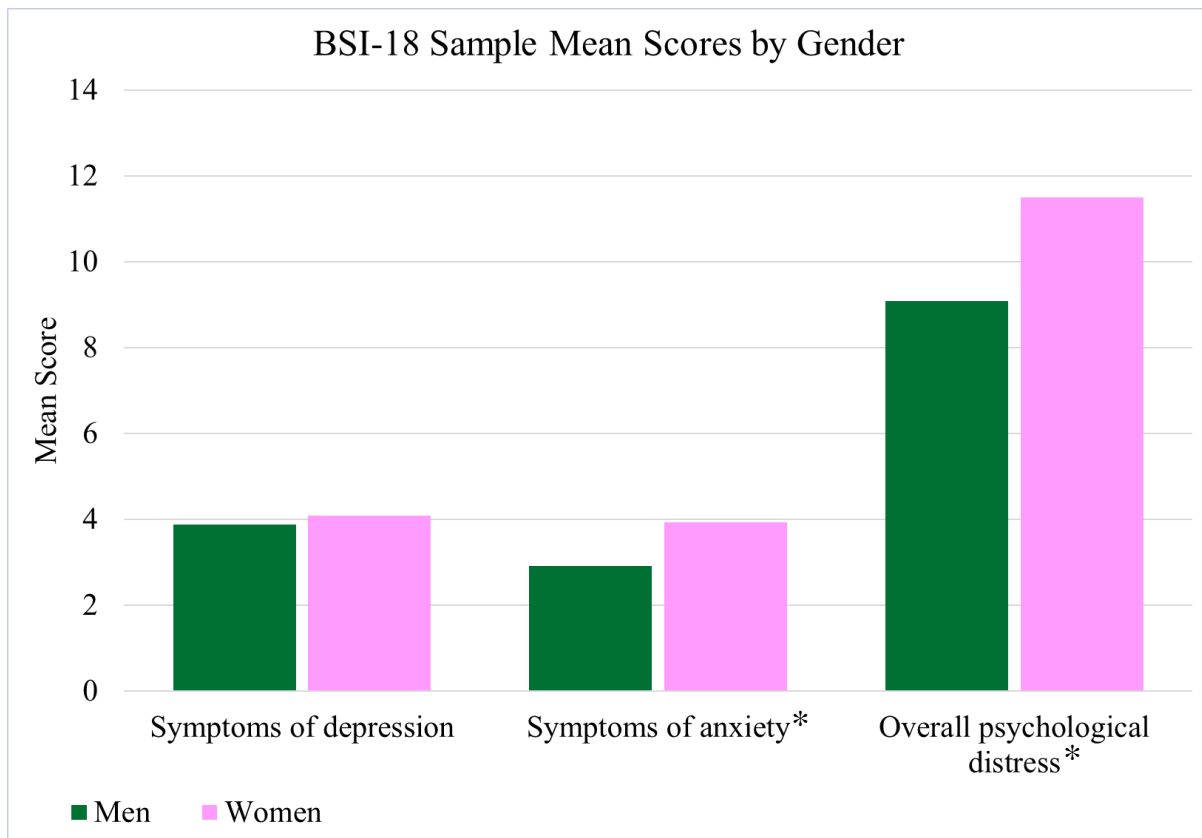


Table 4.1. Eigenvalues for Sample Correlation Matrix for Reasons of Use (N=364)

Factor	Eigenvalue	Factor	Eigenvalue
1	15.037	27	0.423
2	5.234	28	0.400
3	2.558	29	0.379
4	1.994	30	0.370
5	1.806	31	0.364
6	1.651	32	0.347
7	1.459	33	0.333
8	1.379	34	0.324
9	1.24	35	0.307
10	1.113	36	0.296
11	1.025	37	0.278
12	0.953	38	0.261
13	0.891	39	0.245
14	0.837	40	0.238
15	0.825	41	0.236
16	0.790	42	0.227
17	0.753	43	0.209
18	0.666	44	0.200
19	0.642	45	0.191
20	0.617	46	0.180
21	0.583	47	0.172
22	0.535	48	0.158
23	0.525	49	0.149
24	0.479	50	0.123
25	0.455	51	0.106
26	0.436	---	---

Figure 4.5. Exploratory Factor Analysis Scree Plot.

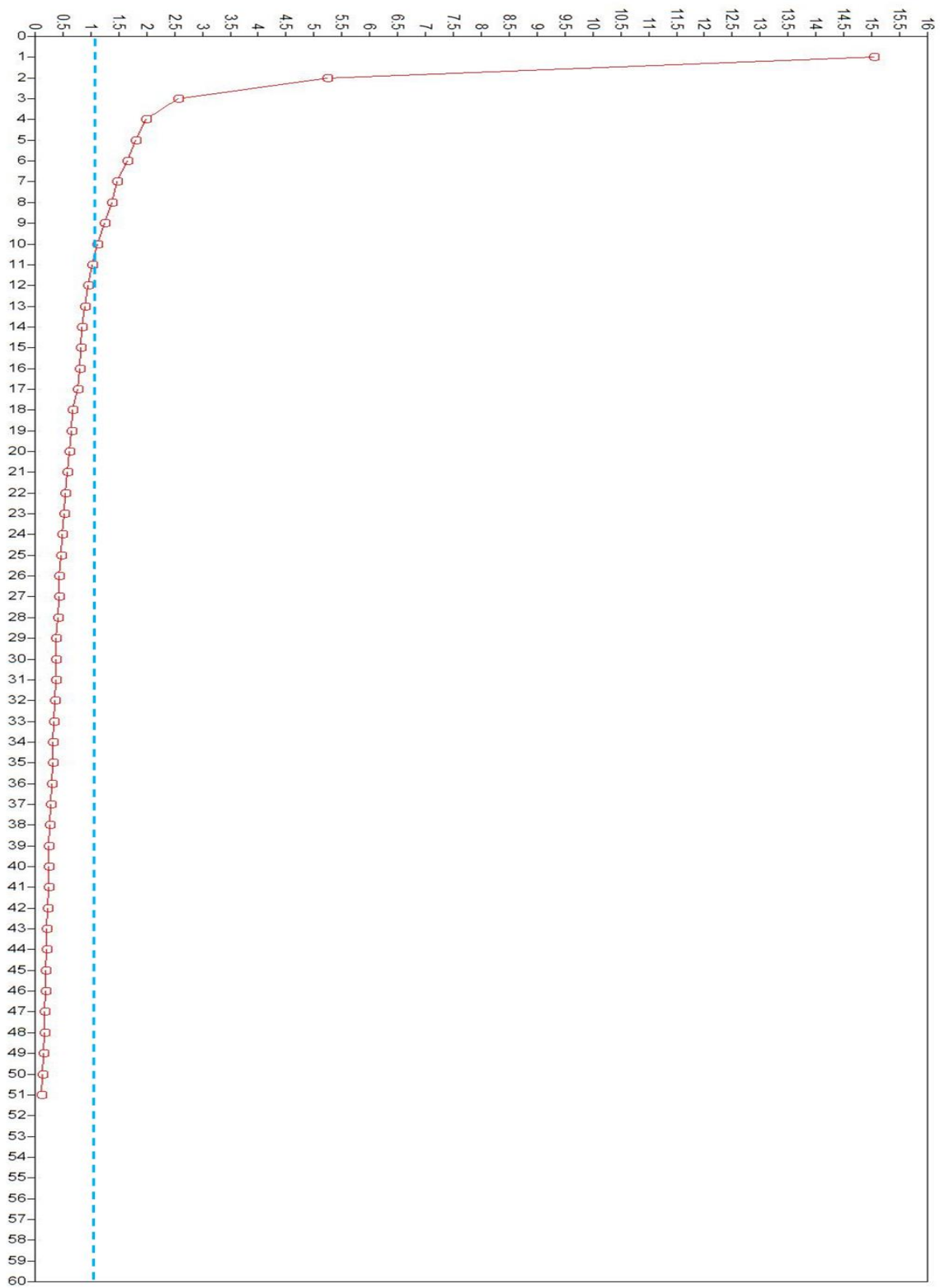


Table 4.2. Model Fit Indices from Exploratory Factor Analysis (N=364)

Number of Factors	Chi-square model fit ^a	P value of Chi-square model fit	CFI ^b	TLI ^c	RMSEA ^d	P value of RMSEA
1	6899.008	0.000	0.474	0.452	0.113	0.000
2	5078.192	0.000	0.638	0.607	0.095	0.000
3	4514.912	0.000	0.686	0.644	0.091	0.000
4	4031.201	0.000	0.726	0.676	0.087	0.000
5	3590.825	0.000	0.763	0.706	0.083	0.000
6	3110.304	0.000	0.803	0.745	0.077	0.000
7	2749.091	0.000	0.832	0.772	0.073	0.000
8	2416.314	0.000	0.859	0.799	0.068	0.000
9	2124.478	0.000	0.882	0.823	0.064	0.000
10	1876.220	0.000	0.901	0.844	0.060	0.000
11	1621.197	0.000	0.921	0.869	0.055	0.013
12	1430.622	0.000	0.935	0.886	0.051	0.282
13	1274.969	0.000	0.949	0.900	0.048	0.761
14	1142.274	0.000	0.955	0.911	0.045	0.960
15	1023.003	0.000	0.962	0.922	0.043	0.996
16	911.578	0.000	0.969	0.932	0.040	1.000
17	805.670	0.000	0.976	0.943	0.036	1.000

^a χ^2 value should be < 5 and its p value > 0.05 to indicate good fit (Hu & Bentler, 1999; Muthén & Muthén, 2008)

^b Considered great when ≥ 0.95 , acceptable at ≥ 0.90 , and sometimes permissible at 0.80 (Hu & Bentler, 1999; Muthén & Muthén, 2008)

^c Should be ≥ 0.95 (Muthén & Muthén, 2008)

^d A test of close fit should have values ≤ 0.05 to be considered as a good fit (Schermelleh-Engel, Moosbrugger, & Müller, 2003)

Table 4.3. Geomin Rotated Loadings from Exploratory Factor Analysis, 15 Factors (N=364)

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Available	-0.036	0.007	0.266*	-0.161*	0.086	0.018	-0.034	0.405*	0.124*	0.009	0.09	0.007	0.004	-0.083	0.14
Bored	-0.038	-0.002	0.551*	0.255*	0.046	0.009	0.140*	0.140*	-0.003	-0.049	0.028	0.022	-0.114	0.005	-0.059
Special day	-0.003	0.800*	0.054	0.008	0.013	-0.008	0.016	-0.043	0.033	-0.024	0.022	0.105	0.009	-0.079	0.013
Influence alcohol	-0.026	0.163*	0.06	-0.007	0.17	-0.087	0.071	0.065	0.512*	-0.156	0.03	-0.006	-0.023	0.037	0.056
Pressure others	-0.03	0.004	0.056	0.064	0.512*	0.106	-0.053	0.038	-0.003	0.068	-0.064	0.007	-0.1	0.008	0.116
Depressed	0.016	0.041	0.002	0.683*	0.02	-0.036	0.02	-0.09	0.023	0.03	0.17	-0.067	0.009	0.053	0.205*
Fun	0.083	0.248*	0.159*	0.016	-0.005	0.051	-0.062	0.451*	-0.002	-0.071	-0.01	-0.094	-0.093	0.121*	0.06
Cool	0.088	-0.009	0.221*	0.025	0.249*	0.085	-0.069	-0.058	0.008	0.016	0.001	0.021	0	-0.048	0.046
Low health risk	0.246*	-0.025	0.009	-0.11	0.153	0.109	0.042	0.201	-0.038	-0.102	0.382*	-0.084	0.069	-0.086	0.062
Think differently	0.947*	0.033	-0.026	0.006	0.054	-0.085	0.063	-0.02	0.002	-0.006	0.01	0.084	-0.015	-0.005	0.017
There	0.03	0.045	0.544*	-0.168*	0.121	-0.069	-0.051	0.280*	0.026	0.085	0.044	0.013	0.032	-0.063	0.093
Nothing to do	0.004	-0.02	0.779*	0.111	-0.015	0.097	0.038	-0.023	-0.023	0.001	-0.031	-0.014	-0.074	0.036	-0.002
Celebrate	0.021	0.787*	0.021	0.08	-0.08	0.041	-0.029	0.062	0.005	0.044	-0.02	-0.005	0.029	0	0.011
Forget	0.044	0.097	0.034	0.689*	0.044	0.006	-0.015	0.046	0.051	0.023	-0.014	0.043	0.065	-0.006	0.024

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Enjoy effect	0.012	0.177*	-0.005	0.038	-0.124	-0.024	-0.004	0.709*	-0.011	0.104	-0.005	-0.004	-0.015	0.038	-0.014
Curious	0.024	0.051	0.101	-0.048	-0.012	0.695*	-0.021	-0.055	0.003	0.09	0.059	0.009	0.002	0.013	0.156*
Altered perception	0.542*	-0.041	0.213*	0.091	-0.281*	0.206*	-0.051	0.047	-0.017	0.038	0.014	-0.032	0.031	0.07	0.004
Free	0.057	0.221*	0.402*	-0.016	0.041	0.018	-0.071	0.067	0.044	-0.103	-0.098	0.049	0.135*	0.051	0.029
Something to do	0.045	0.066	0.759*	0.025	-0.016	0.044	0.028	0.02	0.01	0.009	-0.006	-0.024	0.064	-0.037	-0.097
Not doing it	0.028	0	0.003	0.069	0.596*	0.163	-0.057	0.08	0.043	-0.035	-0.059	-0.038	0.022	0.048	-0.068
Escape	0.079	-0.071	0.018	0.642*	0.246*	0.053	0.004	0.047	-0.007	0.021	-0.016	0.031	0.079	-0.079	-0.022
Feltlike	-0.032	0.051	-0.026	0.044	0.022	0.795*	0.082	0.111	0.042	-0.044	0.049	0.007	-0.025	-0.023	-0.034
No danger	0.015	-0.088	0.004	0.029	0.082	0.188*	0.008	0.420*	0.028	-0.014	0.352*	0.043	0.034	-0.059	-0.123
Help sleep	0.065	0.028	-0.024	-0.018	0.063	0.001	0.920*	-0.009	-0.027	-0.034	0.027	0.001	-0.013	0.009	0.008
Special occasion	-0.004	0.772*	-0.031	-0.057	0.089	0.071	0.106*	0.034	-0.019	0.044	0.014	0.01	0.047	0.017	-0.052
Experiment	0.054	0.094	0.11	-0.009	0.094	0.622*	0.022	-0.024	-0.023	0.069	-0.044	0.011	0.028	0.09	-0.029
More comfortable	0.035	0.089	-0.023	0.059	0.032	0.098	-0.022	0.003	0.042	0.627*	0.093	0.043	-0.013	0.019	-0.017
Drunk not thinking	-0.013	-0.075	0.027	0.029	0.203*	0.09	0.005	-0.01	0.589*	0.063	0.04	0.008	0.001	0.023	0.011
Safer than alcohol	0.015	-0.012	0.076	0.026	-0.042	0.068	0.034	0.187*	-0.027	0.09	0.509*	0.078	-0.04	-0.005	-0.043

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Problem sleeping	0.01	-0.025	-0.004	0.042	-0.055	0.035	0.839*	-0.025	0.02	0.095	-0.001	-0.02	0.049	0.016	0.084
Relax insecure	-0.004	0.008	-0.027	0.035	0.058	0.004	0.079	0.129	-0.008	0.706*	0.08	0.047	0.054	-0.024	0.092
Drunk	0.036	0.016	-0.028	0.004	-0.034	0.006	-0.012	-0.002	1.002*	0.024	-0.09	-0.005	0.028	-0.016	-0.046
Word differently	0.481*	0.114*	0.044	0.04	-0.094	0.059	0.003	0.059	0.087*	0.109	0.11	0.1	-0.039	-0.022	-0.195*
Feel good	0.109*	0.064	0.029	0.023	-0.028	-0.041	0.109	0.578*	0.014	0.177	-0.017	0.002	0.003	0.064	-0.098
Napping	-0.03	0.006	0.191*	-0.002	-0.029	-0.007	0.595*	0.02	0.06	0.07	0.015	0.104	0.066	0.015	-0.118*
Feel confident	0.089	-0.092	0.1	-0.08	-0.017	0.07	0.117*	0.109	0.009	0.474*	-0.062	0.184*	0.065	0.079	-0.017
Headache	0.033	0.058	0.126	0.077	0.055	-0.094	0.127*	0.005	0.028	0.142	0.048	0.1	0.298*	0.121*	-0.061
Cravings	-0.041	0.021	0.13	0.069	0.377*	-0.055	0.044	-0.047	0.126*	0.228	0.221	-0.032	-0.016	0.035	-0.002
Natural	0.058	0.035	-0.013	-0.129	-0.016	-0.024	0.013	-0.026	0.041	0.173	0.685*	-0.125	0.059	0.121	0.015
Stomach	0.041	0.028	-0.031	0.021	0.178	-0.024	0.052	0.012	-0.035	0.089	0.001	0.023	0.152*	0.622*	-0.139
Alert	0.046	0.003	0.019	-0.042	0.13	-0.008	-0.077	-0.01	-0.037	0.023	0.127	0.631*	0.044	0.193*	-0.139
Side effect	0.076	-0.051	-0.106	-0.018	-0.023	0.075	-0.03	-0.024	0.127*	-0.112	0.532*	0.062	-0.003	0.328*	0.027
Feel better than other drugs	-0.024	0.052	0.06	0.134*	-0.021	-0.109	-0.009	0.155	-0.091	0.046	0.572*	0.063	0.035	0.03	-0.086
Help pain	-0.049	-0.008	0.044	0.068	-0.029	0.016	0.025	-0.034	-0.028	-0.031	0.086	0.035	0.825*	0.037	0.045

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Sick	-0.091*	-0.008	-0.018	0.086	-0.021	0.061	-0.004	0.065	0.009	0.044	0.011	0.148*	0.227*	0.588*	0.06
Concentrate	0.052	0.008	-0.01	0.023	-0.045	-0.025	0.022	0.029	0.01	-0.013	-0.014	0.953*	0.012	0.024	0.404*
Natural remedy	-0.01	0.013	-0.094	0.029	-0.018	0.01	0.117*	0.047	-0.047	0.032	0.383*	0.101	0.264*	0.149*	0.121*
Vomit	-0.018	-0.007	0.078	-0.044	0.009	-0.006	0.054	-0.02	0.043	-0.028	0.049	-0.018	0.009	0.845*	0.023
Forget other drugs	-0.013	0.074	0.084	0.048	0.309*	0.033	0.023	-0.044	0.036	0.165	0.177	0.125	-0.002	0.149*	-0.039
Aches	0.037	0.04	-0.014	-0.029	0.012	0.003	0.006	-0.007	0.05	0.027	0.002	-0.028	0.891*	0.004	-0.055
Focused	-0.027	0.047	-0.012	0.014	0.017	0.039	0.056	-0.059	0.009	0.06	0.022	0.824*	0.005	-0.015	0.01

*Significant at 5% level

Table 4.4. Geomin Rotated Loadings from Exploratory Factor Analysis, 16 Factors (N=364)

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Available	-0.045	-.007	0.183	-0.044	0.460*	0.275*	0.068	-0.013	0.062	0.092	0.042	0.015	-0.002	-0.054	-0.03	0.022
Bored	-0.029	-.005	0.533*	0.198*	-0.041	0.175*	-0.008	0.129*	0.018	0.004	-0.065	0.032	-0.091	-0.014	0	0.163
Special day	-0.004	.792*	0.034	-0.012	-0.002	-0.009	-0.004	0.019	-0.006	0.031	-0.039	0.134*	0.016	-.095*	-0.034	0.06
Influence alcohol	-0.03	.173*	0.028	0.032	0.137	0.027	-0.065	0.071	0.016	0.470*	-0.148	-0.002	-0.032	0.049	0.017	0.141
Pressure others	-0.046	0.014	0.021	0.199*	0.137	-0.027	0.179*	-0.059	-0.082	0.004	0.016	0.02	-0.113	0.018	0.082	0.307*
Depressed	-0.005	0.031	-0.008	0.711*	0.021	-0.078	-0.037	0.031	0.138	0.013	0.009	-0.042	0	0.073	-0.217	0.001
Fun	0.097	.238*	0.143	0.033	0.116	0.413*	0.054	-0.074	0.002	0	-0.084	-0.067	-0.084	0.113	-0.035	0.01
Cool	0.085	-.007	0.182*	0.071	0.045	-0.054	0.117	-0.071	-0.032	0.015	-0.032	0.047	0.006	-0.056	-0.001	0.225*
Low health risk	.247*	-.025	-0.017	-0.069	0.068	0.146	0.126	0.035	0.378*	-0.04	-0.18	-0.053	0.076	-0.091	-0.004	0.203
Think differently	.916*	0.032	-0.038	0.058	0.044	-0.024	-0.069	0.062	0.004	-0.003	-0.006	0.083	-0.024	-0.007	-0.004	0.078
There	0.011	0.042	0.494*	-0.024	0.556*	0.077	-0.026	-0.026	0.037	-0.007	0.175	-0.016	0.007	-0.017	0.039	-0.02
Nothing to do	0	-0.13	0.744*	0.075	0.052	-0.009	0.084	0.032	-0.038	-0.01	-0.006	0.001	-0.061	0.024	-0.086	0.091
Celebrate	0.018	.793*	0.037	0.074	-0.006	0.056	0.029	-0.031	0.009	0.01	0.063	-0.004	0.016	-0.001	-0.033	-0.102
Forget	0.032	0.087	0.055	0.688*	-0.058	0.076	0.002	-0.007	-0.003	0.05	0.04	0.039	0.055	0.005	-0.02	-0.023
Enjoy effect	0.034	0.134	-0.021	-0.015	-0.001	0.800*	-0.048	-0.017	-0.013	-0.003	0.077	0.031	0.017	0.013	-0.018	0.007

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Curious	0.031	0.043	0.061	-0.055	0.018	-0.023	0.703*	-0.021	0.022	-0.004	0.06	0.04	0.019	0.006	-0.238*	0.083
Altered perception	.568*	-.051	0.242*	0.001	-0.12	0.108	0.146	-0.066	0.018	-0.011	0.04	-0.025	0.055	0.049	-0.2	-0.074
Free	0.057	.247*	0.376*	0.029	0.145	-0.003	0.03	-0.078	-0.059	0.041	-0.069	0.024	0.116	0.066	0.032	-0.021
Something to do	0.053	0.086	0.735*	-0.012	0.014	0.012	0.027	0.019	0.01	0.021	0.021	-0.036	0.073	-0.046	0.017	0.08
Not doing it	0.006	0.012	-0.001	0.2	0.078	0	0.242*	-0.063	-0.049	0.048	-0.045	-0.046	0.004	0.053	0.272*	0.317*
Escape	0.072	-.077	0.023	0.687*	-0.016	0.039	0.072	0.011	-0.023	-0.021	0.047	0.01	0.066	-0.062	0.099	0.129
Feltlike	-0.025	0.054	-0.013	0.039	-0.048	0.108	0.784*	0.088	0.089	0.028	-0.022	-0.01	-0.029	-0.011	0.014	-0.017
No danger	0.008	-.086	0.028	0.069	0.046	0.321*	0.200*	0.012	0.436*	0.037	-0.014	0.026	0.02	-0.048	0.195*	-0.012
Help sleep	0.056	0.025	-0.023	0.002	0.026	-0.008	0.02	0.929*	0.011	-0.029	-0.036	-0.003	-0.015	0.019	-0.005	0.024
Special occasion	-0.011	.776*	-0.04	-0.034	0.016	0.021	0.089	0.110*	0.015	-0.025	0.064	0.007	0.033	0.019	0.088	0.03
Experiment	0.042	0.102	0.106	0.024	-0.011	-0.033	0.646*	0.03	-0.01	-0.02	0.075	0.004	0.016	0.1	0.037	0.002
More comfortable	0.034	0.092	-0.024	0.082	-0.069	-0.009	0.097	-0.014	0.089	0.042	0.608*	0.026	-0.023	0.018	-0.028	0.092
Drunk not thinking	-0.018	-0.05	0.015	0.072	0.041	-0.049	0.109	0.006	0.054	0.549*	0.059	-0.014	-0.011	0.038	0.048	0.163*
Safer than alcohol	0.005	0.01	0.136	0.029	-0.036	0.063	0.037	0.019	0.608*	-0.015	0.096	0.043	-0.06	-0.001	0.033	-0.039
Problem sleeping	0.007	-.027	0.012	0.028	-0.047	0.003	0.028	0.828*	-0.009	0.025	0.075	-0.012	0.055	0.016	-.148*	-0.009

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Relax insecure	-0.01	-.001	-0.059	0.107	0.09	0.093	0.025	0.096	0.04	-0.007	0.665*	0.063	0.044	-0.015	-0.098	0.098
Drunk	0.029	0.016	-0.014	-0.026	-0.039	0.031	-0.001	-0.014	-0.051	1.045*	0.018	0.003	0.035	-0.027	-0.022	-0.018
Word differently	.492*	.117*	0.097	0.002	-0.099	0.035	0.025	0.003	0.149*	0.074	0.171*	0.057	-0.047	-0.027	0.104	-0.033
Feel good	.137*	0.057	0.061	0.017	0.014	0.516*	-0.056	0.088	0.02	0.011	0.213	-0.018	0.004	0.054	0.088	0.009
Napping	-0.027	0.014	0.228*	-0.024	-0.021	-0.009	-0.02	0.589*	0.036	0.054	0.131	0.065	0.061	0.02	0.058	-0.036
Feel confident	0.099	-.078	0.097	-0.033	0.062	0.041	0.071	0.12	-0.045	-0.002	0.533*	0.123	0.042	0.1	0.026	-0.027
Headache	0.034	0.076	0.142	0.109	0.042	-0.07	-0.097	0.124*	0.071	0.023	0.21	0.046	0.276*	0.138*	0.093	-0.01
Cravings	-0.014	0.001	0.055	0.039	-0.025	-0.011	-0.058	0.025	0.07	0.082	0.204	-0.012	0.019	0	-0.021	0.638*
Natural	0.041	0.043	-0.018	-0.112	0.03	-0.103	-0.032	0.02	0.666*	0.032	0.158	-0.122	0.054	0.133	-0.066	0.056
Stomach	0.02	0.027	-0.024	0.063	-0.008	0.007	0.009	0.067	0.004	-0.029	0.115	0.021	0.126	0.630*	0.200*	0.032
Alert	0.034	-.006	0.044	-0.034	-0.011	-0.016	0.006	-0.063	0.139*	-0.023	0.05	0.617*	0.034	0.186*	0.207*	0.041
Side effect	0.061	-.057	-0.089	-0.018	0.037	-0.068	0.068	-0.017	0.526*	0.120*	-0.116	0.077	-0.005	0.342*	-0.044	-0.029
Feel better than other drugs	-0.03	0.063	0.131	0.109	-0.076	0.057	-.148*	-0.024	0.635*	-0.078	0.054	0.042	0.025	0.025	0.047	0.005
Help pain	-0.042	-0.01	0.042	0.05	-0.01	-0.016	0.007	0.018	0.063	-0.021	-0.04	0.049	0.843*	0.029	-0.059	0.008
Sick	-.086*	-.006	-0.009	0.063	-0.051	0.095	0.042	-0.009	0.016	0.008	0.039	0.154*	0.219*	0.588*	-0.033	-0.014

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Concentrate	0.071	0.02	-0.042	0.062	0.170*	0.003	-0.036	0.018	-0.009	-0.002	-0.013	0.883*	0.015	0.046	-0.195	-0.034
Natural remedy	-0.009	0.006	-0.088	0.025	0.013	0.03	-0.005	0.113*	0.354*	-0.05	0.003	0.126*	0.268*	0.152*	-.130*	0.04
Vomit	-0.012	-.003	0.057	-0.069	-0.013	0.012	-0.019	0.054	0.018	0.03	-0.02	-0.015	-0.001	0.861*	-0.011	0.04
Forget other drugs	0.02	0.042	0.02	-0.038	-0.141	0.066	0.02	0.001	0.027	0.01	0.112	0.170*	0.042	0.101	-0.004	0.618*
Aches	0.038	0.043	-0.022	-0.027	-0.003	0.006	0.008	0.01	-0.01	0.046	0.04	-0.017	0.876*	0.005	0.055	0.015
Focused	-0.033	0.027	0.015	-0.019	-0.048	-0.008	0.032	0.065	0.016	0.022	0.05	0.851*	0.004	-0.04	0.026	0.03

*Significant at 5% level

Table 4.5. Geomin Rotated Loadings from Exploratory Factor Analysis, 17 Factors (N=364)

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Available	-0.041	-0.006	0.173	.512*	0.005	-0.052	.235*	0.113	-0.029	0.021	0.08	0.038	0.018	-0.038	-0.001	0.03	0.029
Bored	-0.03	-0.009	.518*	0.003	.259*	-0.059	.153*	0.02	.105*	-0.005	0.002	-0.088	0.026	0	-0.095	.204*	-0.036
Special day	0.001	.792*	0.032	0.022	0.013	-0.088	-0.014	0.017	0.002	-0.021	0.027	-0.045	.121*	-0.079	0.014	0.125	0.019
Influence alcohol	-0.032	.173*	0.022	.153*	0.036	0.062	0.017	-0.059	0.061	0.015	.477*	-0.162	-0.001	0.057	-0.033	0.077	-0.012
Pressure others	-0.046	0.013	0.049	0.026	0.016	.631*	0.002	0.005	0	-0.017	0.013	0.039	0.028	-0.017	-0.107	0.047	0.051
Depressed	-0.004	0.032	-0.014	0.013	.731*	-0.034	-0.09	-0.022	0.017	0.125	0.009	0.007	-0.053	0.078	-0.007	0.01	.216*
Fun	0.099	.231*	0.151	0.095	0.013	0.07	.416*	0.039	-0.061	0.014	0.001	-0.074	-0.068	0.096	-0.08	-0.022	0.046
Cool	0.092	-0.008	0.215*	-0.024	-0.032	0.328*	-0.043	0.015	-0.043	0.01	0.026	-0.013	0.044	-0.079	0.014	0.076	0.073
Low health risk	0.262*	-0.026	0.002	0.097	-0.067	0.046	0.11	0.11	0.032	0.348*	-0.045	-0.173	-0.066	-0.083	0.075	0.165	0.021
Think differently	0.909*	0.034	-0.04	0.038	0.049	0.053	-0.017	-0.088	0.073	-0.011	-0.005	-0.007	0.093	-0.003	-0.023	0.022	-0.012
There	0.016	0.049	0.486*	0.553*	-0.014	0.042	0.05	-0.02	-0.03	0.024	-0.015	0.182	-0.008	-0.004	0.007	-0.047	-0.02
Nothing to do	-0.001	-0.012	0.740*	0.03	0.09	0.028	-0.008	0.069	0.03	-0.023	-0.006	-0.009	-0.002	0.019	-0.062	0.093	0.07
Celebrate	0.017	0.789*	0.038	-0.044	0.041	0.021	0.079	0.013	-0.019	0.035	0.013	0.073	-0.007	-0.009	0.016	-0.088	0.035
Forget	0.031	0.083	0.058	-0.067	0.683*	0.03	0.065	-0.004	-0.022	-0.015	0.049	0.046	0.033	0.007	0.053	-0.028	0.028
Enjoy effect	0.033	0.119	-0.02	0.002	-0.015	-0.032	0.809*	-0.03	0	-0.003	0	0.064	0.03	-0.002	0.019	0.038	0.005

Sick	-0.090*	-0.041	-0.036	0.072	0.034	0.014	0.046	-0.012	0.029	0.096	-0.028	0.134*	0.504*	0.029	-0.013
Help pain	-0.008	-0.01	0.06	-0.058	-0.006	0.027	0.04	0.003	0.077	-0.077	0.015	0.049	0.114*	0.015	-0.002
Feel better than other drugs	-0.006	0.04	0.117	-0.11	0.037	-0.02	-0.038	0.053	0.127	0.088	0.204*	0.054	0.066	-0.016	-0.058
Side effect	-0.083	-0.017	-0.103	0.055	0.001	-0.016	0.046	0.034	0.045	0.052	-0.017	0.014	-0.062	-0.038	0.078
Alert	0.048	0.051	0.078	-0.005	-0.026	0.045	-0.108	0.067	0.115	-0.037	-0.009	0.009	0.032	-0.032	0.095
Stomach	0.03	-0.011	0.044	-0.048	0.017	0.099	-0.047	0.118	0.01	0	-0.033	0.031	-0.073	-0.01	0.004
Natural	0.110*	-0.012	0.065	-0.076	-0.028	0.007	-0.099	-0.032	-0.069	0.049	-0.01	0.520*	0.032	0.039	0.095
Cravings	0.033	0.008	-0.161*	0.088	0.008	-0.015	-0.014	-0.061	-0.091	0.07	-0.009	-0.058	0.044	-0.003	0.023
Headache	-0.001	0.027	-0.004	-0.025	-0.077	0.061	0.032	0.015	0.137*	0.136*	0.599*	0.109*	0	-0.009	0.111
Feel confident	0.032	0.078	0.691*	0.499*	0.12	0.006	0.668*	0.069	0.078	-0.041	0.039	0.036	0.116	-0.05	0.05
Drunk	0.011	-0.02	-0.066	0.116*	-0.026	-0.03	0.036	0.092	0.024	0	0.056	0.015	0.071	1.052*	-0.006
Word differently	0.043	-0.038	0.03	-0.12	0.048	0.117	0.128	0.125	0.190*	0.507*	0.104	0.190*	0.15	0.013	0.636*
Feel good	0.151*	0.046	0.042	0.073	0.614*	0.023	-0.121	-0.021	0.053	0.133*	0.071	-0.012	0.061	0.002	0.059
Relax insecure	0.570*	0.023	0.005	0.343*	0.196*	0.618*	0.132	0.027	0.142*	0.104	0.021	0.045	-0.013	-0.033	-0.014
Help pain	0.221*	0.834*	0.02	-0.002	0.039	0.134*	0.055	0.013	0.269*	0.04	0.055	0.001	-0.048	0.034	0.042
Side effect	-0.01	0.014	-0.011	-0.01	0.051	0.004	0.074	0.573*	-0.016	0.003	-0.008	0.006	0.015	-0.035	0.137
Stomach	0.057	0.057	-0.056	0.032	-0.186*	-0.164*	0.04	0	-0.099	-0.039	-0.079	-0.105	-0.162*	0.01	0.098

Concentrate	0.069	-0.006	0.003	-0.035	0.107	0.041	0	0.013	-0.036	0.031	0.005	0	-0.006	0.887*	0.041	0.013	-0.048	0.236*
Natural remedy	-0.007	0.031	0.041	0.011	0	-0.035	-0.075	0.013	0.003	0.133*	0.379*	-0.045	-0.009	0.122*	0.139*	0.266*	0.021	0.138*
Vomit	0.039	0.031	0.041	0.011	-0.069	0.009	0.032	0.047	0.031	-0.029	-0.007	0.009	0.035	0.152*	0.133	0.038	0.660*	-0.022
Forget other drugs	0.039	0.042	-0.021	0.018	-0.013	-0.033	0.003	0.018	0.013	-0.017	0.044	0.039	-0.019	0.009	0.870*	0.03	0.051	-0.058
Aches	-0.033	0.027	0.009	-0.061	-0.015	-0.016	-0.009	0.038	0.064	0.012	0.023	0.042	0.843*	-0.033	0.006	0.051	-0.016	
Focused	0.039	0.042	-0.021	0.018	-0.013	-0.033	0.003	0.018	0.013	-0.017	0.044	0.039	-0.019	0.009	0.870*	0.03	0.051	-0.058

*Significant at 5% level

Table 4.6. Model Fit Indices from Confirmatory Factor Analyses

Models	WAVE 1 (n=364)					WAVE 2 (n=339)				
	χ^2 ^a	χ^2 , P value	CFI ^b	TLI ^c	RMSEA ^d	χ^2 ^a	χ^2 , P value	CFI ^b	TLI ^c	RMSEA ^d
Model 15	3022.286	0.000	0.902	0.890	0.068	---	---	---	---	---
Model 16	2916.762	0.000	0.907	0.894	0.066	---	---	---	---	---
Model 17	2485.133	0.000	0.929	0.918	0.059	---	---	---	---	---
17 original hypothesized	2234.350	0.000	0.941	0.931	0.054	1965.710	0.000	0.946	0.936	0.049
Medical Items	384.334	0.000	0.969	0.959	0.102	293.070	0.000	0.977	0.969	0.089
Comprehensive Marijuana Motive Questionnaire Items	1146.771	0.000	0.953	0.944	0.057	1100.533	0.000	0.948	0.938	0.057

^a χ^2 value should be < 5 and its p value >0.05 to indicate good fit (Hu & Bentler, 1999; Muthén & Muthén, 2008)

^b Great when ≥ 0.95 , acceptable at ≥ 0.90 , and sometimes permissible at 0.80 (Hu & Bentler, 1999; Muthén & Muthén, 2008)

^c Should be ≥ 0.95 (Muthén & Muthén, 2008)

^d A test of close fit should have values ≤ 0.05 to be considered as a good fit (Schermelleh-Engel, Moosbrugger, & Müller, 2003)

Table 4.7. Confirmatory Factor Analysis, 15 Factors, Unstandardized and Standardized Parameter Estimates (N=364)

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Motive 1						
Nothing to do	1.000	0.000	999.000	0.813	0.026	0.000
Bored	0.970	0.045	0.000	0.789	0.027	0.000
Something to do	1.108	0.045	0.000	0.901	0.019	0.000
Free	0.818	0.054	0.000	0.665	0.039	0.000
There	0.963	0.045	0.000	0.783	0.029	0.000
Motive 2						
Celebrate	1.000	0.000	999.000	0.885	0.02	0.000
Special day	0.926	0.034	0.000	0.819	0.024	0.000
Special occasion	1.040	0.034	0.000	0.92	0.018	0.000
Motive 3						
Forget	1.000	0.000	999.000	0.905	0.031	0.000
Depressed	0.761	0.062	0.000	0.688	0.047	0.000
Escape	0.907	0.054	0.000	0.82	0.034	0.000
Motive 4						
Altered perception	1.000	0.000	999.000	0.771	0.033	0.000
Think differently	1.091	0.061	0.000	0.841	0.026	0.000
Word differently	1.187	0.065	0.000	0.915	0.026	0.000
Motive 5						
Pressure others	1.000	0.000	999.000	0.528	0.081	0.000
Not doing it	1.172	0.158	0.000	0.619	0.06	0.000
Cool	0.886	0.182	0.000	0.468	0.081	0.000
Cravings	1.557	0.249	0.000	0.823	0.033	0.000
Forget other drugs	1.826	0.300	0.000	0.965	0.035	0.000
Motive 6						
Napping	1.000	0.000	999.000	0.906	0.023	0.000
Help sleep	0.999	0.032	0.000	0.904	0.018	0.000
Problem sleeping	1.038	0.035	0.000	0.94	0.017	0.000
Motive 7						
Experiment	1.000	0.000	999.000	0.911	0.028	0.000
Curious	0.881	0.048	0.000	0.803	0.033	0.000
Feltlike	0.925	0.048	0.000	0.843	0.03	0.000
Motive 8						
Enjoy effect	1.000	0.000	999.000	0.776	0.03	0.000
Fun	0.848	0.053	0.000	0.657	0.035	0.000
Feel good	1.107	0.054	0.000	0.859	0.026	0.000
No danger	0.982	0.061	0.000	0.762	0.037	0.000

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Available	0.702	0.058	0.000	0.545	0.041	0.000
Motive 9						
Drunk	1.000	0.000	999.000	0.836	0.035	0.000
Influence alcohol	0.891	0.059	0.000	0.746	0.041	0.000
Drunk not thinking	1.136	0.082	0.000	0.95	0.039	0.000
Motive 10						
Side effect	1.000	0.000	999.000	0.68	0.036	0.000
Natural remedy	1.259	0.072	0.000	0.856	0.026	0.000
Natural	1.146	0.066	0.000	0.779	0.03	0.000
Feel better than other drugs	1.146	0.076	0.000	0.779	0.031	0.000
Safer than alcohol	1.142	0.084	0.000	0.777	0.035	0.000
Low health risk	0.781	0.081	0.000	0.531	0.048	0.000
Motive 11						
Alert	1.000	0.000	999.000	0.93	0.019	0.000
Concentrate	0.974	0.028	0.000	0.905	0.019	0.000
Focused	0.985	0.028	0.000	0.916	0.017	0.000
Motive 12						
Aches	1.000	0.000	999.000	0.909	0.017	0.000
Headache	0.986	0.036	0.000	0.896	0.027	0.000
Help pain	0.995	0.032	0.000	0.905	0.018	0.000
Motive 13						
Stomach	1.000	0.000	999.000	0.908	0.02	0.000
Vomit	0.900	0.034	0.000	0.817	0.027	0.000
Sick	1.020	0.031	0.000	0.926	0.018	0.000
Motive 14						
More comfortable	1.000	0.000	999.000	0.832	0.022	0.000
Relax insecure	1.071	0.038	0.000	0.891	0.02	0.000
Feel confident	0.969	0.038	0.000	0.806	0.025	0.000

Table 4.8. Confirmatory Factor Analysis, Wave 1, 15 Factors, Unstandardized and Standardized Covariances (N=364)

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	--	0.619	0.553	0.546	0.643	0.212	0.596	0.816	0.485	0.298	0.223	0.27	0.238	0.453
2	0.445	--	0.419	0.504	0.476	0.341	0.492	0.648	0.394	0.369	0.438	0.448	0.349	0.548
3	0.407	0.335	--	0.496	0.612	0.372	0.364	0.463	0.366	0.364	0.378	0.475	0.44	0.575
4	0.342	0.344	0.346	--	0.411	0.374	0.543	0.702	0.253	0.583	0.523	0.412	0.358	0.654
5	0.276	0.223	0.292	0.167	--	0.375	0.585	0.502	0.601	0.477	0.421	0.453	0.521	0.618
6	0.156	0.273	0.305	0.261	0.179	--	0.258	0.306	0.231	0.615	0.519	0.644	0.624	0.668
7	0.441	0.397	0.300	0.382	0.282	0.213	--	0.532	0.37	0.409	0.269	0.266	0.321	0.5
8	0.514	0.445	0.325	0.420	0.206	0.215	0.376	--	0.364	0.605	0.347	0.359	0.335	0.62
9	0.330	0.292	0.277	0.163	0.266	0.175	0.282	0.236	--	0.191	<u>0.123</u>	0.199	0.268	0.34
10	0.165	0.222	0.225	0.306	0.171	0.379	0.253	0.319	0.109	--	0.668	0.724	0.727	0.704
11	0.168	0.360	0.318	0.375	0.207	0.437	0.228	0.250	<u>0.096</u>	0.422	--	0.655	0.672	0.717
12	0.200	0.360	0.391	0.289	0.217	0.530	0.220	0.253	0.151	0.448	0.553	--	0.778	0.659
13	0.176	0.280	0.361	0.251	0.250	0.513	0.265	0.236	0.204	0.449	0.567	0.642	--	0.647
14	0.307	0.403	0.433	0.420	0.272	0.504	0.379	0.400	0.236	0.399	0.555	0.498	0.489	--

Standardized covariances
 Not significant at $p < 0.05$

Table 4.9. Confirmatory Factor Analysis, Wave 1, 16 Factors, Unstandardized and Standardized Parameter Estimates (N=364)

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Motive 1						
Nothing to do	1.000	0.000	999.000	0.822	0.027	0.000
Bored	0.971	0.045	0.000	0.798	0.026	0.000
Something to do	1.112	0.045	0.000	0.913	0.019	0.000
Free	0.820	0.055	0.000	0.674	0.040	0.000
Motive 2						
Celebrate	1.000	0.000	999.000	0.884	0.020	0.000
Special day	0.927	0.034	0.000	0.820	0.024	0.000
Special occasion	1.040	0.034	0.000	0.920	0.018	0.000
Motive 3						
Forget	1.000	0.000	999.000	0.904	0.031	0.000
Depressed	0.763	0.062	0.000	0.690	0.047	0.000
Escape	0.906	0.054	0.000	0.820	0.034	0.000
Motive 4						
Altered perception	1.000	0.000	999.000	0.771	0.033	0.000
Think differently	1.091	0.061	0.000	0.842	0.025	0.000
Word differently	1.186	0.065	0.000	0.915	0.026	0.000
Motive 5						
Pressure others	1.000	0.000	999.000	0.528	0.081	0.000
Not doing it	1.171	0.158	0.000	0.619	0.060	0.000
Cool	0.887	0.182	0.000	0.469	0.081	0.000
Cravings	1.558	0.249	0.000	0.823	0.033	0.000
Forget other drugs	1.826	0.300	0.000	0.965	0.035	0.000
Motive 6						
Napping	1.000	0.000	999.000	0.906	0.023	0.000
Help sleep	0.998	0.032	0.000	0.904	0.018	0.000
Problem sleeping	1.038	0.035	0.000	0.940	0.017	0.000
Motive 7						
Experiment	1.000	0.000	999.000	0.911	0.028	0.000
Curious	0.882	0.048	0.000	0.804	0.033	0.000
Feltlike	0.924	0.048	0.000	0.842	0.030	0.000
Motive 8						
Enjoy effect	1.000	0.000	999.000	0.809	0.029	0.000
Fun	0.855	0.053	0.000	0.692	0.035	0.000
Feel good	1.118	0.055	0.000	0.904	0.025	0.000
Motive 9						
Drunk	1.000	0.000	999.000	0.836	0.034	0.000

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Influence alcohol	0.895	0.059	0.000	0.748	0.041	0.000
Drunk not thinking	1.135	0.081	0.000	0.949	0.039	0.000
Motive 10						
Side effect	1.000	0.000	999.000	0.671	0.037	0.000
Natural remedy	1.264	0.074	0.000	0.848	0.027	0.000
Natural	1.149	0.067	0.000	0.771	0.031	0.000
Feel better than other drugs	1.150	0.077	0.000	0.772	0.031	0.000
Safer than alcohol	1.147	0.085	0.000	0.770	0.034	0.000
Low health risk	0.798	0.080	0.000	0.535	0.046	0.000
No danger	1.066	0.078	0.000	0.716	0.036	0.000
Motive 11						
Alert	1.000	0.000	999.000	0.930	0.019	0.000
Concentrate	0.973	0.028	0.000	0.905	0.019	0.000
Focused	0.985	0.028	0.000	0.916	0.017	0.000
Motive 12						
Aches	1.000	0.000	999.000	0.909	0.017	0.000
Headache	0.985	0.036	0.000	0.896	0.027	0.000
Help pain	0.995	0.033	0.000	0.905	0.018	0.000
Motive 13						
Stomach	1.000	0.000	999.000	0.908	0.020	0.000
Vomit	0.899	0.035	0.000	0.816	0.027	0.000
Sick	1.020	0.031	0.000	0.926	0.018	0.000
Motive 14						
More comfortable	1.000	0.000	999.000	0.832	0.022	0.000
Relax insecure	1.071	0.038	0.000	0.891	0.020	0.000
Feel confident	0.969	0.038	0.000	0.806	0.025	0.000
Motive 16						
Available	1.000	0.000	999.000	0.692	0.033	0.000
There	1.404	0.101	0.000	0.972	0.034	0.000

Table 4.10. Confirmatory Factor Analysis, Wave 1, 16 Factors, Unstandardized and Standardized Covariances (N=364)

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16
1	--	0.612	0.582	0.537	0.645	0.226	0.602	0.725	0.473	0.333	0.220	0.273	0.255	0.444	0.748
2	0.445	--	0.419	0.504	0.476	0.341	0.492	0.668	0.394	0.385	0.438	0.448	0.349	0.548	0.489
3	0.433	0.335	--	0.496	0.612	0.372	0.363	0.467	0.366	0.387	0.378	0.475	0.440	0.575	0.284
4	0.340	0.344	0.346	--	0.411	0.374	0.543	0.694	0.252	0.609	0.523	0.412	0.358	0.654	0.442
5	0.280	0.223	0.292	0.167	--	0.375	0.585	0.453	0.601	0.490	0.421	0.453	0.521	0.618	0.489
6	0.168	0.273	0.304	0.261	0.179	--	0.258	0.300	0.231	0.600	0.519	0.644	0.624	0.668	<u>0.091</u>
7	0.451	0.397	0.300	0.382	0.282	0.213	--	0.450	0.370	0.458	0.269	0.266	0.321	0.500	0.448
8	0.482	0.478	0.341	0.433	0.193	0.220	0.332	--	0.315	0.547	0.320	0.343	0.332	0.598	0.674
9	0.325	0.291	0.277	0.163	0.266	0.175	0.282	0.213	--	0.209	<u>0.123</u>	0.199	0.268	0.339	0.444
10	0.184	0.229	0.235	0.315	0.174	0.364	0.280	0.297	0.117	--	0.656	0.707	0.706	0.713	0.370
11	0.168	0.360	0.318	0.375	0.207	0.437	0.228	0.241	<u>0.096</u>	0.410	--	0.655	0.672	0.717	0.155
12	0.204	0.360	0.390	0.289	0.217	0.530	0.221	0.252	0.151	0.432	0.554	--	0.778	0.659	0.167
13	0.190	0.280	0.361	0.251	0.250	0.513	0.265	0.244	0.204	0.430	0.567	0.642	--	0.647	<u>0.106</u>
14	0.304	0.403	0.433	0.420	0.272	0.504	0.379	0.402	0.236	0.399	0.555	0.498	0.489	--	0.358
16	0.425	0.299	0.178	0.236	0.179	<u>0.057</u>	0.282	0.377	0.257	0.172	0.100	0.105	<u>0.066</u>	0.206	--

Standardized covariances
 Not significant at $p < 0.05$

Table 4.11. Confirmatory Factor Analysis, Wave 1, 17 Factors EFA, Unstandardized and Standardized Parameter Estimates (N=364)

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Motive 1						
Nothing to do	1.000	0.000	999.000	0.822	0.026	0.000
Bored	0.969	0.044	0.000	0.797	0.026	0.000
Something to do	1.111	0.045	0.000	0.913	0.019	0.000
Free	0.820	0.054	0.000	0.674	0.040	0.000
Motive 2						
Celebrate	1.000	0.000	999.000	0.884	0.020	0.000
Special day	0.927	0.034	0.000	0.820	0.024	0.000
Special occasion	1.040	0.034	0.000	0.920	0.018	0.000
Motive 3						
Forget	1.000	0.000	999.000	0.904	0.031	0.000
Depressed	0.762	0.062	0.000	0.689	0.047	0.000
Escape	0.907	0.053	0.000	0.820	0.034	0.000
Motive 4						
Altered perception	1.000	0.000	999.000	0.771	0.033	0.000
Think differently	1.092	0.061	0.000	0.842	0.025	0.000
Word differently	1.187	0.065	0.000	0.915	0.026	0.000
Motive 5						
Pressure others	1.000	0.000	999.000	0.778	0.059	0.000
Not doing it	1.148	0.107	0.000	0.894	0.047	0.000
Cool	0.879	0.127	0.000	0.684	0.074	0.000
Motive 6						
Napping	1.000	0.000	999.000	0.904	0.023	0.000
Help sleep	1.000	0.032	0.000	0.905	0.018	0.000
Problem sleeping	1.040	0.035	0.000	0.941	0.017	0.000
Motive 7						
Experiment	1.000	0.000	999.000	0.912	0.027	0.000
Curious	0.880	0.048	0.000	0.803	0.033	0.000
Feltlike	0.923	0.047	0.000	0.842	0.030	0.000
Motive 8						
Enjoy effect	1.000	0.000	999.000	0.809	0.029	0.000
Fun	0.856	0.053	0.000	0.692	0.035	0.000
Feel good	1.118	0.055	0.000	0.904	0.025	0.000
Motive 9						
Drunk	1.000	0.000	999.000	0.836	0.034	0.000
Influence alcohol	0.895	0.059	0.000	0.748	0.041	0.000
Drunk not thinking	1.135	0.080	0.000	0.949	0.038	0.000

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Motive 10						
Side effect	1.000	0.000	999.000	0.673	0.037	0.000
Natural remedy	1.264	0.074	0.000	0.850	0.027	0.000
Natural	1.148	0.067	0.000	0.772	0.031	0.000
Feel better than other drugs	1.148	0.077	0.000	0.772	0.031	0.000
Safer than alcohol	1.144	0.085	0.000	0.770	0.034	0.000
Low health risk	0.793	0.080	0.000	0.533	0.046	0.000
No danger	1.060	0.078	0.000	0.713	0.036	0.000
Motive 11						
Alert	1.000	0.000	999.000	0.928	0.019	0.000
Concentrate	0.976	0.028	0.000	0.906	0.019	0.000
Focused	0.987	0.028	0.000	0.916	0.017	0.000
Motive 12						
Aches	1.000	0.000	999.000	0.909	0.017	0.000
Headache	0.984	0.036	0.000	0.894	0.027	0.000
Help pain	0.996	0.032	0.000	0.905	0.018	0.000
Motive 13						
Stomach	1.000	0.000	999.000	0.907	0.020	0.000
Vomit	0.900	0.034	0.000	0.817	0.027	0.000
Sick	1.021	0.031	0.000	0.926	0.018	0.000
Motive 14						
More comfortable	1.000	0.000	999.000	0.832	0.022	0.000
Relax insecure	1.072	0.038	0.000	0.891	0.020	0.000
Feel confident	0.970	0.038	0.000	0.807	0.025	0.000
Motive 16						
Available	1.000	0.000	999.000	0.691	0.033	0.000
There	1.407	0.101	0.000	0.972	0.034	0.000
Motive 17						
Cravings	1.000	0.000	999.000	0.811	0.032	0.000
Forget other drugs	1.184	0.074	0.000	0.960	0.032	0.000

Table 4.12. Confirmatory Factor Analysis, Wave 1, 17 Factors EFA, Unstandardized and Standardized Covariances (N=364)

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17
1	--	0.612	0.582	0.537	0.647	0.226	0.602	0.725	0.473	0.332	0.220	0.273	0.255	0.444	0.747	0.533
2	0.445	--	0.419	0.504	0.346	0.341	0.492	0.668	0.394	0.385	0.438	0.448	0.349	0.548	0.489	0.472
3	0.433	0.335	--	0.496	0.494	0.372	0.363	0.467	0.366	0.387	0.378	0.475	0.440	0.575	0.284	0.576
4	0.340	0.344	0.346	--	0.259	0.374	0.543	0.694	0.252	0.609	0.523	0.412	0.358	0.654	0.442	0.426
5	0.414	0.238	0.347	0.155	--	<u>-0.016</u>	0.597	0.345	0.554	0.144	<u>0.044</u>	<u>0.078</u>	0.154	0.235	0.506	0.522
6	0.168	0.273	0.304	0.261	<u>-0.011</u>	--	0.258	0.300	0.231	0.600	0.519	0.644	0.624	0.668	<u>0.091</u>	0.514
7	0.452	0.397	0.300	0.382	0.424	0.213	--	0.450	0.370	0.458	0.269	0.266	0.321	0.500	0.448	0.464
8	0.482	0.477	0.341	0.433	0.217	0.219	0.332	--	0.315	0.547	0.320	0.343	0.332	0.598	0.674	0.437
9	0.325	0.291	0.277	0.163	0.360	0.174	0.282	0.213	--	0.209	<u>0.123</u>	0.199	0.268	0.339	0.444	0.515
10	0.184	0.229	0.235	0.316	<u>0.075</u>	0.364	0.281	0.298	0.117	--	0.656	0.708	0.706	0.713	0.370	0.584
11	0.168	0.360	0.318	0.374	<u>0.032</u>	0.436	0.228	0.240	<u>0.096</u>	0.410	--	0.655	0.672	0.717	0.155	0.559
12	0.204	0.360	0.391	0.289	<u>0.055</u>	0.530	0.221	0.252	0.151	0.433	0.553	--	0.779	0.659	0.167	0.579
13	0.190	0.280	0.361	0.251	0.109	0.512	0.265	0.244	0.203	0.431	0.566	0.642	--	0.647	<u>0.106</u>	0.610
14	0.304	0.403	0.432	0.419	0.152	0.503	0.379	0.402	0.236	0.399	0.554	0.498	0.488	--	0.358	0.698
16	0.425	0.299	0.178	0.235	0.272	<u>0.057</u>	0.282	0.377	0.256	0.172	0.100	0.105	<u>0.066</u>	0.206	--	0.391
17	0.356	0.338	0.423	0.266	0.329	0.377	0.344	0.286	0.349	0.319	0.421	0.427	0.449	0.471	0.219	--

Standardized covariances

Not significant at $p < 0.05$

Table 4.13. Confirmatory Factor Analysis, Wave 1, 17 Original Hypothesized Factors, Unstandardized and Standardized Parameter Estimates (N=364)

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Motive 1						
Nothing to do	1.000	0.000	999.000	0.832	0.026	0.000
Bored	0.971	0.044	0.000	0.808	0.026	0.000
Something to do	1.114	0.045	0.000	0.926	0.019	0.000
Motive 2						
Celebrate	1.000	0.000	999.000	0.885	0.020	0.000
Special day	0.927	0.034	0.000	0.820	0.024	0.000
Special occasion	1.039	0.034	0.000	0.919	0.017	0.000
Motive 3						
Forget	1.000	0.000	999.000	0.904	0.031	0.000
Depressed	0.760	0.062	0.000	0.688	0.047	0.000
Escape	0.908	0.053	0.000	0.821	0.034	0.000
Motive 4						
Altered perception	1.000	0.000	999.000	0.771	0.033	0.000
Think differently	1.091	0.061	0.000	0.842	0.025	0.000
Word differently	1.186	0.064	0.000	0.915	0.026	0.000
Motive 5						
Pressure others	1.000	0.000	999.000	0.776	0.059	0.000
Not doing it	1.154	0.108	0.000	0.895	0.047	0.000
Cool	0.884	0.128	0.000	0.685	0.074	0.000
Motive 6						
Napping	1.000	0.000	999.000	0.904	0.023	0.000
Help sleep	1.001	0.032	0.000	0.905	0.018	0.000
Problem sleeping	1.041	0.035	0.000	0.941	0.017	0.000
Motive 7						
Experiment	1.000	0.000	999.000	0.912	0.027	0.000
Curious	0.880	0.048	0.000	0.802	0.033	0.000
Feltlike	0.924	0.047	0.000	0.843	0.029	0.000
Motive 8						
Enjoy effect	1.000	0.000	999.000	0.810	0.029	0.000
Fun	0.858	0.053	0.000	0.694	0.035	0.000
Feel good	1.114	0.055	0.000	0.902	0.025	0.000
Motive 9						
Drunk	1.000	0.000	999.000	0.833	0.034	0.000
Influence alcohol	0.898	0.060	0.000	0.748	0.041	0.000
Drunk not thinking	1.142	0.082	0.000	0.952	0.039	0.000

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Motive 10						
Side effect	1.000	0.000	999.000	0.725	0.034	0.000
Natural remedy	1.255	0.070	0.000	0.910	0.027	0.000
Natural	1.135	0.064	0.000	0.823	0.029	0.000
Motive 11						
Alert	1.000	0.000	999.000	0.928	0.019	0.000
Concentrate	0.976	0.028	0.000	0.906	0.019	0.000
Focused	0.987	0.028	0.000	0.916	0.017	0.000
Motive 12						
Aches	1.000	0.000	999.000	0.909	0.017	0.000
Headache	0.985	0.036	0.000	0.895	0.027	0.000
Help pain	0.996	0.032	0.000	0.905	0.018	0.000
Motive 13						
Stomach	1.000	0.000	999.000	0.907	0.020	0.000
Vomit	0.901	0.034	0.000	0.818	0.026	0.000
Sick	1.020	0.030	0.000	0.925	0.018	0.000
Motive 14						
More comfortable	1.000	0.000	999.000	0.832	0.022	0.000
Relax insecure	1.072	0.038	0.000	0.891	0.020	0.000
Feel confident	0.970	0.038	0.000	0.807	0.025	0.000
Motive 15						
Low health risk	1.000	0.000	999.000	0.592	0.046	0.000
Safer than alcohol	1.431	0.141	0.000	0.847	0.040	0.000
No danger	1.338	0.113	0.000	0.792	0.032	0.000
Motive 16						
Available	1.000	0.000	999.000	0.644	0.036	0.000
Free	1.142	0.093	0.000	0.735	0.040	0.000
There	1.367	0.088	0.000	0.880	0.026	0.000
Motive 17						
Cravings	1.000	0.000	999.000	0.758	0.033	0.000
Forget other drugs	1.179	0.072	0.000	0.893	0.031	0.000
Feel better than other drugs	1.038	0.073	0.000	0.787	0.040	0.000

Table 4.14. Confirmatory Factor Analysis, Wave 1, 17 Original Hypothesized Factors, Unstandardized and Standardized Covariances (N=364)

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	--	0.568	0.587	0.531	0.640	0.242	0.596	0.711	0.447	<u>0.107</u>	0.200	0.248	0.241	0.451	0.489	0.806	0.528
2	0.418	--	0.419	0.504	0.345	0.341	0.492	0.668	0.394	0.286	0.438	0.448	0.349	0.548	0.403	0.595	0.489
3	0.442	0.335	--	0.496	0.493	0.372	0.364	0.467	0.366	0.298	0.378	0.475	0.440	0.575	0.383	0.356	0.574
4	0.341	0.344	0.346	--	0.259	0.374	0.543	0.694	0.252	0.462	0.523	0.412	0.358	0.654	0.652	0.485	0.513
5	0.413	0.237	0.346	0.155	--	<u>-0.016</u>	0.597	0.346	0.553	<u>0.001</u>	<u>0.044</u>	<u>0.078</u>	0.154	0.235	0.303	0.563	0.457
6	0.182	0.273	0.304	0.261	<u>-0.011</u>	--	0.258	0.300	0.231	0.634	0.519	0.644	0.624	0.668	0.438	<u>0.106</u>	0.554
7	0.452	0.397	0.300	0.382	0.422	0.213	--	0.450	0.370	0.330	0.269	0.266	0.321	0.500	0.560	0.507	0.448
8	0.479	0.478	0.342	0.433	0.217	0.219	0.332	--	0.315	0.309	0.319	0.343	0.332	0.598	0.650	0.727	0.523
9	0.310	0.291	0.276	0.162	0.358	0.174	0.281	0.213	--	0.179	<u>0.123</u>	0.199	0.268	0.339	0.251	0.498	0.424
10	<u>0.065</u>	0.183	0.196	0.258	<u>0.001</u>	0.415	0.218	0.181	0.108	--	0.664	0.737	0.762	0.662	0.690	0.150	0.711
11	0.154	0.360	0.318	0.374	<u>0.032</u>	0.436	0.227	0.240	<u>0.095</u>	0.447	--	0.655	0.672	0.717	0.498	0.204	0.625
12	0.188	0.360	0.390	0.289	<u>0.055</u>	0.529	0.221	0.252	0.151	0.486	0.553	--	0.779	0.659	0.493	0.231	0.648
13	0.182	0.280	0.361	0.251	0.109	0.512	0.265	0.244	0.203	0.502	0.566	0.642	--	0.647	0.468	0.164	0.647
14	0.312	0.403	0.432	0.420	0.152	0.503	0.379	0.402	0.235	0.399	0.553	0.498	0.489	--	0.648	0.377	0.734
15	0.241	0.211	0.205	0.297	0.139	0.234	0.302	0.311	0.124	0.296	0.273	0.265	0.251	0.319	--	0.526	0.759
16	0.432	0.339	0.207	0.241	0.281	<u>0.061</u>	0.298	0.379	0.267	0.070	0.122	0.135	0.096	0.202	0.200	--	0.432
17	0.333	0.328	0.394	0.300	0.268	0.379	0.310	0.321	0.268	0.391	0.440	0.446	0.445	0.463	0.340	0.211	--

Standardized covariances Not significant at p < 0.05

Table 4.15. Confirmatory Factor Analysis, Wave 2, 17 Original Hypothesized Factors, Unstandardized and Standardized Parameter Estimates (N=339)

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Boredom						
Nothing to do	1.000	0.000	999.000	0.891	0.022	0.000
Bored	0.912	0.038	0.000	0.813	0.027	0.000
Something to do	0.968	0.040	0.000	0.863	0.024	0.000
Celebration						
Celebrate	1.000	0.000	999.000	0.879	0.018	0.000
Special day	0.965	0.030	0.000	0.848	0.021	0.000
Special occasion	1.089	0.028	0.000	0.957	0.013	0.000
Coping						
Forget	1.000	0.000	999.000	0.877	0.042	0.000
Depressed	0.643	0.077	0.000	0.563	0.054	0.000
Escape	0.902	0.072	0.000	0.790	0.042	0.000
Altered Perceptions						
Altered perception	1.000	0.000	999.000	0.828	0.024	0.000
Think differently	1.061	0.043	0.000	0.879	0.024	0.000
Word differently	1.088	0.044	0.000	0.901	0.022	0.000
Conformity						
Pressure others	1.000	0.000	999.000	0.777	0.064	0.000
Not doing it	1.036	0.134	0.000	0.805	0.061	0.000
Cool	1.041	0.117	0.000	0.809	0.064	0.000
Sleep						
Napping	1.000	0.000	999.000	0.838	0.034	0.000
Help sleep	1.051	0.051	0.000	0.881	0.023	0.000
Problem sleeping	1.107	0.054	0.000	0.928	0.022	0.000
Experimentation						
Experiment	1.000	0.000	999.000	0.836	0.035	0.000
Curious	0.965	0.063	0.000	0.806	0.038	0.000
Feltlike	0.885	0.067	0.000	0.740	0.044	0.000
Enjoyment						
Enjoy effect	1.000	0.000	999.000	0.831	0.025	0.000
Fun	0.991	0.046	0.000	0.824	0.028	0.000
Feel good	1.036	0.049	0.000	0.861	0.027	0.000
Alcohol						
Drunk	1.000	0.000	999.000	0.909	0.036	0.000
Influence alcohol	0.893	0.062	0.000	0.812	0.034	0.000
Drunk not thinking	0.916	0.067	0.000	0.833	0.045	0.000

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Natural Remedy						
Side effect	1.000	0.000	999.000	0.772	0.034	0.000
Natural remedy	1.186	0.068	0.000	0.915	0.028	0.000
Natural	1.048	0.055	0.000	0.809	0.028	0.000
Attention						
Alert	1.000	0.000	999.000	0.893	0.025	0.000
Concentrate	1.027	0.036	0.000	0.917	0.016	0.000
Focused	0.986	0.035	0.000	0.880	0.018	0.000
Pain						
Aches	1.000	0.000	999.000	0.941	0.016	0.000
Headache	0.857	0.035	0.000	0.807	0.032	0.000
Help pain	0.968	0.033	0.000	0.911	0.019	0.000
Nausea						
Stomach	1.000	0.000	999.000	0.863	0.025	0.000
Vomit	0.994	0.043	0.000	0.859	0.024	0.000
Sick	1.066	0.039	0.000	0.921	0.019	0.000
Social Anxiety						
More comfortable	1.000	0.000	999.000	0.790	0.028	0.000
Relax insecure	1.067	0.048	0.000	0.843	0.025	0.000
Feel confident	1.015	0.047	0.000	0.802	0.029	0.000
Relative Low Risk						
Low health risk	1.000	0.000	999.000	0.749	0.033	0.000
Safer than alcohol	1.170	0.071	0.000	0.877	0.034	0.000
No danger	1.076	0.063	0.000	0.806	0.030	0.000
Availability						
Available	1.000	0.000	999.000	0.741	0.035	0.000
Free	0.883	0.073	0.000	0.655	0.041	0.000
There	1.186	0.070	0.000	0.879	0.027	0.000
Substitution						
Cravings	1.000	0.000	999.000	0.682	0.047	0.000
Forget other drugs	1.129	0.098	0.000	0.770	0.044	0.000
Feel better than other drugs	1.267	0.120	0.000	0.864	0.047	0.000

Table 4.16. Confirmatory Factor Analysis, Wave 2, 17 Original Hypothesized Factors, Unstandardized and Standardized Covariances (N=339)

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	--	0.474	0.492	0.332	0.645	0.051	0.491	0.657	0.484	-0.014	0.114	0.019	0.146	0.383	0.404	0.794	0.429
2	0.371	--	0.319	0.447	0.435	0.320	0.597	0.609	0.352	0.285	0.312	0.285	0.287	0.492	0.444	0.610	0.344
3	0.384	0.245	--	0.480	0.480	0.354	0.505	0.426	0.327	0.358	0.374	0.383	0.428	0.550	0.364	0.411	0.480
4	0.245	0.326	0.348	--	0.337	0.264	0.543	0.652	0.274	0.444	0.549	0.372	0.342	0.645	0.521	0.415	0.443
5	0.447	0.297	0.327	0.217	--	-0.019	0.676	0.275	0.717	0.010	0.126	0.067	0.185	0.322	0.308	0.654	0.314
6	0.038	0.236	0.260	0.183	-0.012	--	0.276	0.293	0.120	0.543	0.412	0.652	0.557	0.504	0.366	0.183	0.351
7	0.366	0.439	0.370	0.375	0.438	0.193	--	0.487	0.507	0.322	0.372	0.279	0.324	0.542	0.489	0.588	0.483
8	0.487	0.445	0.311	0.449	0.178	0.204	0.338	--	0.342	0.274	0.278	0.220	0.258	0.567	0.669	0.616	0.562
9	0.393	0.281	0.260	0.206	0.506	0.091	0.385	0.259	--	0.033	0.181	0.129	0.235	0.347	0.280	0.659	0.411
10	-0.010	0.193	0.242	0.284	0.006	0.351	0.207	0.176	0.023	--	0.665	0.750	0.666	0.572	0.605	0.073	0.715
11	0.091	0.245	0.293	0.406	0.088	0.308	0.278	0.206	0.147	0.458	--	0.634	0.667	0.740	0.458	0.162	0.580
12	0.016	0.236	0.316	0.290	0.049	0.514	0.219	0.172	0.111	0.545	0.532	--	0.759	0.562	0.429	0.055	0.490
13	0.112	0.218	0.324	0.245	0.124	0.403	0.234	0.185	0.185	0.444	0.514	0.617	--	0.637	0.424	0.142	0.642
14	0.270	0.342	0.381	0.422	0.197	0.334	0.358	0.373	0.249	0.349	0.522	0.418	0.435	--	0.600	0.421	0.606
15	0.270	0.292	0.240	0.323	0.179	0.230	0.306	0.417	0.191	0.350	0.307	0.302	0.274	0.355	--	0.470	0.682
16	0.525	0.397	0.267	0.254	0.377	0.113	0.364	0.379	0.444	0.042	0.107	0.038	0.091	0.247	0.261	--	0.433
17	0.261	0.206	0.287	0.250	0.166	0.201	0.275	0.319	0.255	0.376	0.353	0.314	0.378	0.326	0.348	0.219	--

Standardized covariances ; Not significant at $p \leq 0.05$

Table 4.17. Confirmatory Factor Analysis, Wave 1, Medical Items, Unstandardized and Standardized Parameter Estimates (N=364)

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Substitution						
Cravings	1.000	0.000	999.000	0.714	0.037	0.000
Forget other drugs	1.304	0.090	0.000	0.931	0.032	0.000
Feel better than other drugs	1.128	0.093	0.000	0.805	0.045	0.000
Natural remedy						
Side effect	1.000	0.000	999.000	0.755	0.032	0.000
Natural remedy	1.224	0.063	0.000	0.924	0.024	0.000
Natural	1.046	0.054	0.000	0.789	0.029	0.000
Attention						
Alert	1.000	0.000	999.000	0.918	0.017	0.000
Concentrate	0.995	0.025	0.000	0.914	0.017	0.000
Focused	0.997	0.026	0.000	0.915	0.016	0.000
Pain						
Aches	1.000	0.000	999.000	0.911	0.015	0.000
Headache	0.873	0.031	0.000	0.795	0.027	0.000
Help pain	1.024	0.027	0.000	0.934	0.015	0.000
Nausea						
Stomach	1.000	0.000	999.000	0.888	0.019	0.000
Vomit	0.947	0.030	0.000	0.841	0.024	0.000
Sick	1.042	0.029	0.000	0.925	0.017	0.000

Table 4.18. Confirmatory Factor Analysis, Wave 1, Medical Items, Unstandardized and Standardized Covariances (N=364)

Motive	Substitution	Natural Medicine	Attention	Pain	Nausea
Substitution	--	0.7	0.62	0.655	0.641
Natural Medicine	0.377	--	0.662	0.746	0.761
Attention	0.406	0.459	--	0.67	0.674
Pain	0.426	0.513	0.561	--	0.797
Nausea	0.406	0.510	0.550	0.645	--

Standardized covariances ; Not significant at $p \leq 0.05$

Table 4.19. Confirmatory Factor Analysis, Wave 2, Medical Items, Unstandardized and Standardized Parameter Estimates (N=339)

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Natural remedy						
Side effect	1.000	0.000	999.000	0.776	0.033	0.000
Natural remedy	1.189	0.061	0.000	0.923	0.024	0.000
Natural	1.030	0.051	0.000	0.799	0.027	0.000
Substitution						
Cravings	1.000	0.000	999.000	0.658	0.051	0.000
Forget other drugs	1.254	0.125	0.000	0.825	0.044	0.000
Feel better than other drugs	1.257	0.135	0.000	0.827	0.053	0.000
Attention						
Alert	1.000	0.000	999.000	0.872	0.025	0.000
Concentrate	1.075	0.036	0.000	0.937	0.014	0.000
Focused	1.001	0.035	0.000	0.872	0.019	0.000
Pain						
Aches	1.000	0.000	999.000	0.944	0.014	0.000
Headache	0.770	0.035	0.000	0.727	0.033	0.000
Help pain	0.978	0.028	0.000	0.924	0.017	0.000
Nausea						
Stomach	1.000	0.000	999.000	0.841	0.025	0.000
Vomit	1.043	0.040	0.000	0.877	0.021	0.000
Sick	1.094	0.040	0.000	0.921	0.018	0.000

Table 4.20. Confirmatory Factor Analysis, Wave 2, Medical Items, Unstandardized and Standardized Covariances (N=339)

Motive	Natural Medicine	Substitution	Attention	Pain	Nausea
Natural Medicine	--	0.723	0.664	0.555	0.667
Substitution	0.369	--	0.586	0.313	0.648
Attention	0.449	0.336	--	0.531	0.669
Pain	0.555	0.313	0.531	--	0.773
Nausea	0.435	0.359	0.491	0.614	--

Standardized covariances ; Not significant at $p \leq 0.05$

Table 4.21. Confirmatory Factor Analysis, Wave 1, 17 Comprehensive Marijuana Motive Questionnaire Items, Unstandardized and Standardized Parameter Estimates (N=339)

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Boredom						
Nothing to do	1.000	0.000	999.000	0.839	0.024	0.000
Bored	0.955	0.039	0.000	0.801	0.024	0.000
Something to do	1.103	0.041	0.000	0.925	0.018	0.000
Availability						
Available	1.000	0.000	999.000	0.651	0.035	0.000
Free	1.114	0.085	0.000	0.725	0.038	0.000
There	1.352	0.081	0.000	0.881	0.024	0.000
Celebration						
Celebrate	1.000	0.000	999.000	0.9	0.018	0.000
Special day	0.914	0.031	0.000	0.823	0.022	0.000
Special occasion	1.001	0.030	0.000	0.901	0.017	0.000
Coping						
Forget	1.000	0.000	999.000	0.908	0.029	0.000
Depressed	0.711	0.060	0.000	0.646	0.048	0.000
Escape	0.932	0.051	0.000	0.846	0.032	0.000
Altered Perceptions						
Altered perception	1.000	0.000	999.000	0.795	0.03	0.000
Think differently	1.045	0.054	0.000	0.83	0.025	0.000
Word differently	1.140	0.054	0.000	0.906	0.024	0.000
Conformity						
Pressure others	1.000	0.000	999.000	0.786	0.056	0.000
Not doing it	1.124	0.098	0.000	0.883	0.045	0.000
Cool	0.876	0.118	0.000	0.688	0.071	0.000
Sleep						
Napping	1.000	0.000	999.000	0.889	0.021	0.000
Help sleep	1.032	0.030	0.000	0.917	0.019	0.000
Problem sleeping	1.052	0.032	0.000	0.935	0.018	0.000
Experimentation						
Experiment	1.000	0.000	999.000	0.902	0.025	0.000
Curious	0.882	0.044	0.000	0.796	0.031	0.000
Feltlike	0.949	0.042	0.000	0.857	0.026	0.000
Enjoyment						
Enjoy effect	1.000	0.000	999.000	0.816	0.027	0.000
Fun	0.897	0.048	0.000	0.732	0.032	0.000
Feel good	1.064	0.048	0.000	0.868	0.025	0.000

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Alcohol						
Drunk	1.000	0.000	999.000	0.852	0.031	0.000
Influence alcohol	0.881	0.054	0.000	0.751	0.039	0.000
Drunk not thinking	1.090	0.068	0.000	0.928	0.035	0.000
Social Anxiety						
More comfortable	1.000	0.000	999.000	0.851	0.022	0.000
Feel confident	0.940	0.039	0.000	0.8	0.027	0.000
Relax insecure	1.032	0.038	0.000	0.879	0.022	0.000
Relative Low Risk						
Low health risk	1.000	0.000	999.000	0.617	0.046	0.000
Safer than alcohol	1.239	0.123	0.000	0.765	0.042	0.000
No danger	1.381	0.119	0.000	0.853	0.033	0.000

Table 4.22. Confirmatory Factor Analysis, Wave 1, 17 Comprehensive Marijuana Motive Questionnaire Items, Unstandardized and Standardized Covariances (N=364)

Motive	Boredom	Available	Celebration	Coping	Altered Perceptions	Conformity	Sleep	Experimentation	Enjoyment	Alcohol	Social Anxiety	Relative Low Risk
Boredom	--	0.807	0.568	0.589	0.531	0.642	0.241	0.597	0.712	0.447	0.452	0.494
Available	0.441	--	0.596	0.358	0.485	0.565	<u>0.105</u>	0.508	0.729	0.499	0.377	0.531
Celebration	0.429	0.349	--	0.42	0.504	0.346	0.341	0.493	0.668	0.395	0.548	0.404
Coping	0.449	0.212	0.343	--	0.497	0.497	0.371	0.364	0.467	0.368	0.575	0.384
Altered Perceptions	0.354	0.251	0.360	0.359	--	0.26	0.375	0.545	0.696	0.252	0.655	0.655
Conformity	0.423	0.289	0.245	0.355	0.162	--	<u>-0.017</u>	0.599	0.35	0.555	0.236	0.312
Sleep	0.180	<u>0.061</u>	0.273	0.300	0.265	<u>-0.012</u>	--	0.259	0.295	0.23	0.672	0.437
Experimentation	0.452	0.298	0.400	0.299	0.391	0.424	0.207	--	0.452	0.37	0.5	0.562
Enjoyment	0.487	0.387	0.490	0.346	0.451	0.224	0.213	0.333	--	0.317	0.595	0.653
Alcohol	0.320	0.277	0.303	0.284	0.170	0.371	0.174	0.285	0.220	--	0.34	0.253
Social Anxiety	0.323	0.209	0.420	0.444	0.443	0.158	0.508	0.384	0.414	0.246	--	0.652
Relative Low Risk	0.256	0.213	0.225	0.215	0.321	0.152	0.240	0.313	0.329	0.133	0.343	--

Standardized covariances ; Not significant at $p < 0.05$

Table 4.23. Confirmatory Factor Analysis, Wave 2, 17 Comprehensive Marijuana Motive Questionnaire Items, Standardized and Unstandardized and Standardized Parameter Estimates (N=339)

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Boredom						
Nothing to do	1.000	0.000	999.000	0.892	0.022	0.000
Bored	0.913	0.037	0.000	0.814	0.026	0.000
Something to do	0.967	0.039	0.000	0.862	0.024	0.000
Availability						
Available	1.000	0.000	999.000	0.742	0.033	0.000
Free	0.885	0.069	0.000	0.657	0.039	0.000
There	1.180	0.066	0.000	0.876	0.026	0.000
Celebration						
Celebrate	1.000	0.000	999.000	0.886	0.017	0.000
Special day	0.958	0.027	0.000	0.849	0.019	0.000
Special occasion	1.072	0.026	0.000	0.950	0.012	0.000
Coping						
Forget	1.000	0.000	999.000	0.876	0.041	0.000
Depressed	0.610	0.074	0.000	0.534	0.053	0.000
Escape	0.925	0.072	0.000	0.810	0.042	0.000
Altered Perceptions						
Altered perception	1.000	0.000	999.000	0.849	0.023	0.000
Think differently	1.018	0.038	0.000	0.865	0.024	0.000
Word differently	1.051	0.039	0.000	0.893	0.020	0.000
Conformity						
Pressure others	1.000	0.000	999.000	0.780	0.061	0.000
Not doing itt	1.028	0.125	0.000	0.801	0.058	0.000
Cool	1.038	0.108	0.000	0.809	0.060	0.000
Sleep						
Napping	1.000	0.000	999.000	0.855	0.028	0.000
Help sleep	1.049	0.042	0.000	0.897	0.023	0.000
Problem sleeping	1.057	0.046	0.000	0.904	0.024	0.000
Experimentation						
Experiment	1.000	0.000	999.000	0.808	0.034	0.000
Curious	1.017	0.059	0.000	0.822	0.035	0.000
Feltlike	0.931	0.069	0.000	0.752	0.043	0.000
Enjoyment						
Enjoy effect	1.000	0.000	999.000	0.838	0.025	0.000
Fun	1.018	0.044	0.000	0.853	0.025	0.000
Feel good	0.990	0.049	0.000	0.830	0.028	0.000

Motives & Indicators	Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Alcohol						
Drunk	1.000	0.000	999.000	0.901	0.034	0.000
Influence alcohol	0.914	0.060	0.000	0.823	0.033	0.000
Drunk not thinking	0.921	0.062	0.000	0.830	0.042	0.000
Social Anxiety						
More comfortable	1.000	0.000	999.000	0.784	0.031	0.000
Relax insecure	1.063	0.057	0.000	0.834	0.028	0.000
Feel confidentt	1.045	0.056	0.000	0.820	0.031	0.000
Relative Low Risk						
Low health risk	1.000	0.000	999.000	0.775	0.035	0.000
Safer than alcohol	1.027	0.068	0.000	0.796	0.038	0.000
No danger	1.093	0.068	0.000	0.847	0.031	0.000

Table 4.24. Confirmatory Factor Analysis, Wave 2, 17 Comprehensive Marijuana Motive Questionnaire Items, Standardized and Unstandardized and Standardized Covariances (N=339)

Motive	Boredom	Available	Celebration	Coping	Altered Perceptions	Conformity	Sleep	Experimentation	Enjoyment	Alcohol	Social Anxiety	Relative Low Risk
Boredom	--	0.795	0.474	0.493	0.332	0.645	<u>0.052</u>	0.491	0.656	0.485	0.383	0.410
Available	0.526	--	0.611	0.412	0.415	0.654	0.184	0.589	0.616	0.660	0.421	0.473
Celebration	0.374	0.402	--	0.320	0.447	0.435	0.320	0.598	0.609	0.352	0.492	0.448
Coping	0.385	0.268	0.248	--	0.481	0.480	0.352	0.506	0.426	0.328	0.550	0.369
Altered Perceptions	0.252	0.262	0.337	0.358	--	0.337	0.263	0.544	0.653	0.275	0.645	0.526
Conformity	0.449	0.379	0.301	0.328	0.224	--	<u>-0.018</u>	0.678	0.276	0.718	0.321	0.315
Sleep	<u>0.040</u>	0.117	0.242	0.264	0.191	<u>-0.012</u>	--	0.276	0.291	<u>0.119</u>	0.502	0.364
Experimentation	0.354	0.354	0.428	0.358	0.373	0.427	0.191	--	0.486	0.507	0.543	0.494
Enjoyment	0.490	0.383	0.452	0.312	0.465	0.180	0.209	0.329	--	0.341	0.565	0.674
Alcohol	0.390	0.441	0.281	0.259	0.210	0.504	<u>0.092</u>	0.369	0.258	--	0.346	0.279
Social Anxiety	0.268	0.245	0.342	0.378	0.430	0.197	0.337	0.344	0.371	0.245	--	0.606
Relative Low Risk	0.284	0.272	0.308	0.251	0.346	0.190	0.242	0.309	0.438	0.195	0.368	--

Standardized covariances ; Not significant at $p < 0.05$

Figure 4.6. Confirmatory Factor Analysis Measurement Model. Final 17 Motives. Wave 1 Unstandardized Parameter Estimates.

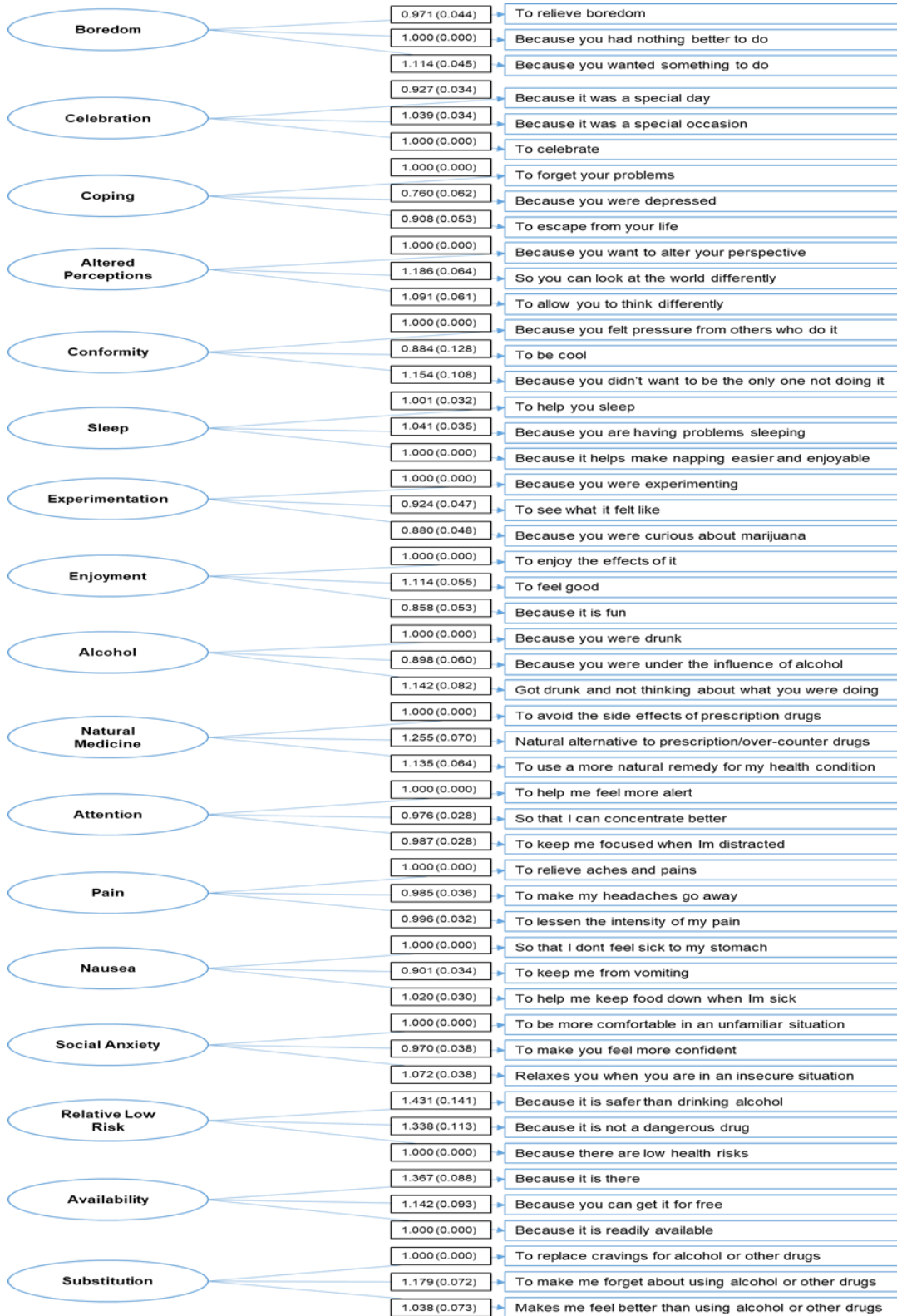


Figure 4.7. Confirmatory Factor Analysis Measurement Model. Final 17 Motives. Wave 1 Standardized Parameter Estimates.

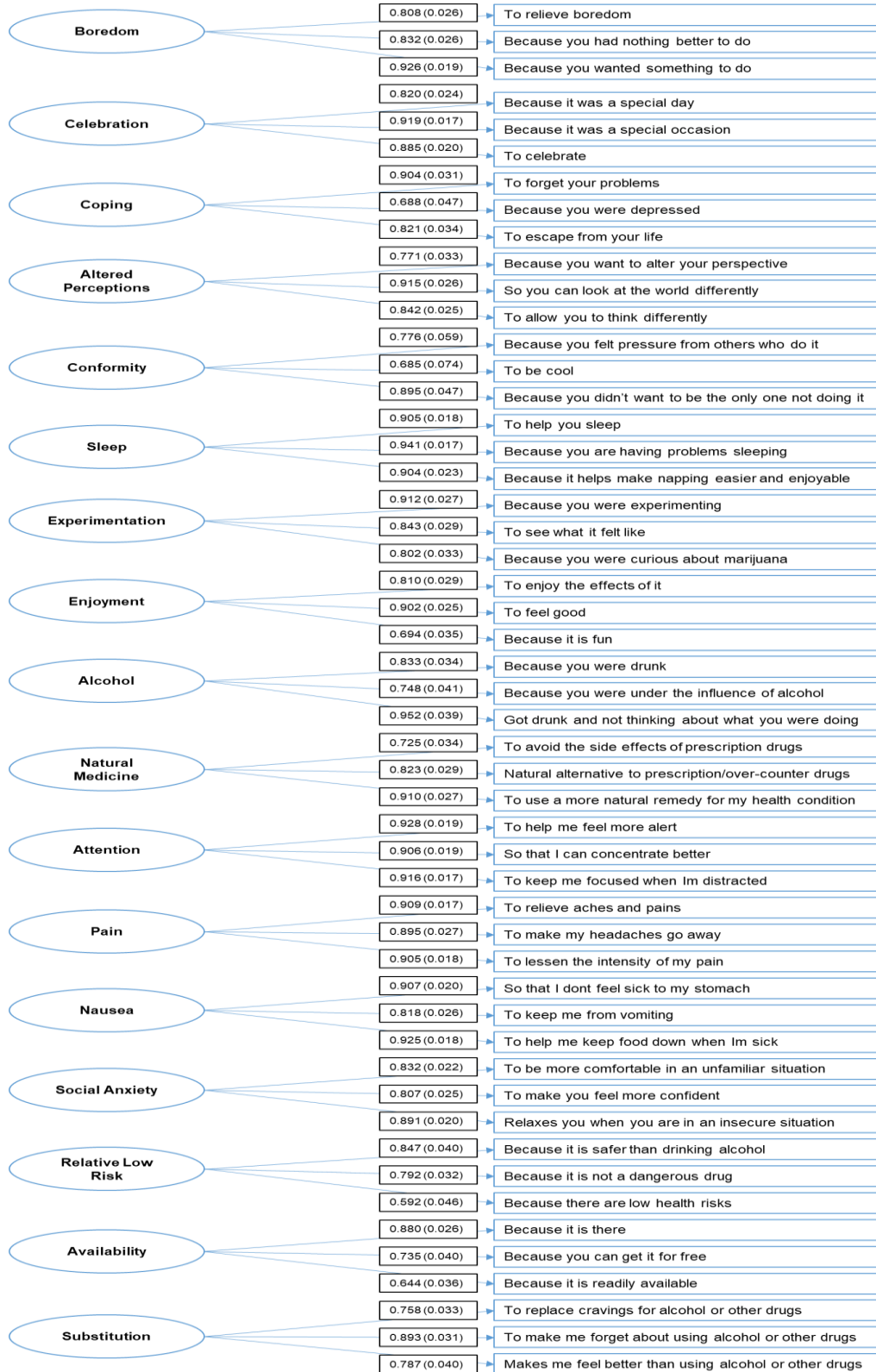


Figure 4.8. Confirmatory Factor Analysis Measurement Model. Final 17 Motives. Wave 2 Unstandardized Parameter Estimates.

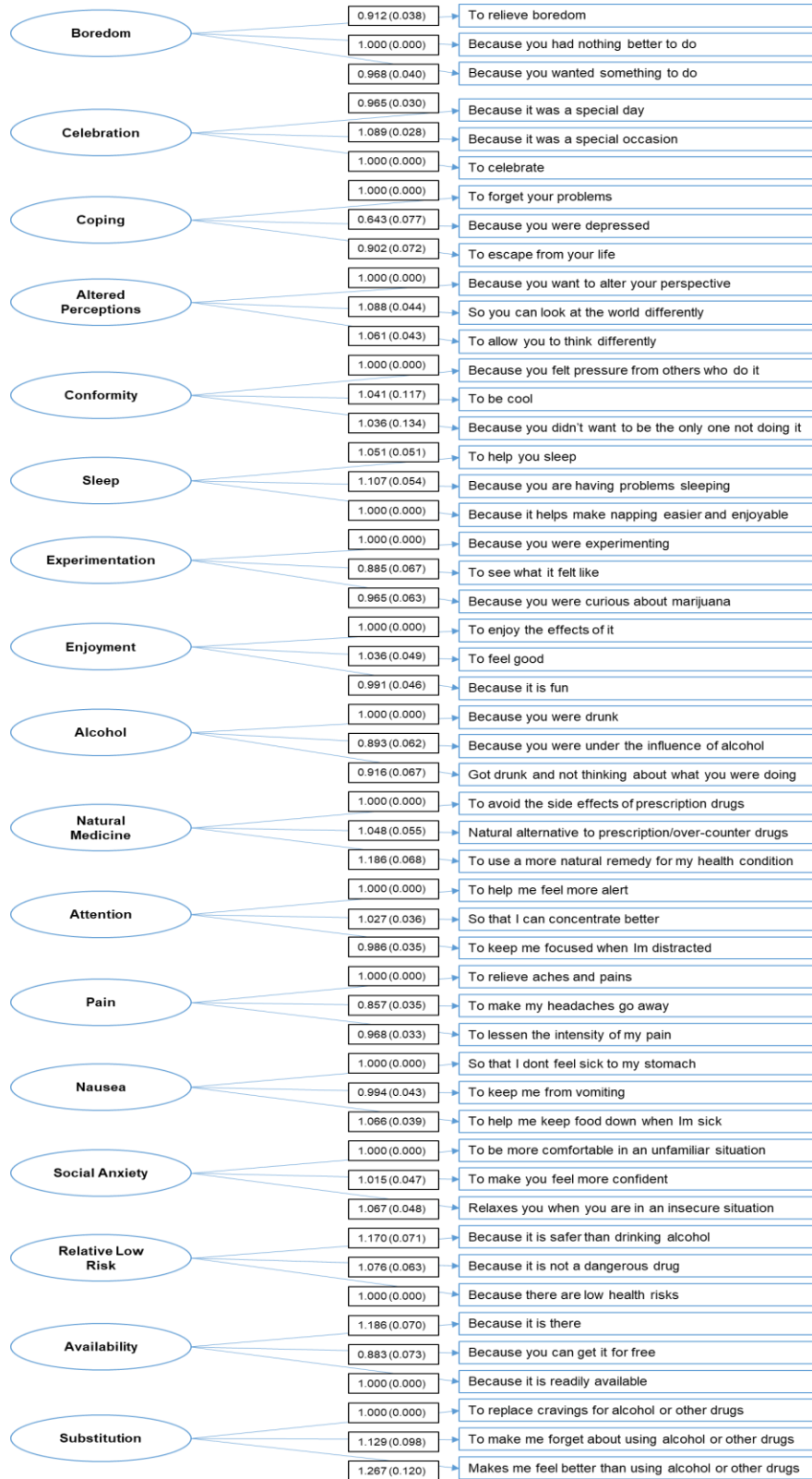


Figure 4.9. Confirmatory Factor Analysis Measurement Model. Final 17 Motives. Wave 2 Standardized Parameter Estimates.

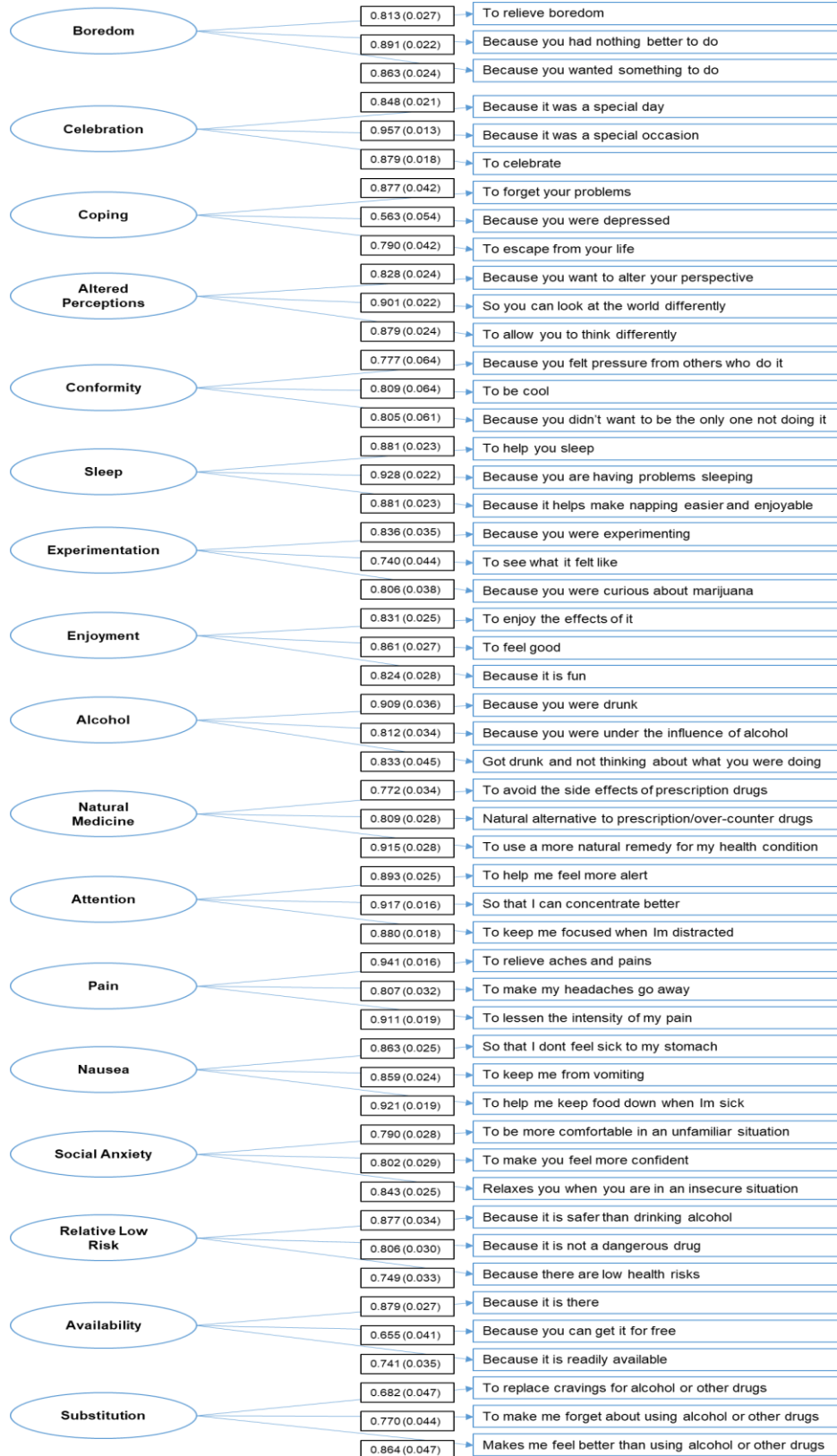


Figure 4.10. Confirmatory Factor Analysis Measurement Model. Medical Motives. Wave 1
Unstandardized Parameter Estimates.

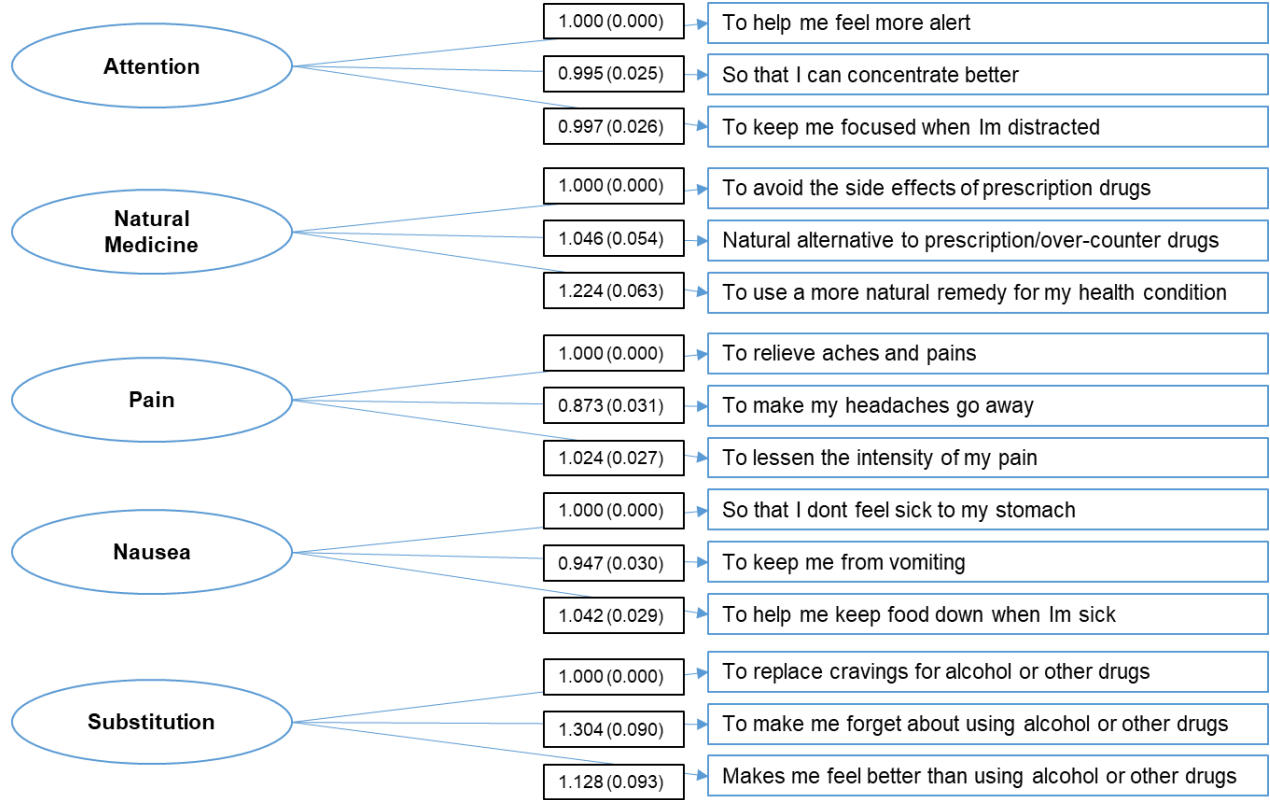


Figure 4.11. Confirmatory Factor Analysis Measurement Model. Medical Motives. Wave 1
Standardized Parameter Estimates.

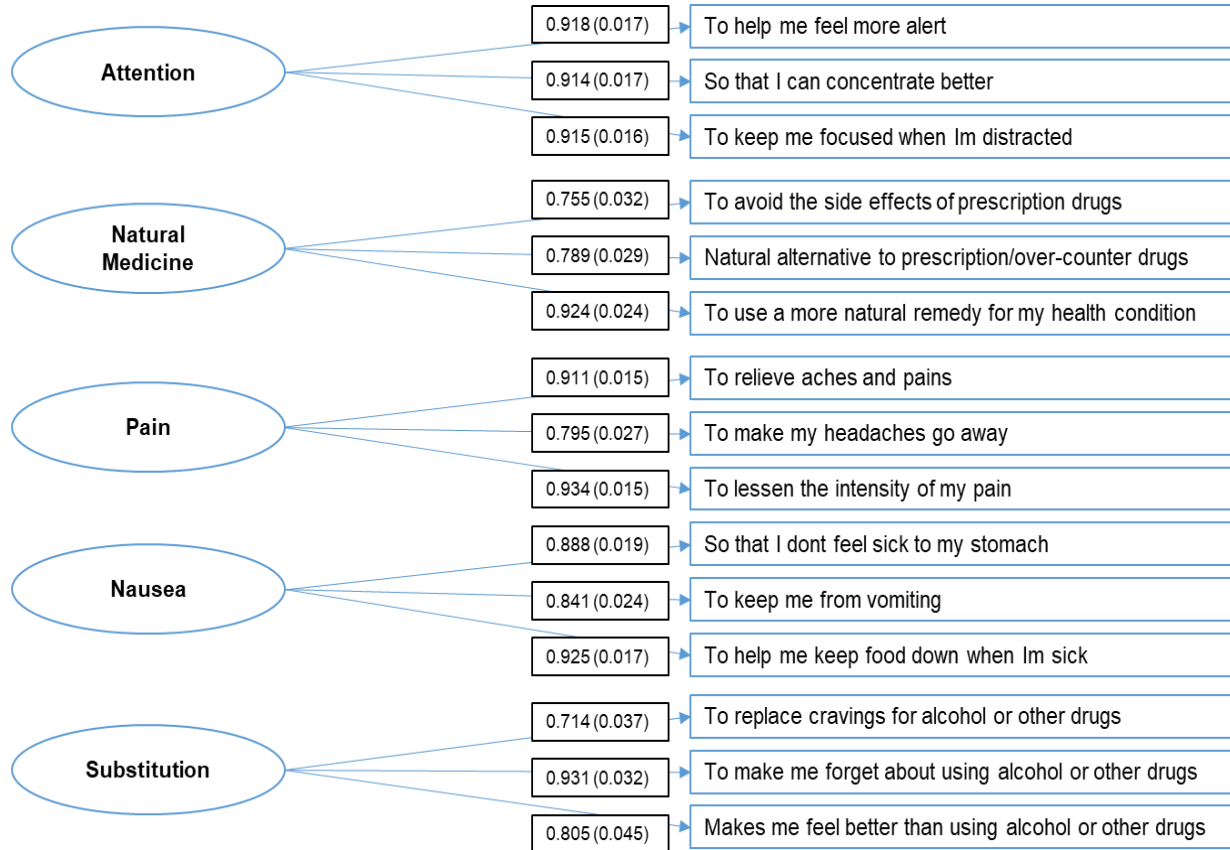


Figure 4.12. Confirmatory Factor Analysis Measurement Model. Medical Motives. Wave 2
Unstandardized Parameter Estimates.



Figure 4.13. Confirmatory Factor Analysis Measurement Model. Medical Motives. Wave 2 Standardized Parameter Estimates.

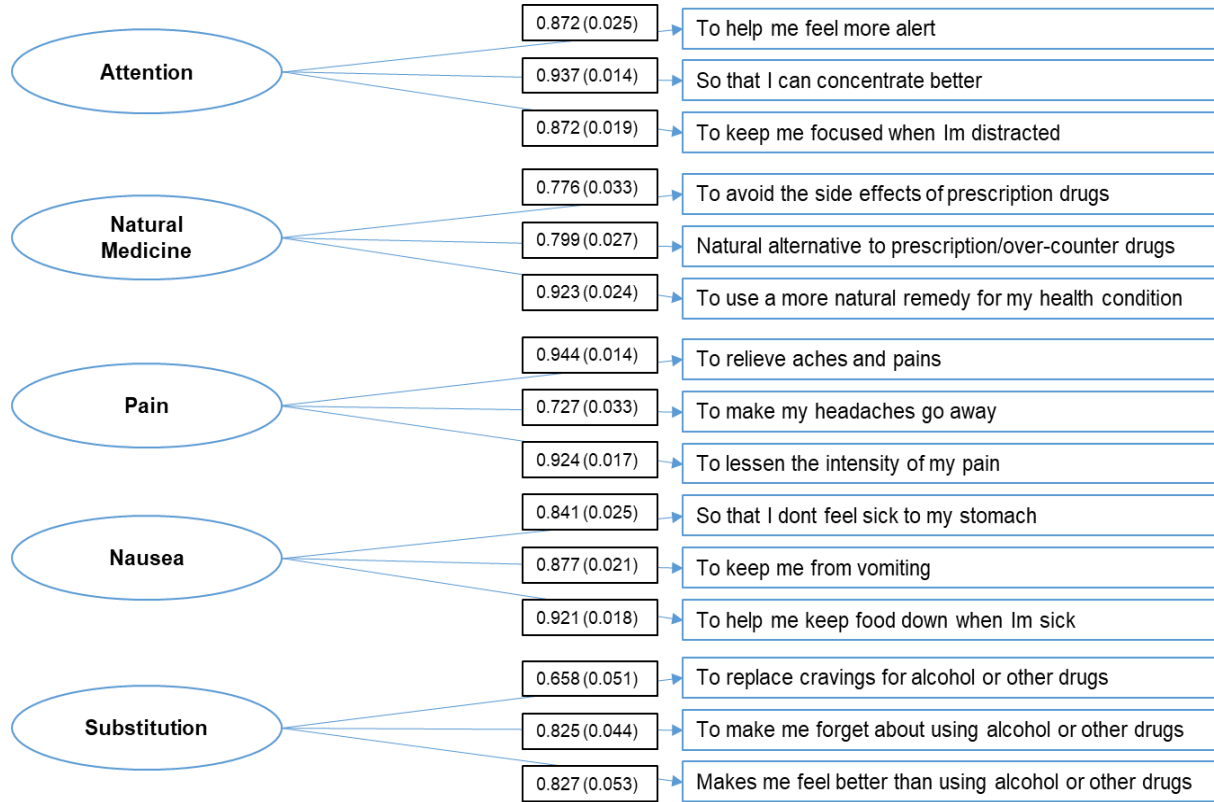


Figure 4.14. Confirmatory Factor Analysis Measurement Model. Comprehensive Marijuana Motives Questionnaire. Wave 1 Unstandardized Parameter Estimates.

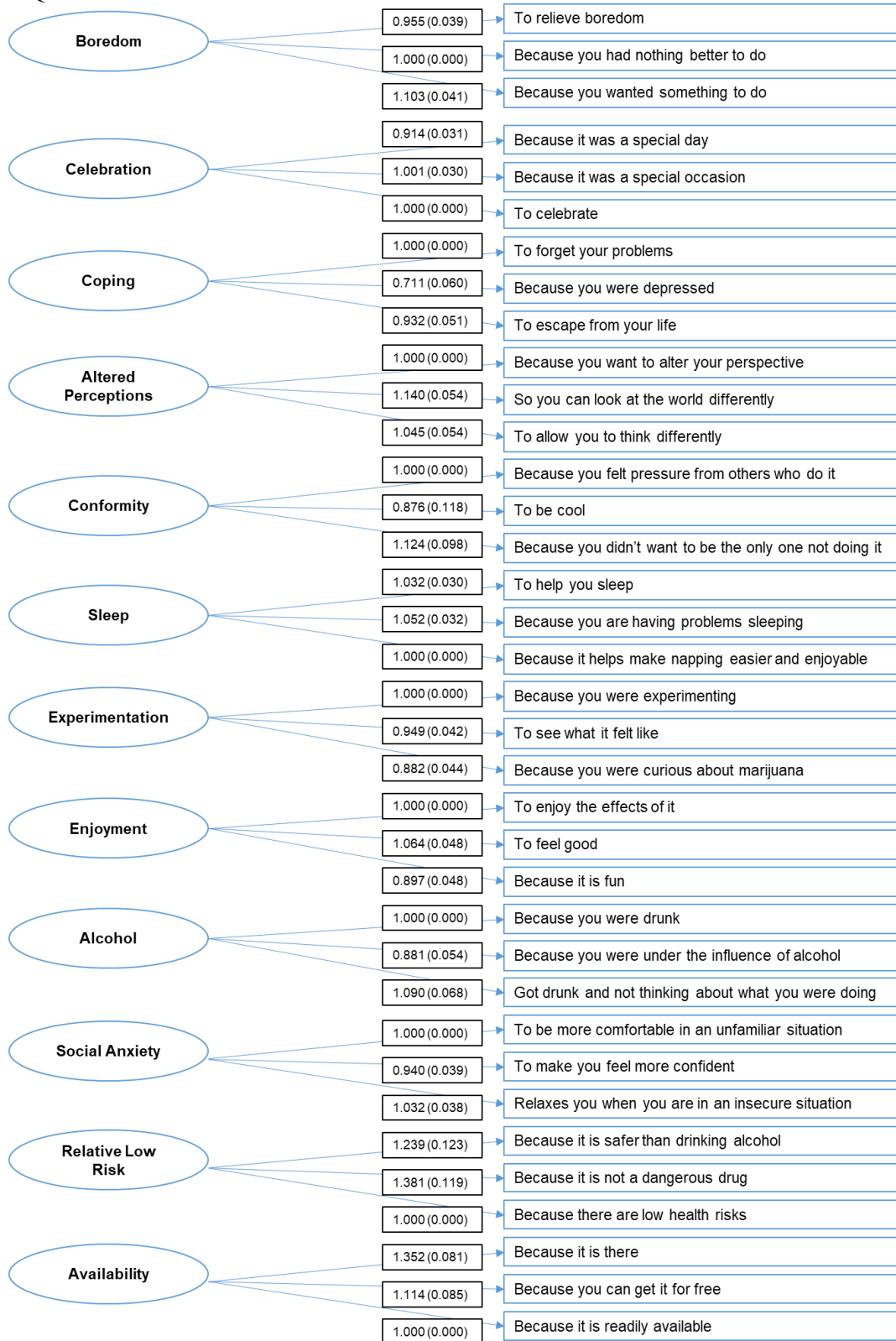


Figure 4.15. Confirmatory Factor Analysis Measurement Model. Comprehensive Marijuana Motives Questionnaire. Wave 1 Standardized Parameter Estimates.

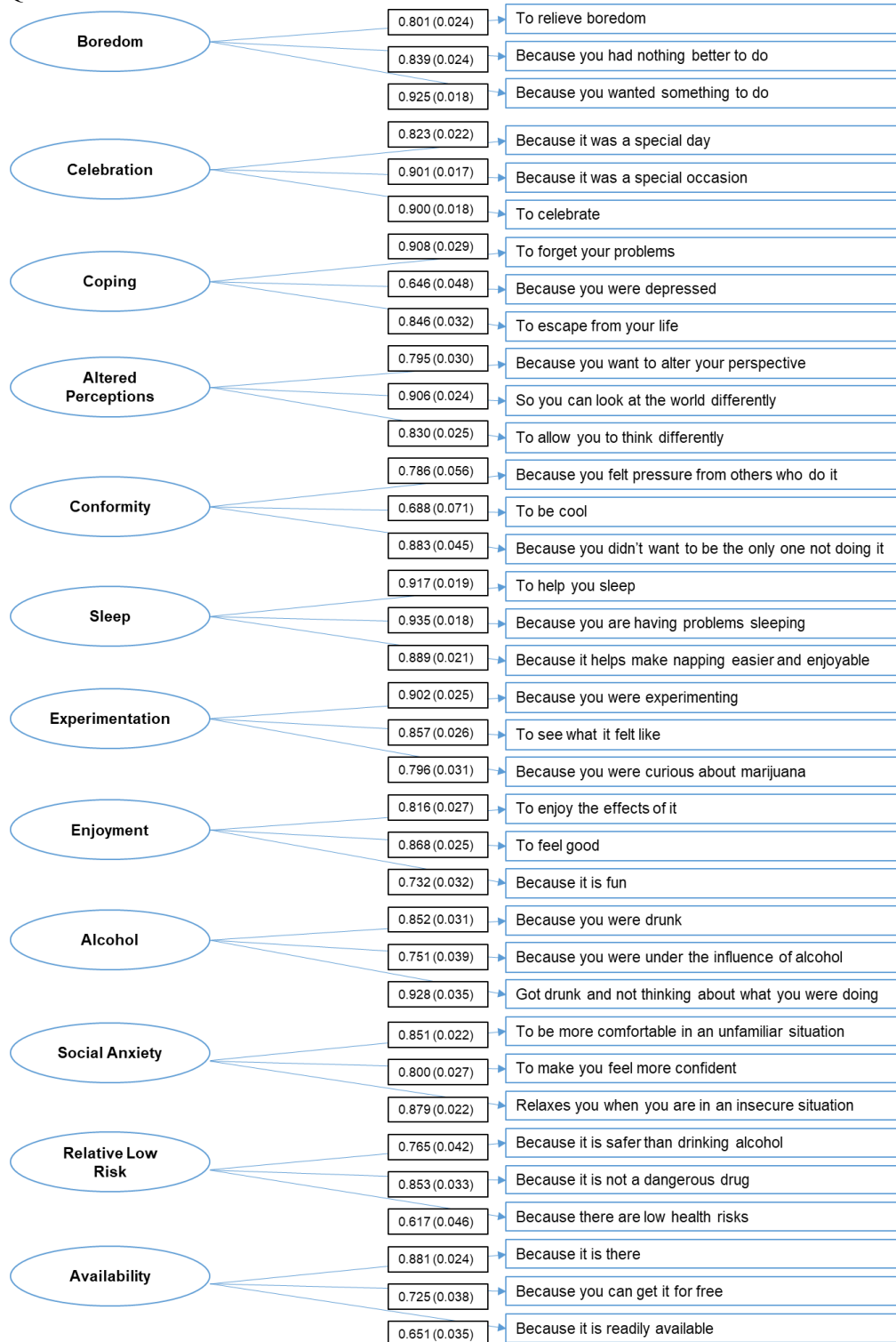


Figure 4.16. Confirmatory Factor Analysis Measurement Model. Comprehensive Marijuana Motives Questionnaire. Wave 2 Unstandardized Parameter Estimates.

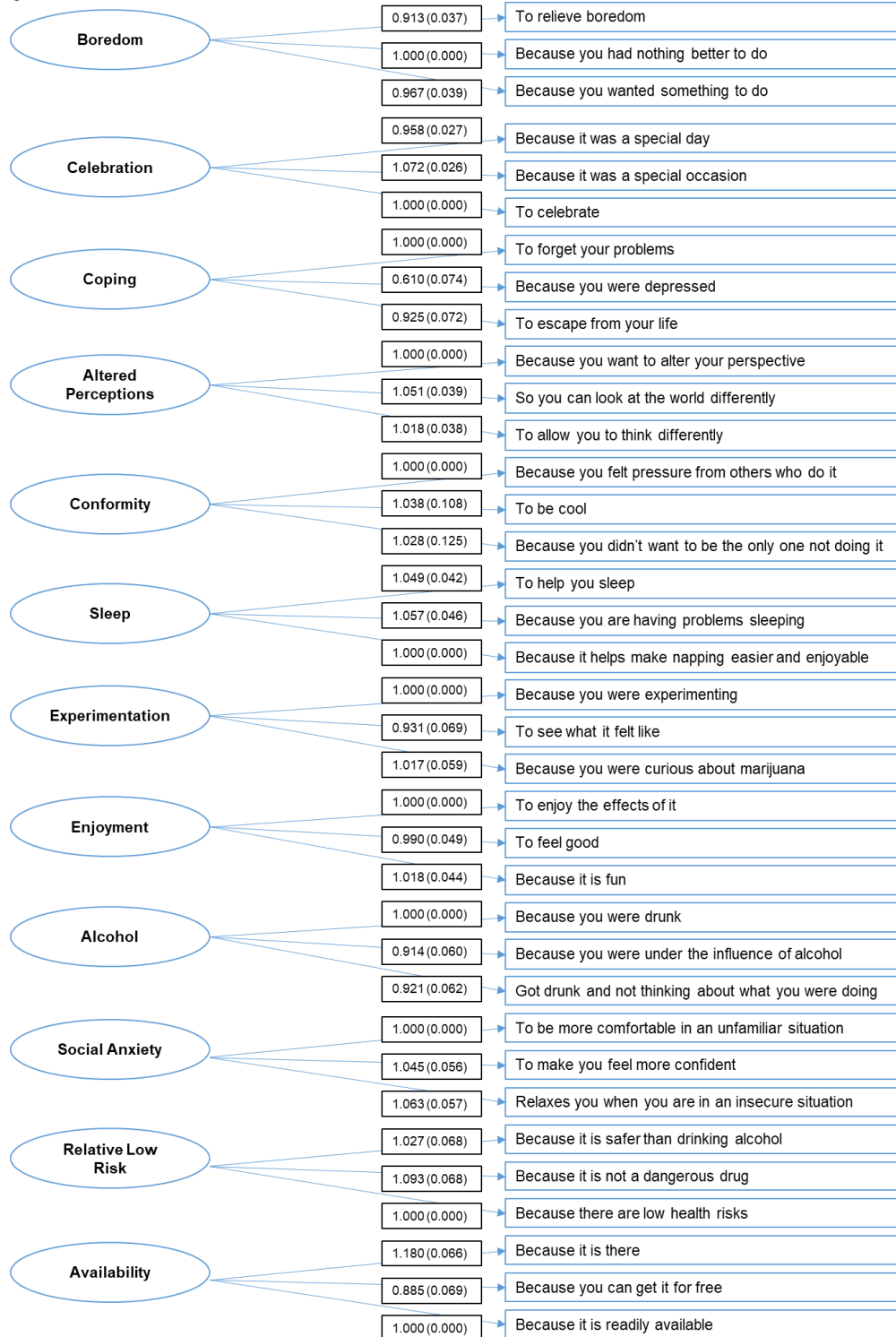


Figure 4.17. Confirmatory Factor Analysis Measurement Model. Comprehensive Marijuana Motives Questionnaire. Wave 2 Standardized Parameter Estimates.

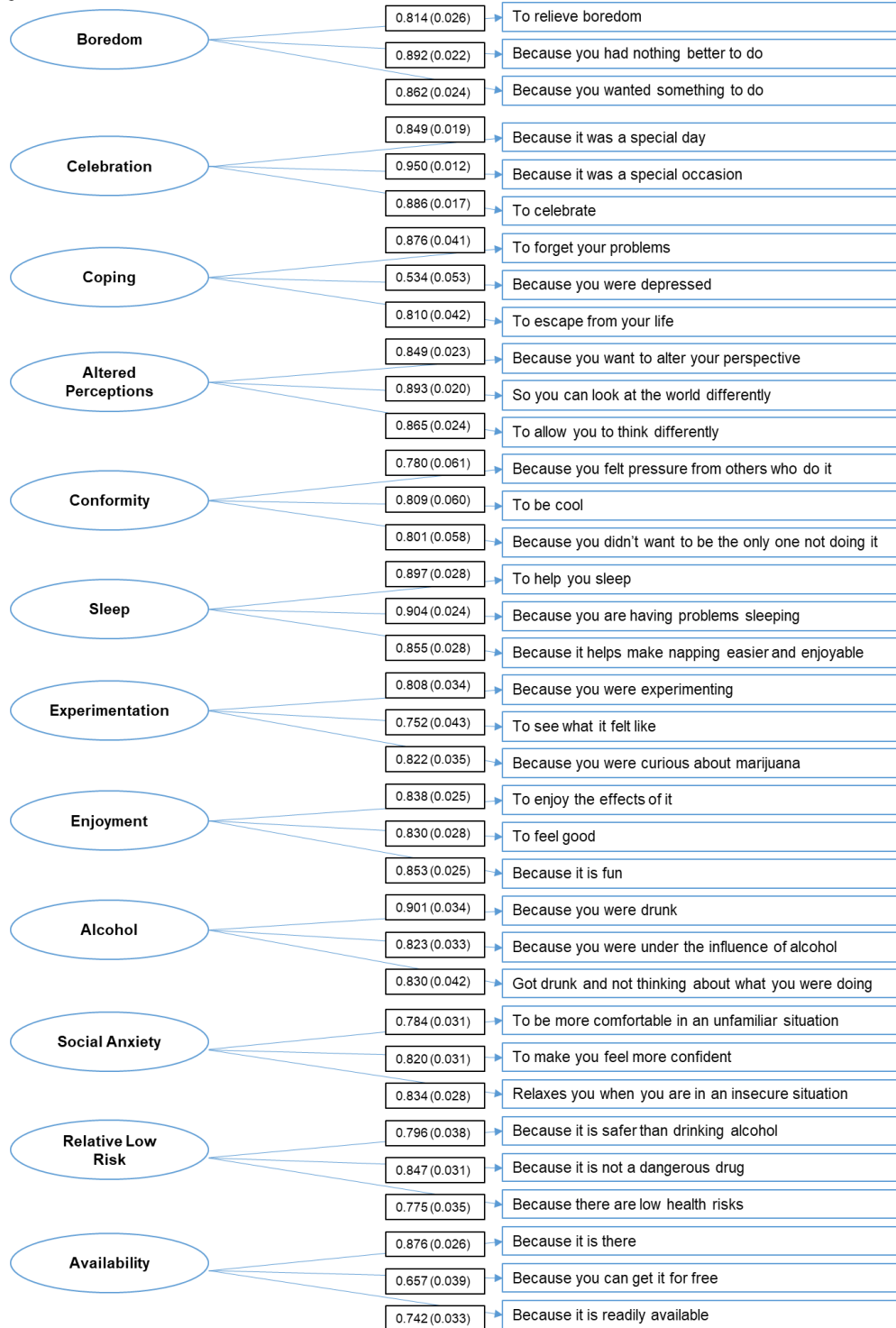


Table 4.25. Confirmatory Factor Analysis, Wave 1, 17 Original Hypothesized Factors, R-Square (N=364)

Indicator	R-Square				
	Estimate	Standard Error	Est./S.E.	P-Value	Residual Variance
Available	0.414	0.046	9.001	0.000	0.586
Bored	0.653	0.041	15.789	0.000	0.347
Special day	0.673	0.039	17.272	0.000	0.327
Influence alcohol	0.560	0.062	9.094	0.000	0.440
Pressure others	0.602	0.091	6.598	0.000	0.398
Depressed	0.473	0.065	7.274	0.000	0.527
Fun	0.482	0.049	9.899	0.000	0.518
Cool	0.470	0.102	4.623	0.000	0.530
Low health risk	0.350	0.054	6.470	0.000	0.650
Think differently	0.708	0.043	16.534	0.000	0.292
There	0.774	0.047	16.640	0.000	0.226
Nothing to do	0.692	0.043	16.087	0.000	0.308
Celebrate	0.783	0.035	22.491	0.000	0.217
Forget	0.818	0.055	14.748	0.000	0.182
Enjoy effect	0.655	0.047	13.876	0.000	0.345
Curious	0.644	0.053	12.093	0.000	0.356
Altered perception	0.595	0.051	11.725	0.000	0.405
Free	0.540	0.059	9.221	0.000	0.460
Something to do	0.858	0.036	24.062	0.000	0.142
Not doing it	0.802	0.085	9.440	0.000	0.198
Escape	0.674	0.055	12.172	0.000	0.326
Feltlike	0.710	0.050	14.325	0.000	0.290
No danger	0.627	0.051	12.223	0.000	0.373
Help sleep	0.819	0.032	25.602	0.000	0.181
Special occasion	0.845	0.032	26.275	0.000	0.155
Experiment	0.832	0.049	16.841	0.000	0.168
More comfortable	0.692	0.037	18.603	0.000	0.308
Drunk not thinking	0.905	0.074	12.182	0.000	0.095
Safer than alcohol	0.717	0.067	10.666	0.000	0.283
Problem sleeping	0.885	0.032	27.220	0.000	0.115
Relax insecure	0.795	0.035	22.678	0.000	0.205
Drunk	0.694	0.057	12.114	0.000	0.306
Word differently	0.837	0.047	17.864	0.000	0.163
Feel good	0.813	0.045	17.911	0.000	0.187
Napping	0.817	0.042	19.367	0.000	0.183
Feel confident	0.651	0.041	15.858	0.000	0.349
Headache	0.802	0.049	16.285	0.000	0.198

R-Square					
Indicator	Estimate	Standard Error	Est./S.E.	P-Value	Residual Variance
Cravings	0.574	0.050	11.515	0.000	0.426
Natural	0.678	0.048	14.245	0.000	0.322
Stomach	0.823	0.036	23.177	0.000	0.177
Alert	0.861	0.035	24.740	0.000	0.139
Side Effect	0.526	0.049	10.672	0.000	0.474
Feel Better Than Other Drugs	0.619	0.064	9.740	0.000	0.381
Help Pain	0.820	0.033	25.176	0.000	0.180
Sick	0.856	0.033	25.587	0.000	0.144
Concentrate	0.820	0.034	23.980	0.000	0.180
Natural Remedy	0.828	0.049	16.922	0.000	0.172
Vomit	0.669	0.043	15.491	0.000	0.331
Forget Other Drugs	0.798	0.055	14.528	0.000	0.202
Aches	0.826	0.031	26.963	0.000	0.174
Focused	0.840	0.031	27.168	0.000	0.160

Table 4.26. Confirmatory Factor Analysis, Wave 2, 17 Original Hypothesized Factors, R-Square (N=339)

Indicator	R-Square				
	Estimate	Standard Error	Est./S.E.	P-Value	Residual Variance
Available	0.549	0.052	10.594	0.000	0.451
Bored	0.661	0.043	15.225	0.000	0.339
Special Day	0.720	0.035	20.599	0.000	0.280
Influence Alcohol	0.660	0.055	11.980	0.000	0.340
Pressure Others	0.603	0.099	6.098	0.000	0.397
Depressed	0.317	0.061	5.242	0.000	0.683
Fun	0.679	0.046	14.698	0.000	0.321
Cool	0.654	0.104	6.308	0.000	0.346
Low Health Risk	0.562	0.050	11.228	0.000	0.438
Think Differently	0.773	0.043	18.019	0.000	0.227
There	0.772	0.047	16.373	0.000	0.228
Nothing To Do	0.795	0.040	19.859	0.000	0.205
Celebrate	0.773	0.031	24.738	0.000	0.227
Forget	0.768	0.073	10.513	0.000	0.232
Enjoy Effect	0.691	0.042	16.492	0.000	0.309
Curious	0.650	0.061	10.578	0.000	0.350
Altered Perception	0.686	0.040	17.268	0.000	0.314
Free	0.429	0.053	8.067	0.000	0.571
Something To Do	0.745	0.042	17.923	0.000	0.255
Not Doing It	0.648	0.099	6.563	0.000	0.352
Escape	0.625	0.067	9.314	0.000	0.375
Feltlike	0.547	0.065	8.430	0.000	0.453
No Danger	0.650	0.048	13.433	0.000	0.350
Help Sleep	0.776	0.040	19.256	0.000	0.224
Special Occasion	0.916	0.024	38.174	0.000	0.084
Experiment	0.698	0.058	12.076	0.000	0.302
More Comfortable	0.625	0.044	14.255	0.000	0.375
Drunk Not Thinking	0.695	0.075	9.288	0.000	0.305
Safer Than Alcohol	0.769	0.059	12.935	0.000	0.231
Problem Sleeping	0.860	0.041	21.031	0.000	0.140
Relax Insecure	0.711	0.043	16.555	0.000	0.289
Drunk	0.827	0.066	12.590	0.000	0.173
Word Differently	0.813	0.039	20.949	0.000	0.187
Feel Good	0.742	0.047	15.699	0.000	0.258
Napping	0.702	0.056	12.503	0.000	0.298
Feel Confident	0.644	0.047	13.778	0.000	0.356
Headache	0.651	0.052	12.629	0.000	0.349

R-Square					
Indicator	Estimate	Standard Error	Est./S.E.	P-Value	Residual Variance
Cravings	0.465	0.064	7.294	0.000	0.535
Natural	0.654	0.045	14.684	0.000	0.346
Stomach	0.746	0.044	17.096	0.000	0.254
Alert	0.797	0.045	17.893	0.000	0.203
Side Effect	0.595	0.053	11.217	0.000	0.405
Feel Better Than Other Drugs	0.747	0.081	9.237	0.000	0.253
Help Pain	0.830	0.035	23.948	0.000	0.170
Sick	0.847	0.035	24.339	0.000	0.153
Concentrate	0.841	0.029	28.594	0.000	0.159
Natural Remedy	0.837	0.052	16.150	0.000	0.163
Vomit	0.737	0.041	17.843	0.000	0.263
Forget Other Drugs	0.593	0.067	8.826	0.000	0.407
Aches	0.886	0.030	29.546	0.000	0.114
Focused	0.775	0.032	23.843	0.000	0.225

Table 4.27. Confirmatory Factor Analysis, Wave 1, Medical Items, R-Square (N=364)

R-Square					
Indicator	Estimate	Standard Error	Est./S.E.	P-Value	Residual Variance
Headache	0.633	0.043	14.618	0.000	0.367
Cravings	0.509	0.053	9.698	0.000	0.491
Natural	0.623	0.045	13.779	0.000	0.377
Stomach	0.788	0.034	23.402	0.000	0.212
Alert	0.843	0.031	27.066	0.000	0.157
Side Effect	0.569	0.049	11.688	0.000	0.431
Feel Better Than Other Drugs	0.648	0.072	8.941	0.000	0.352
Help Pain	0.872	0.028	31.569	0.000	0.128
Sick	0.855	0.031	27.871	0.000	0.145
Concentrate	0.836	0.032	26.507	0.000	0.164
Natural Remedy	0.853	0.045	18.895	0.000	0.147
Vomit	0.707	0.04	17.584	0.000	0.293
Forget Other Drugs	0.866	0.059	14.601	0.000	0.134
Aches	0.831	0.027	30.531	0.000	0.169
Focused	0.837	0.029	28.522	0.000	0.163

Table 4.28. Confirmatory Factor Analysis, Wave 2, Medical Items, R-Square (N=339)

R-Square					
Indicator	Estimate	Standard Error	Est./S.E.	P-Value	Residual Variance
Side Effect	0.602	0.051	11.791	0.000	0.398
Natural Remedy	0.851	0.044	19.273	0.000	0.149
Natural	0.638	0.043	14.759	0.000	0.362
Cravings	0.433	0.067	6.471	0.000	0.567
Forget Other Drugs	0.681	0.072	9.462	0.000	0.319
Feel Better Than Other Drugs	0.684	0.087	7.829	0.000	0.316
Alert	0.760	0.044	17.183	0.000	0.240
Concentrate	0.879	0.027	32.890	0.000	0.121
Focused	0.761	0.033	23.391	0.000	0.239
Aches	0.891	0.026	34.073	0.000	0.109
Headache	0.528	0.048	10.892	0.000	0.472
Help Pain	0.853	0.031	27.668	0.000	0.147
Stomach	0.708	0.042	16.719	0.000	0.292
Vomit	0.769	0.037	20.611	0.000	0.231
Sick	0.847	0.033	25.363	0.000	0.153

Table 4.29. Confirmatory Factor Analysis, Wave 1, Comprehensive Marijuana Motive Questionnaire Items, R-Square (N=364)

Indicator	Estimate	Standard Error	Est./S.E.	P-Value	Residual Variance
Available	0.424	0.045	9.417	0.000	0.576
Bored	0.641	0.039	16.406	0.000	0.359
Special Day	0.677	0.037	18.358	0.000	0.323
Influence Alcohol	0.564	0.058	9.744	0.000	0.436
Pressure Others	0.617	0.088	7.018	0.000	0.383
Depressed	0.417	0.062	6.758	0.000	0.583
Fun	0.536	0.046	11.565	0.000	0.464
Cool	0.474	0.097	4.858	0.000	0.526
Low Health Risk	0.381	0.057	6.732	0.000	0.619
Think Differently	0.689	0.042	16.581	0.000	0.311
There	0.775	0.043	17.984	0.000	0.225
Nothing To Do	0.704	0.041	17.252	0.000	0.296
Celebrate	0.810	0.033	24.879	0.000	0.19
Forget	0.825	0.053	15.514	0.000	0.175
Enjoy Effect	0.665	0.045	14.865	0.000	0.335
Curious	0.634	0.050	12.651	0.000	0.366
Altered Perception	0.631	0.048	13.140	0.000	0.369
Free	0.526	0.055	9.573	0.000	0.474
Something To Do	0.856	0.034	25.275	0.000	0.144
Not Doing It	0.780	0.080	9.775	0.000	0.22
Escape	0.716	0.054	13.307	0.000	0.284
Feltlike	0.734	0.045	16.214	0.000	0.266
No Danger	0.727	0.057	12.837	0.000	0.273
Help Sleep	0.841	0.035	24.209	0.000	0.159
Special Occasion	0.812	0.030	26.908	0.000	0.188
Experiment	0.814	0.044	18.302	0.000	0.186
More Comfortable	0.725	0.038	19.138	0.000	0.275
Drunk Not Thinking	0.861	0.065	13.310	0.000	0.139
Safer Than Alcohol	0.586	0.064	9.174	0.000	0.414
Problem Sleeping	0.874	0.035	25.305	0.000	0.126
Relax Insecure	0.772	0.038	20.403	0.000	0.228
Drunk	0.726	0.053	13.715	0.000	0.274
Word Differently	0.820	0.043	19.171	0.000	0.18
Feel Good	0.753	0.043	17.620	0.000	0.247
Napping	0.790	0.037	21.615	0.000	0.21
Feel Confident	0.640	0.043	14.975	0.000	0.36

Table 4.30. Confirmatory Factor Analysis, Wave 2, Comprehensive Marijuana Motive Questionnaire Items, R-Square (N=339)

Indicator	Estimate	Standard Error	Est./S.E.	P-Value	Residual Variance
Altered Perception	0.721	0.038	18.848	0.000	0.279
Available	0.551	0.049	11.137	0.000	0.449
Bored	0.662	0.043	15.478	0.000	0.338
Celebrate	0.786	0.029	26.824	0.000	0.214
Feel Confident	0.672	0.051	13.279	0.000	0.328
Cool	0.655	0.098	6.694	0.000	0.345
Curious	0.676	0.057	11.806	0.000	0.324
Depressed	0.285	0.057	5.040	0.000	0.715
Drunk	0.812	0.062	13.102	0.000	0.188
Drunk Not Thinking	0.689	0.070	9.892	0.000	0.311
Enjoy Effect	0.702	0.042	16.652	0.000	0.298
Escape	0.656	0.067	9.734	0.000	0.344
Experiment	0.654	0.055	11.870	0.000	0.346
Feltlike	0.566	0.064	8.780	0.000	0.434
Feel Good	0.688	0.047	14.664	0.000	0.312
Forget	0.767	0.071	10.753	0.000	0.233
Free	0.432	0.052	8.322	0.000	0.568
Fun	0.727	0.043	16.951	0.000	0.273
Help Sleep	0.805	0.041	19.631	0.000	0.195
Influence Alcohol	0.678	0.054	12.559	0.000	0.322
Low Health Risk	0.601	0.054	11.221	0.000	0.399
More Comfortable	0.615	0.048	12.788	0.000	0.385
Napping	0.731	0.049	15.021	0.000	0.269
No Danger	0.718	0.052	13.790	0.000	0.282
Not Doing It	0.642	0.093	6.929	0.000	0.358
Nothing To Do	0.795	0.040	19.979	0.000	0.205
Pressure Others	0.608	0.095	6.393	0.000	0.392
Problem Sleeping	0.817	0.044	18.525	0.000	0.183
Relax Insecure	0.695	0.047	14.788	0.000	0.305
Safer Than Alcohol	0.634	0.061	10.346	0.000	0.366
Something To Do	0.743	0.041	18.162	0.000	0.257
Special Day	0.721	0.032	22.209	0.000	0.279
Special Occasion	0.903	0.023	38.880	0.000	0.097
There	0.767	0.046	16.832	0.000	0.233
Think Differently	0.748	0.041	18.299	0.000	0.252
Word Differently	0.797	0.036	22.019	0.000	0.203

Table 4.31. Reliability Analysis. Cronbach's alphas Waves 1 & 2.

	Wave 1 (N=364)					Wave 2 (N=339)				
	Mean	Std. Deviation	Cronbach's Alpha	Cronbach's Alpha Standardized Items	Cronbach's Alpha if Item Deleted	Mean	Std. Deviation	Cronbach's Alpha	Cronbach's Alpha Standardized Items	Cronbach's Alpha if Item Deleted
Boredom	7.22	3.56	0.85	0.85	---	6.40	3.13	0.85	0.85	---
<i>To relieve boredom</i>	---	---	---	---	0.82	---	---	---	---	0.83
<i>Because you had nothing better to do</i>	---	---	---	---	0.77	---	---	---	---	0.75
<i>Because you wanted something to do</i>	---	---	---	---	0.78	---	---	---	---	0.77
Availability	8.34	3.40	0.72	0.72	---	7.50	3.23	0.74	0.74	---
<i>Because it is readily available</i>	---	---	---	---	0.62	---	---	---	---	0.67
<i>Because it is there</i>	---	---	---	---	0.48	---	---	---	---	0.55
<i>Because you can get it for free</i>	---	---	---	---	0.75	---	---	---	---	0.75
Celebration	9.15	3.50	0.88	0.88	---	8.15	3.45	0.90	0.90	---
<i>Because it was a special day</i>	---	---	---	---	0.84	---	---	---	---	0.88
<i>Because it was a special occasion</i>	---	---	---	---	0.83	---	---	---	---	0.82
<i>To celebrate</i>	---	---	---	---	0.83	---	---	---	---	0.87
Coping	6.75	3.39	0.80	0.80	---	5.88	2.73	0.72	0.73	---
<i>To forget your problems</i>	---	---	---	---	0.69	---	---	---	---	0.64
<i>Because you were depressed</i>	---	---	---	---	0.77	---	---	---	---	0.68
<i>To escape from your life</i>	---	---	---	---	0.72	---	---	---	---	0.58
Altered Perceptions	9.13	3.76	0.84	0.84	---	7.86	3.52	0.87	0.87	---
<i>Because you want to alter your perspective</i>	---	---	---	---	0.80	---	---	---	---	0.82
<i>So you can look at the world differently</i>	---	---	---	---	0.79	---	---	---	---	0.78
<i>To allow you to think differently</i>	---	---	---	---	0.73	---	---	---	---	0.84
Conformity	3.98	1.93	0.67	0.68	---	3.69	1.64	0.70	0.71	---
<i>Because you felt pressure from others who do it</i>	---	---	---	---	0.49	---	---	---	---	0.64
<i>Because you didnt want to be the only one not doing it</i>	---	---	---	---	0.55	---	---	---	---	0.57
<i>To be cool</i>	---	---	---	---	0.70	---	---	---	---	0.64
Sleep	10.12	3.90	0.89	0.89	---	9.69	3.67	0.85	0.85	---
<i>To help you sleep</i>	---	---	---	---	0.80	---	---	---	---	0.74
<i>Because it helps make napping easier and enjoyable</i>	---	---	---	---	0.91	---	---	---	---	0.89
<i>Because you are having problems sleeping</i>	---	---	---	---	0.80	---	---	---	---	0.74
Enjoyment	11.12	3.20	0.78	0.79	---	10.02	3.44	0.82	0.82	---
<i>To enjoy the effects of it</i>	---	---	---	---	0.64	---	---	---	---	0.68
<i>To feel good</i>	---	---	---	---	0.70	---	---	---	---	0.77

	Wave 1 (N=364)					Wave 2 (N=339)				
	Mean	Std. Deviation	Cronbach's Alpha	Cronbach's Alpha Standardized Items	Cronbach's Alpha if Item Deleted	Mean	Std. Deviation	Cronbach's Alpha	Cronbach's Alpha Standardized Items	Cronbach's Alpha if Item Deleted
<i>Because it is fun</i>	---	---	---	---	0.79	---	---	---	---	0.81
Experimentation	6.20	3.30	0.84	0.84	---	4.91	2.41	0.73	0.73	---
<i>Because you were experimenting</i>	---	---	---	---	0.79	---	---	---	---	0.60
<i>Because you were curious about marijuana</i>	---	---	---	---	0.80	---	---	---	---	0.60
<i>To see what it felt like</i>	---	---	---	---	0.75	---	---	---	---	0.73
Alcohol	5.13	2.62	0.79	0.79	---	4.61	2.27	0.78	0.78	---
<i>Because you were drunk</i>	---	---	---	---	0.59	---	---	---	---	0.63
<i>Because you were under the influence of alcohol</i>	---	---	---	---	0.79	---	---	---	---	0.68
<i>Because you had gotten drunk and werent thinking about what you were doing</i>	---	---	---	---	0.74	---	---	---	---	0.76
Attention	7.49	3.86	0.89	0.89	---	6.38	3.26	0.87	0.87	---
<i>To help me feel more alert</i>	---	---	---	---	0.89	---	---	---	---	0.88
<i>So that I can concentrate better</i>	---	---	---	---	0.84	---	---	---	---	0.78
<i>To keep me focused when Im distracted</i>	---	---	---	---	0.81	---	---	---	---	0.80
Natural Medicine	8.24	4.05	0.79	0.79	---	7.49	3.89	0.81	0.81	---
<i>To use a more natural remedy for my health condition</i>	---	---	---	---	0.72	---	---	---	---	0.74
<i>To avoid the side effects of prescription drugs</i>	---	---	---	---	0.74	---	---	---	---	0.78
<i>As a natural alternative to prescription or over-the-counter drugs</i>	---	---	---	---	0.69	---	---	---	---	0.68
Substitution	6.75	3.22	0.66	0.68	---	5.76	2.83	0.59	0.64	---
<i>To replace cravings for alcohol or other drugs</i>	---	---	---	---	0.50	---	---	---	---	0.44
<i>It makes me feel better than using alcohol or other drugs</i>	---	---	---	---	0.76	---	---	---	---	0.70
<i>To make me forget about using alcohol or other drugs</i>	---	---	---	---	0.43	---	---	---	---	0.40
Pain	9.07	4.01	0.85	0.85	---	8.25	3.74	0.83	0.83	---
<i>To relieve aches and pains</i>	---	---	---	---	0.72	---	---	---	---	0.65
<i>To make my headaches go away</i>	---	---	---	---	0.90	---	---	---	---	0.92
<i>To lessen the intensity of my pain</i>	---	---	---	---	0.73	---	---	---	---	0.70
Nausea	6.48	3.84	0.87	0.87	---	5.91	3.42	0.86	0.86	---
<i>So that I dont feel sick to my stomach</i>	---	---	---	---	0.82	---	---	---	---	0.84
<i>To keep me from vomiting</i>	---	---	---	---	0.82	---	---	---	---	0.79
<i>To help me keep food down when Im sick</i>	---	---	---	---	0.80	---	---	---	---	0.78

	Wave 1 (N=364)					Wave 2 (N=339)				
	Mean	Std. Deviation	Cronbach's Alpha	Cronbach's Alpha Standardized Items	Cronbach's Alpha if Item Deleted	Mean	Std. Deviation	Cronbach's Alpha	Cronbach's Alpha Standardized Items	Cronbach's Alpha if Item Deleted
Social Anxiety	8.25	3.84	0.84	0.84	---	6.83	3.28	0.79	0.79	---
<i>Because it makes you more comfortable in an unfamiliar situation</i>	---	---	---	---	0.78	---	---	---	---	0.69
<i>To make you feel more confident</i>	---	---	---	---	0.82	---	---	---	---	0.76
<i>Because it relaxes you when you are in an insecure situation</i>	---	---	---	---	0.72	---	---	---	---	0.70
Relative Low Risk	9.43	3.76	0.72	0.72	---	8.16	3.94	0.77	0.77	---
<i>Because it is safer than drinking alcohol</i>	---	---	---	---	0.70	---	---	---	---	0.79
<i>Because it is not a dangerous drug</i>	---	---	---	---	0.53	---	---	---	---	0.58
<i>Because there are low health risks</i>	---	---	---	---	0.66	---	---	---	---	0.70

Table 4.32. Multigroup Confirmatory Analysis. Fit Indices. (N=364)

	χ^2	df	p	CFI	TLI	RMSEA
<i>Comprehensive Marijuana Motive Questionnaire Items</i>						
Configural Invariance (Model A)	1738.2	1152	0.000	0.956	0.952	0.053
Measurement Invariance (Model B)	1729.599	1188	0.000	0.959	0.957	0.05
<i>Medical Items</i>						
Configural Invariance (Model C)	500.808	200	0.000	0.969	0.968	0.091
Measurement Invariance (Model D)	460.182	215	0.000	0.975	0.976	0.079

Table 4.33. Comprehensive Marijuana Motive Questionnaire Items Configural Invariance. Parameter Estimates by Gender. (N=364)

Parameter Estimates	Men						Women					
	Unstandardized			Standardized			Unstandardized			Standardized		
Motives & Indicators	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Boredom												
Nothing to do	0.824	0.031	0.000	0.824	0.031	0.000	0.880	0.127	0.000	0.870	0.035	0.000
Bored	0.812	0.029	0.000	0.812	0.029	0.000	1.012	0.151	0.000	0.798	0.042	0.000
Something to do	0.927	0.023	0.000	0.927	0.023	0.000	1.006	0.154	0.000	0.911	0.027	0.000
Celebration												
Celebrate	0.904	0.023	0.000	0.904	0.023	0.000	0.923	0.117	0.000	0.894	0.030	0.000
Special day	0.816	0.028	0.000	0.816	0.028	0.000	0.995	0.130	0.000	0.830	0.037	0.000
Special occasion	0.876	0.023	0.000	0.876	0.023	0.000	0.915	0.107	0.000	0.948	0.023	0.000
Coping												
Forget	0.883	0.037	0.000	0.883	0.037	0.000	0.779	0.102	0.000	0.942	0.050	0.000
Depressed	0.694	0.056	0.000	0.694	0.056	0.000	0.575	0.118	0.000	0.533	0.090	0.000
Escape	0.854	0.040	0.000	0.854	0.040	0.000	0.767	0.107	0.000	0.825	0.054	0.000
Altered perceptions												
Altered perception	0.806	0.033	0.000	0.806	0.033	0.000	0.774	0.129	0.000	0.780	0.061	0.000
Think differently	0.878	0.025	0.000	0.878	0.025	0.000	0.740	0.118	0.000	0.737	0.054	0.000
Word differently	0.891	0.025	0.000	0.891	0.025	0.000	0.977	0.141	0.000	0.937	0.055	0.000
Conformity												
Pressure others	0.752	0.067	0.000	0.752	0.067	0.000	0.967	0.245	0.000	0.871	0.077	0.000
Not doing it	0.863	0.061	0.000	0.863	0.061	0.000	1.066	0.265	0.000	0.895	0.066	0.000
Cool	0.578	0.096	0.000	0.578	0.096	0.000	0.915	0.190	0.000	0.880	0.063	0.000
Sleep												
Napping	0.904	0.020	0.000	0.904	0.020	0.000	0.928	0.148	0.000	0.869	0.054	0.000
Help sleep	0.918	0.020	0.000	0.918	0.020	0.000	0.752	0.102	0.000	0.910	0.039	0.000
Problem sleeping	0.956	0.018	0.000	0.956	0.018	0.000	0.741	0.114	0.000	0.871	0.042	0.000
Experimentation												
Experiment	0.888	0.034	0.000	0.888	0.034	0.000	1.080	0.163	0.000	0.918	0.034	0.000
Curious	0.792	0.038	0.000	0.792	0.038	0.000	0.911	0.155	0.000	0.799	0.053	0.000
Feltlike	0.874	0.033	0.000	0.874	0.033	0.000	0.812	0.127	0.000	0.861	0.038	0.000
Enjoyment												
Enjoy effect	0.830	0.033	0.000	0.830	0.033	0.000	0.734	0.121	0.000	0.766	0.052	0.000
Fun	0.707	0.038	0.000	0.707	0.038	0.000	0.779	0.134	0.000	0.778	0.057	0.000
Feel good	0.862	0.030	0.000	0.862	0.030	0.000	0.912	0.139	0.000	0.870	0.043	0.000

Alcohol												
Drunk	0.814	0.037	0.000	0.814	0.037	0.000	1.123	0.190	0.000	0.925	0.057	0.000
Influence alcohol	0.751	0.048	0.000	0.751	0.048	0.000	0.738	0.128	0.000	0.727	0.063	0.000
Drunk not thinking	0.984	0.040	0.000	0.984	0.040	0.000	0.882	0.143	0.000	0.834	0.060	0.000
Social anxiety												
More comfortable	0.844	0.025	0.000	0.844	0.025	0.000	0.878	0.121	0.000	0.875	0.041	0.000
Feel confident	0.797	0.033	0.000	0.797	0.033	0.000	0.785	0.115	0.000	0.806	0.044	0.000
Relax insecure	0.863	0.025	0.000	0.863	0.025	0.000	0.878	0.131	0.000	0.907	0.040	0.000
Relative low risk												
Low health risk	0.708	0.046	0.000	0.708	0.046	0.000	0.576	0.150	0.000	0.483	0.097	0.000
Safer than alcohol	0.833	0.042	0.000	0.833	0.042	0.000	0.417	0.094	0.000	0.579	0.088	0.000
No danger	0.821	0.038	0.000	0.821	0.038	0.000	0.906	0.155	0.000	0.937	0.065	0.000
Availability												
Available	0.551	0.047	0.000	0.551	0.047	0.000	0.950	0.137	0.000	0.827	0.042	0.000
Free	0.743	0.047	0.000	0.743	0.047	0.000	0.703	0.127	0.000	0.675	0.066	0.000
There	0.856	0.034	0.000	0.856	0.034	0.000	0.840	0.112	0.000	0.899	0.034	0.000

Table 4.34. Comprehensive Marijuana Motive Questionnaire Items Configural Invariance. Covariances by Gender. (N=364)

Motive	Boredom	Celebration	Coping	Altered Perceptions	Conformity	Sleep	Experimentation	Enjoyment	Alcohol	Social Anxiety	Relative Low Risk	Availability
Boredom	--	0.654	0.561	0.492	0.63	0.265	0.749	0.713	0.426	0.455	0.549	0.872
Celebration	0.531	--	0.485	0.526	0.346	0.276	0.644	0.768	0.461	0.449	0.334	0.665
Coping	0.623	0.363	--	0.559	0.531	0.219	0.491	0.416	0.414	0.469	0.366	0.401
Altered Perceptions	0.550	0.490	0.463	--	0.309	0.252	0.619	0.635	0.254	0.603	0.662	0.433
Conformity	0.653	0.352	0.495	0.228	--	0.063	0.717	0.369	0.51	0.351	0.401	0.481
Sleep	0.233	0.358	0.415	0.424	<u>-0.061</u>	--	<u>0.184</u>	0.26	0.213	0.589	0.376	<u>0.076</u>
Experimentation	0.514	0.419	0.311	0.508	0.523	0.296	--	0.624	0.394	0.558	0.553	0.673
Enjoyment	0.728	0.618	0.472	0.729	0.358	0.295	0.386	--	0.36	0.518	0.622	0.753
Alcohol	0.462	0.353	0.343	0.249	0.593	0.228	0.370	0.284	--	0.384	0.438	0.443
Social Anxiety	0.455	0.591	0.609	0.681	<u>0.160</u>	0.701	0.481	0.618	0.302	--	0.591	0.273
Relative Low Risk	0.477	0.430	0.397	0.650	0.274	0.447	0.571	0.661	0.175	0.685	--	0.407
Availability	0.797	0.568	0.328	0.524	0.643	<u>0.112</u>	0.443	0.733	0.522	0.429	0.601	--

Women ; Not significant at $p < 0.05$

Table 4.35. Comprehensive Marijuana Motive Questionnaire Items. Measurement Invariance. Parameter Estimates by Gender. (N=364)

Parameter Estimates	Men						Women					
	Unstandardized			Standardized			Unstandardized			Standardized		
Motives & Indicators	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Boredom												
Nothing to do	0.825	0.029	0.000	0.825	0.029	0.000	0.825	0.029	0.000	0.868	0.032	0.000
Bored	0.818	0.027	0.000	0.818	0.027	0.000	0.818	0.027	0.000	0.785	0.037	0.000
Something to do	0.928	0.022	0.000	0.928	0.022	0.000	0.928	0.022	0.000	0.908	0.024	0.000
Celebration												
Celebrate	0.904	0.022	0.000	0.904	0.022	0.000	0.904	0.022	0.000	0.894	0.028	0.000
Special day	0.822	0.026	0.000	0.822	0.026	0.000	0.822	0.026	0.000	0.821	0.034	0.000
Special occasion	0.876	0.021	0.000	0.876	0.021	0.000	0.876	0.021	0.000	0.947	0.021	0.000
Coping												
Forget	0.880	0.034	0.000	0.880	0.034	0.000	0.880	0.034	0.000	0.953	0.047	0.000
Depressed	0.685	0.052	0.000	0.685	0.052	0.000	0.685	0.052	0.000	0.550	0.075	0.000
Escape	0.850	0.036	0.000	0.850	0.036	0.000	0.850	0.036	0.000	0.833	0.047	0.000
Altered perceptions												
Altered perception	0.805	0.032	0.000	0.805	0.032	0.000	0.805	0.032	0.000	0.781	0.055	0.000
Think differently	0.874	0.024	0.000	0.874	0.024	0.000	0.874	0.024	0.000	0.747	0.048	0.000
Word differently	0.894	0.024	0.000	0.894	0.024	0.000	0.894	0.024	0.000	0.931	0.050	0.000
Conformity												
Pressure others	0.761	0.054	0.000	0.761	0.054	0.000	0.761	0.054	0.000	0.873	0.068	0.000
Not doing itt	0.859	0.052	0.000	0.859	0.052	0.000	0.859	0.052	0.000	0.905	0.060	0.000
Cool	0.634	0.067	0.000	0.634	0.067	0.000	0.634	0.067	0.000	0.848	0.058	0.000
Sleep												
Napping	0.905	0.019	0.000	0.905	0.019	0.000	0.905	0.019	0.000	0.862	0.046	0.000
Help sleep	0.917	0.020	0.000	0.917	0.020	0.000	0.917	0.020	0.000	0.918	0.034	0.000
Problem sleeping	0.955	0.018	0.000	0.955	0.018	0.000	0.955	0.018	0.000	0.875	0.039	0.000
Experimentation												
Experiment	0.897	0.031	0.000	0.897	0.031	0.000	0.897	0.031	0.000	0.907	0.031	0.000
Curious	0.798	0.035	0.000	0.798	0.035	0.000	0.798	0.035	0.000	0.791	0.046	0.000
Feltlike	0.866	0.031	0.000	0.866	0.031	0.000	0.866	0.031	0.000	0.868	0.034	0.000
Enjoyment												
Enjoy effect	0.826	0.032	0.000	0.826	0.032	0.000	0.826	0.032	0.000	0.775	0.045	0.000
Fun	0.710	0.036	0.000	0.710	0.036	0.000	0.710	0.036	0.000	0.772	0.050	0.000
Feel good	0.865	0.029	0.000	0.865	0.029	0.000	0.865	0.029	0.000	0.864	0.037	0.000

Parameter Estimates	Men						Women					
	Unstandardized			Standardized			Unstandardized			Standardized		
	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Motives & Indicators												
Alcohol												
Drunk	0.843	0.035	0.000	0.843	0.035	0.000	0.843	0.035	0.000	0.876	0.046	0.000
Influence alcohol	0.746	0.042	0.000	0.746	0.042	0.000	0.746	0.042	0.000	0.742	0.052	0.000
Drunk not thinking	0.959	0.037	0.000	0.959	0.037	0.000	0.959	0.037	0.000	0.871	0.048	0.000
Social anxiety												
More comfortable	0.845	0.024	0.000	0.845	0.024	0.000	0.845	0.024	0.000	0.874	0.038	0.000
Feel confident	0.796	0.031	0.000	0.796	0.031	0.000	0.796	0.031	0.000	0.807	0.040	0.000
Relax insecure	0.864	0.024	0.000	0.864	0.024	0.000	0.864	0.024	0.000	0.907	0.037	0.000
Relative low risk												
Low health risk	0.703	0.044	0.000	0.703	0.044	0.000	0.703	0.044	0.000	0.502	0.085	0.000
Safer than alcohol	0.818	0.040	0.000	0.818	0.040	0.000	0.818	0.040	0.000	0.629	0.079	0.000
No danger	0.822	0.036	0.000	0.822	0.036	0.000	0.822	0.036	0.000	0.946	0.057	0.000
Availability												
Available	2.601	0.186	0.000	0.582	0.042	0.000	2.601	0.186	0.000	0.796	0.038	0.000
Free	3.343	0.194	0.000	0.748	0.043	0.000	3.343	0.194	0.000	0.675	0.058	0.000
There	3.866	0.137	0.000	0.864	0.031	0.000	3.866	0.137	0.000	0.897	0.030	0.000

Table 4.36. Comprehensive Marijuana Motive Questionnaire Items. Measurement Invariance. Covariances by Gender. (N=364)

Motive	Boredom	Celebration	Coping	Altered Perceptions	Conformity	Sleep	Experimentation	Enjoyment	Alcohol	Social Anxiety	Relative Low Risk	Availability
Boredom	--	<u>0.661</u>	<u>0.556</u>	<u>0.495</u>	<u>0.637</u>	<u>0.266</u>	<u>0.757</u>	<u>0.719</u>	<u>0.431</u>	<u>0.458</u>	<u>0.536</u>	<u>0.199</u>
Celebration	<u>0.528</u>	--	<u>0.479</u>	<u>0.526</u>	<u>0.349</u>	<u>0.275</u>	<u>0.650</u>	<u>0.772</u>	<u>0.465</u>	<u>0.451</u>	<u>0.324</u>	<u>0.151</u>
Coping	<u>0.625</u>	<u>0.364</u>	--	<u>0.551</u>	<u>0.527</u>	<u>0.215</u>	<u>0.486</u>	<u>0.410</u>	<u>0.409</u>	<u>0.463</u>	<u>0.350</u>	<u>0.090</u>
Altered Perceptions	<u>0.548</u>	<u>0.489</u>	<u>0.466</u>	--	<u>0.310</u>	<u>0.251</u>	<u>0.621</u>	<u>0.635</u>	<u>0.250</u>	<u>0.603</u>	<u>0.643</u>	<u>0.098</u>
Conformity	<u>0.641</u>	<u>0.346</u>	<u>0.490</u>	<u>0.227</u>	--	<u>0.064</u>	<u>0.726</u>	<u>0.370</u>	<u>0.517</u>	<u>0.354</u>	<u>0.386</u>	<u>0.110</u>
Sleep	<u>0.232</u>	<u>0.357</u>	<u>0.417</u>	<u>0.424</u>	-0.060	--	<u>0.183</u>	<u>0.259</u>	<u>0.212</u>	<u>0.588</u>	<u>0.367</u>	<u>0.017</u>
Experimentation	<u>0.511</u>	<u>0.418</u>	<u>0.312</u>	<u>0.507</u>	<u>0.512</u>	<u>0.295</u>	--	<u>0.628</u>	<u>0.399</u>	<u>0.561</u>	<u>0.540</u>	<u>0.153</u>
Enjoyment	<u>0.725</u>	<u>0.616</u>	<u>0.475</u>	<u>0.729</u>	<u>0.350</u>	<u>0.295</u>	<u>0.384</u>	--	<u>0.360</u>	<u>0.519</u>	<u>0.605</u>	<u>0.171</u>
Alcohol	<u>0.460</u>	<u>0.353</u>	<u>0.344</u>	<u>0.249</u>	<u>0.581</u>	<u>0.227</u>	<u>0.368</u>	<u>0.285</u>	--	<u>0.384</u>	<u>0.425</u>	<u>0.101</u>
Social Anxiety	<u>0.454</u>	<u>0.590</u>	<u>0.613</u>	<u>0.681</u>	<u>0.158</u>	<u>0.701</u>	<u>0.480</u>	<u>0.618</u>	<u>0.301</u>	--	<u>0.574</u>	<u>0.062</u>
Relative Low Risk	<u>0.480</u>	<u>0.433</u>	<u>0.403</u>	<u>0.656</u>	<u>0.271</u>	<u>0.451</u>	<u>0.574</u>	<u>0.666</u>	<u>0.174</u>	<u>0.691</u>	--	<u>0.089</u>
Availability	<u>0.175</u>	<u>0.124</u>	<u>0.072</u>	<u>0.115</u>	<u>0.139</u>	<u>0.024</u>	<u>0.097</u>	<u>0.161</u>	<u>0.115</u>	<u>0.094</u>	<u>0.133</u>	--

Women; Significant at p < 0.05

Table 4.37. Medical Items. Configural Invariance. Parameter Estimates by Gender. (N=364)

	Men						Women					
Parameter Estimates	Unstandardized			Standardized			Unstandardized			Standardized		
Motives & Indicators	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Natural Remedy												
Side effect	0.706	0.043	0.000	0.706	0.043	0.000	0.724	0.105	0.000	0.863	0.045	0.000
Natural remedy	0.930	0.029	0.000	0.930	0.029	0.000	0.827	0.141	0.000	0.890	0.043	0.000
Natural	0.797	0.034	0.000	0.797	0.034	0.000	0.792	0.153	0.000	0.765	0.051	0.000
Attention												
Alert	0.918	0.021	0.000	0.918	0.021	0.000	0.874	0.121	0.000	0.919	0.031	0.000
Concentrate	0.922	0.018	0.000	0.922	0.018	0.000	0.844	0.118	0.000	0.916	0.033	0.000
Focused	0.935	0.015	0.000	0.935	0.015	0.000	1.029	0.157	0.000	0.872	0.035	0.000
Pain												
Aches	0.910	0.018	0.000	0.910	0.018	0.000	0.835	0.126	0.000	0.904	0.026	0.000
Headache	0.788	0.034	0.000	0.788	0.034	0.000	0.823	0.129	0.000	0.802	0.045	0.000
Help pain	0.933	0.019	0.000	0.933	0.019	0.000	0.762	0.101	0.000	0.938	0.022	0.000
Nausea												
Stomach	0.864	0.027	0.000	0.864	0.027	0.000	1.028	0.150	0.000	0.942	0.027	0.000
Vomit	0.839	0.031	0.000	0.839	0.031	0.000	0.696	0.097	0.000	0.838	0.038	0.000
Sick	0.926	0.024	0.000	0.926	0.024	0.000	0.762	0.115	0.000	0.907	0.025	0.000
Substitution												
Cravings	0.701	0.045	0.000	0.701	0.045	0.000	0.776	0.131	0.000	0.776	0.059	0.000
Forget other drugs	0.892	0.039	0.000	0.892	0.039	0.000	1.186	0.213	0.000	0.993	0.057	0.000
Feel better than other drugs	0.805	0.052	0.000	0.805	0.052	0.000	0.740	0.145	0.000	0.766	0.083	0.000

Table 4.38. Medical Items. Configural Invariance. Covariances by Gender. (N=364)

Motive	Natural Remedy	Attention	Pain	Nausea	Substitution
Natural Remedy	--	<i>0.452</i>	<i>0.665</i>	<i>0.716</i>	<i>0.605</i>
Attention	<i>0.757</i>	--	<i>0.700</i>	<i>0.680</i>	<i>0.501</i>
Pain	<i>0.778</i>	<i>0.652</i>	--	<i>0.797</i>	<i>0.571</i>
Nausea	<i>0.786</i>	<i>0.673</i>	<i>0.789</i>	--	<i>0.566</i>
Substitution	<i>0.760</i>	<i>0.685</i>	<i>0.715</i>	<i>0.709</i>	--

Women

Table 4.39. Medical Items. Measurement Invariance. Parameter Estimates by Gender. (N=364)

Parameter Estimates	Men						Women					
	Unstandardized			Standardized			Unstandardized			Standardized		
Motives & Indicators	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value	Estimate	Standard Error	P Value
Natural remedy												
Side effect	0.707	0.039	0	0.707	0.039	0	0.707	0.039	0	0.861	0.043	0
Natural remedy	0.928	0.028	0	0.928	0.028	0	0.928	0.028	0	0.895	0.039	0
Natural	0.797	0.033	0	0.797	0.033	0	0.797	0.033	0	0.765	0.048	0
Attention												
Alert	0.916	0.02	0	0.916	0.02	0	0.916	0.02	0	0.922	0.029	0
Concentrate	0.92	0.017	0	0.92	0.017	0	0.92	0.017	0	0.921	0.03	0
Focused	0.938	0.015	0	0.938	0.015	0	0.938	0.015	0	0.866	0.033	0
Pain												
Aches	0.91	0.018	0	0.91	0.018	0	0.91	0.018	0	0.904	0.024	0
Headache	0.79	0.033	0	0.79	0.033	0	0.79	0.033	0	0.801	0.042	0
Help pain	0.931	0.018	0	0.931	0.018	0	0.931	0.018	0	0.942	0.02	0
Nausea												
Stomach	0.877	0.025	0	0.877	0.025	0	0.877	0.025	0	0.931	0.025	0
Vomit	0.83	0.028	0	0.83	0.028	0	0.83	0.028	0	0.848	0.035	0
Sick	0.921	0.022	0	0.921	0.022	0	0.921	0.022	0	0.913	0.024	0
Substitution												
Cravings	0.703	0.04	0	0.703	0.04	0	0.703	0.04	0	0.784	0.051	0
Forget other drugs	0.91	0.036	0	0.91	0.036	0	0.91	0.036	0	0.965	0.047	0
Feel better than other drugs	0.81	0.05	0	0.81	0.05	0	0.81	0.05	0	0.767	0.071	0

Table 4.40. Medical Items. Measurement Invariance. Covariances by Gender. (N=364)

Motive	Natural Remedy	Attention	Pain	Nausea	Substitution
Natural Remedy	--	<i>0.451</i>	<i>0.663</i>	<i>0.714</i>	<i>0.611</i>
Attention	0.758	--	<i>0.698</i>	<i>0.679</i>	<i>0.505</i>
Pain	0.779	0.653	--	<i>0.797</i>	<i>0.575</i>
Nausea	0.787	0.673	0.789	--	<i>0.571</i>
Substitution	0.753	0.678	0.708	0.701	--

Women

Table 4.41. Regression of Depressive Symptomatology on Motives of Marijuana Use

	Depressive Symptomatology					
	Without Control Variables (n=350)			With Control Variables (n=350)		
	B	Std. Error	p	B	Std. Error	p
(Constant)	1.405	1.035	0.175	4.801	2.411	0.047
Boredom	0.206	0.291	0.480	0.147	0.300	0.624
Availability	0.194	0.285	0.498	0.178	0.289	0.539
Celebrate	-0.534	0.264	0.044	-0.413	0.272	0.130
Coping	1.816	0.250	0.000*	1.890	0.255	0.000
Altered Perceptions	0.106	0.246	0.667	0.071	0.248	0.775
Conformity	-0.695	0.415	0.095	-0.768	0.424	0.071
Sleep	0.160	0.232	0.490	0.122	0.236	0.606
Experimentation	-0.165	0.264	0.533	-0.173	0.267	0.518
Enjoyment	-0.061	0.310	0.845	-0.107	0.316	0.735
Alcohol	0.267	0.299	0.373	0.290	0.301	0.337
Attention	-0.416	0.249	0.096	-0.393	0.256	0.125
Substitution	0.214	0.311	0.492	0.224	0.318	0.480
Natural remedy	0.251	0.247	0.310	0.224	0.260	0.391
Pain	-0.529	0.263	0.045	-0.496	0.267	0.064
Nausea	-0.137	0.258	0.595	-0.145	0.263	0.581
Social Anxiety	0.543	0.283	0.056	0.519	0.285	0.070
Relative Low Risk	-0.135	0.242	0.578	-0.094	0.248	0.706
Age (today)	---	---	---	-0.135	0.096	0.163
Non-Hispanic Black/African American**	---	---	---	-1.207	0.705	0.088
Non-Hispanic Asian/Pacific Islander**	---	---	---	-0.724	1.252	0.563
Non-Hispanic Multiethnic**	---	---	---	-0.475	1.047	0.650
Hispanic Latino**	---	---	---	-0.512	0.583	0.380
Women**	---	---	---	-0.168	0.509	0.742
User group**	---	---	---	0.041	0.506	0.936
F	5.605*			4.164*		
df	17			24		
R ²	0.223			0.235		

*Significant at Bonferroni corrected $p \leq 0.003$

** Reference categories: Race/ethnicity = Non-Hispanic White; Gender = Men; user group = non-patient

Table 4.42a. Regression of Depressive Symptomatology on Motives of Marijuana Use Mediated by Past 90 Days Use, No Control Variables (n=355)

	Past 90 Days MJ Use (M)					Depressive Symptomatology (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	53.090	6.011	0.000	41.267	64.914	2.758	1.131	0.015	0.533	4.982
Boredom	2.051	1.687	0.225	-1.268	5.370	0.279	0.287	0.331	-0.285	0.843
Availability	-3.663	1.656	0.028	-6.920	-0.405	0.081	0.283	0.774	-0.475	0.638
Celebrate	2.175	1.502	0.149	-0.780	5.130	-0.437	0.256	0.088	-0.939	0.066
Coping	-0.898	1.445	0.535	-3.740	1.945	1.792	0.245	0.000	1.310	2.274
Altered Perceptions	1.449	1.414	0.306	-1.332	4.231	0.164	0.240	0.494	-0.308	0.637
Conformity	-6.442	2.412	0.008	-11.186	-1.698	-0.867	0.413	0.037	-1.680	-0.054
Sleep	0.430	1.344	0.749	-2.214	3.074	0.191	0.228	0.402	-0.257	0.640
Experimentation	-3.031	1.526	0.048	-6.032	-0.030	-0.244	0.260	0.349	-0.756	0.268
Enjoyment	-0.506	1.782	0.777	-4.011	3.000	-0.127	0.302	0.676	-0.721	0.468
Alcohol	0.814	1.730	0.639	-2.590	4.217	0.275	0.293	0.350	-0.302	0.852
Attention	0.390	1.449	0.788	-2.461	3.241	-0.410	0.246	0.096	-0.893	0.074
Substitution	-0.475	1.803	0.792	-4.021	3.071	0.241	0.306	0.432	-0.361	0.842
Natural remedy	-0.789	1.438	0.584	-3.617	2.039	0.220	0.244	0.368	-0.260	0.700
Pain	3.436	1.527	0.025	0.432	6.441	-0.435	0.261	0.097	-0.948	0.078
Nausea	1.259	1.489	0.398	-1.669	4.187	-0.115	0.253	0.651	-0.612	0.383
Social Anxiety	3.382	1.616	0.037	0.202	6.561	0.567	0.276	0.041	0.024	1.109
Relative Low Risk	1.995	1.409	0.158	-0.776	4.766	-0.091	0.240	0.705	-0.562	0.380
Past 90 Days Marijuana Use	---	---	---	---	---	-0.024	0.009	0.010	-0.042	-0.006
	$R^2 = 0.1932$					$R^2 = 0.241$				
	$F(17,337) = 4.7484^*$					$F(18,336) = 5.928^*$				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.42b. Indirect and Total Effects of Mediation Analysis of Depressive Symptomatology on Motives of Marijuana Use Mediated by Past 90 Days Use, No Control Variables (n=355)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.049	-0.164	0.029	0.230	0.289	0.426	-0.337	0.798
Availability	0.087	0.003	0.206	0.169	0.283	0.552	-0.388	0.725
Celebrate	-0.052	-0.149	0.019	-0.489	0.257	0.058	-0.994	0.017
Coping	0.021	-0.053	0.106	1.813	0.247	0.000	1.327	2.299
Altered Perceptions	-0.035	-0.117	0.026	0.130	0.242	0.592	-0.346	0.605
Conformity	0.153	0.012	0.361	-0.714	0.412	0.084	-1.525	0.097
Sleep	-0.010	-0.089	0.056	0.181	0.230	0.431	-0.271	0.633
Experimentation	0.072	-0.004	0.186	-0.172	0.261	0.511	-0.685	0.341
Enjoyment	0.012	-0.073	0.120	-0.115	0.305	0.707	-0.714	0.485
Alcohol	-0.019	-0.104	0.067	0.256	0.296	0.388	-0.326	0.837
Attention	-0.009	-0.079	0.069	-0.419	0.248	0.092	-0.906	0.068
Substitution	0.011	-0.089	0.110	0.252	0.308	0.414	-0.354	0.858
Natural remedy	0.019	-0.047	0.104	0.239	0.246	0.332	-0.245	0.722
Pain	-0.082	-0.201	-0.004	-0.517	0.261	0.049	-1.030	-0.003
Nausea	-0.030	-0.115	0.032	-0.145	0.255	0.571	-0.645	0.356
Social Anxiety	-0.081	-0.195	-0.004	0.486	0.276	0.079	-0.057	1.030
Relative Low Risk	-0.048	-0.142	0.013	-0.138	0.241	0.566	-0.612	0.335

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.42c. Regression of Depressive Symptomatology on Motives of Marijuana Use Mediated by Past 90 Days Use, With Control Variables (n=350)

	Past 90 Days MJ Use (M)					Depressive Symptomatology (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	52.181	13.622	0.000	25.382	78.979	6.164	2.441	0.012	1.361	10.967
Boredom	1.390	1.694	0.413	-1.944	4.723	0.184	0.297	0.538	-0.402	0.769
Availability	-3.064	1.632	0.061	-6.274	0.147	0.098	0.288	0.735	-0.468	0.664
Celebrate	3.043	1.538	0.049	0.017	6.068	-0.334	0.271	0.219	-0.868	0.200
Coping	-0.780	1.440	0.589	-3.611	2.052	1.870	0.253	0.000	1.373	2.367
Altered Perceptions	1.415	1.401	0.313	-1.341	4.172	0.108	0.246	0.662	-0.376	0.592
Conformity	-5.886	2.395	0.015	-10.597	-1.175	-0.922	0.424	0.030	-1.755	-0.088
Sleep	-0.095	1.335	0.944	-2.721	2.532	0.120	0.234	0.610	-0.341	0.580
Experimentation	-2.907	1.508	0.055	-5.873	0.059	-0.249	0.266	0.350	-0.772	0.274
Enjoyment	-1.123	1.787	0.530	-4.638	2.392	-0.137	0.313	0.664	-0.753	0.480
Alcohol	1.307	1.703	0.443	-2.043	4.656	0.324	0.299	0.279	-0.264	0.912
Attention	0.531	1.444	0.713	-2.310	3.372	-0.379	0.253	0.135	-0.877	0.119
Substitution	0.357	1.795	0.842	-3.174	3.889	0.234	0.315	0.458	-0.385	0.853
Natural remedy	-2.806	1.471	0.057	-5.701	0.089	0.150	0.259	0.563	-0.360	0.661
Pain	3.394	1.508	0.025	0.428	6.361	-0.408	0.266	0.127	-0.932	0.117
Nausea	1.491	1.487	0.317	-1.435	4.417	-0.106	0.261	0.684	-0.620	0.407
Social Anxiety	2.908	1.612	0.072	-0.263	6.078	0.595	0.284	0.037	0.036	1.154
Relative Low Risk	2.573	1.403	0.068	-0.186	5.333	-0.026	0.247	0.915	-0.513	0.460
Past 90 Days Marijuana Use	---	---	---	---	---	-0.026	0.010	0.008	-0.045	-0.007
Age (today)	-0.080	0.545	0.883	-1.153	0.992	-0.262	0.506	0.605	-1.258	0.733
Non-Hispanic Black/African American**	-1.647	3.986	0.680	-9.489	6.194	-1.250	0.699	0.075	-2.625	0.125
Non-Hispanic Asian/Pacific Islander**	-10.204	7.075	0.150	-24.122	3.714	-0.991	1.244	0.426	-3.439	1.457
Non-Hispanic Multiethnic**	-7.876	5.916	0.184	-19.515	3.762	-0.681	1.040	0.513	-2.727	1.365
Hispanic Latino**	-1.447	3.293	0.661	-7.926	5.031	-0.550	0.578	0.342	-1.686	0.586
Women**	-3.620	2.879	0.210	-9.283	2.044	-0.262	0.506	0.605	-1.258	0.733
User group**	12.779	2.860	0.000	7.152	18.406	0.375	0.517	0.469	-0.642	1.391
	R ² = 0.257 F(24,325) = 4.679*					R ² = 0.252 F(25,324) = 4.362*				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

** Reference categories: Race/ethnicity = Non-Hispanic White; Gender = Men; user group= non-patient

Table 4.42d. Indirect and Total Effects of Mediation Analysis of Depressive Symptomatology on Motives of Marijuana Use Mediated by Past 90 Days Use, With Control Variables (n=350)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.036	-0.151	0.055	0.147	0.300	0.624	-0.443	0.737
Availability	0.080	-0.007	0.202	0.178	0.289	0.539	-0.391	0.746
Celebrate	-0.080	-0.192	0.004	-0.413	0.272	0.130	-0.949	0.122
Coping	0.020	-0.068	0.107	1.890	0.255	0.000	1.389	2.391
Altered Perceptions	-0.037	-0.121	0.030	0.071	0.248	0.776	-0.417	0.559
Conformity	0.154	0.005	0.366	-0.768	0.424	0.071	-1.602	0.066
Sleep	0.003	-0.078	0.078	0.122	0.236	0.606	-0.343	0.587
Experimentation	0.076	-0.006	0.201	-0.173	0.267	0.518	-0.698	0.352
Enjoyment	0.029	-0.064	0.149	-0.107	0.316	0.735	-0.729	0.515
Alcohol	-0.034	-0.128	0.054	0.290	0.301	0.337	-0.303	0.883
Attention	-0.014	-0.089	0.071	-0.393	0.256	0.125	-0.896	0.110
Substitution	-0.009	-0.133	0.099	0.225	0.318	0.480	-0.401	0.850
Natural remedy	0.073	-0.003	0.193	0.224	0.260	0.391	-0.289	0.736
Pain	-0.089	-0.209	-0.006	-0.496	0.267	0.064	-1.021	0.029
Nausea	-0.039	-0.134	0.028	-0.145	0.263	0.581	-0.663	0.373
Social Anxiety	-0.076	-0.189	0.001	0.519	0.285	0.070	-0.042	1.080
Relative Low Risk	-0.067	-0.178	0.005	-0.094	0.248	0.706	-0.582	0.395

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Figure 4.18. Mediation Result for the Indirect Effect of Motive of Conformity on Symptoms of Depression Through Past 90 Days Marijuana Use

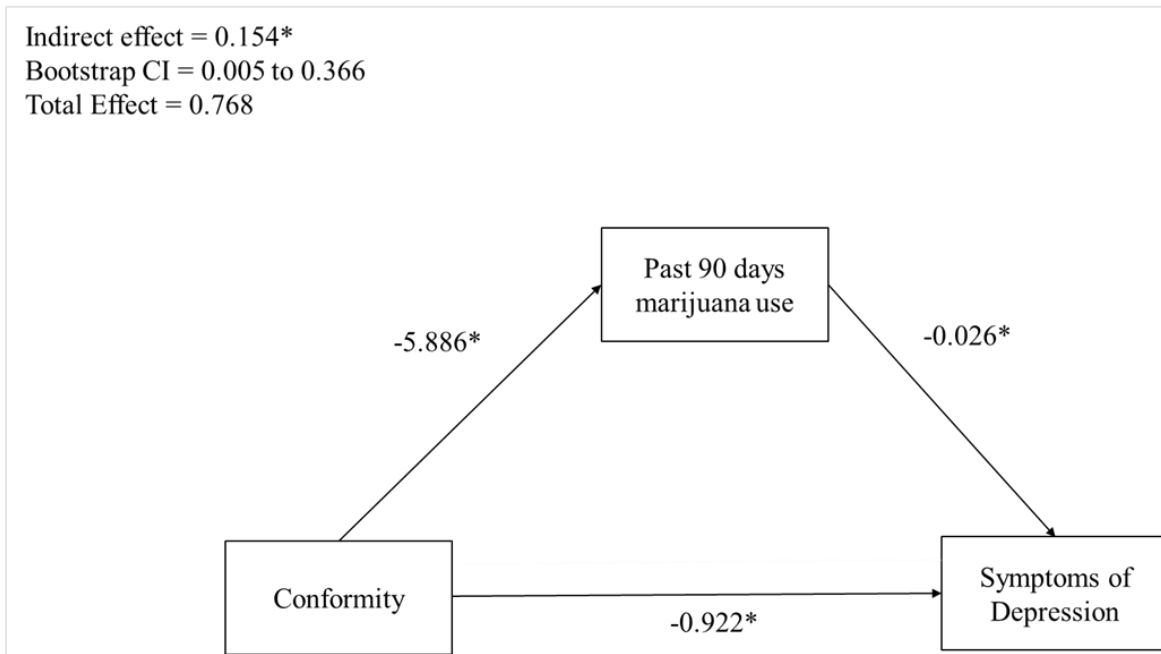


Figure 4.19. Mediation Result for the Indirect Effect of Motive of Pain on Symptoms of Depression Through Past 90 Days Marijuana Use

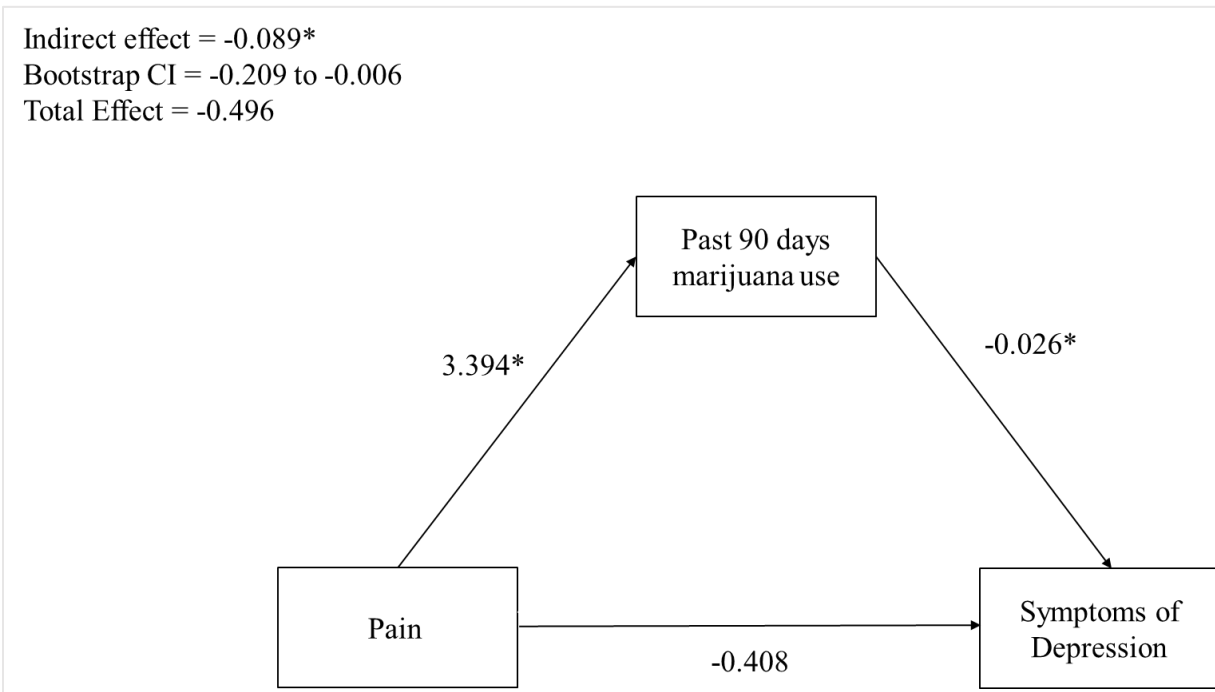


Figure 4.20. Mediation Result for the Indirect Effect of Motive of Attention on Symptoms of Depression Through Number of Daily Marijuana Hits

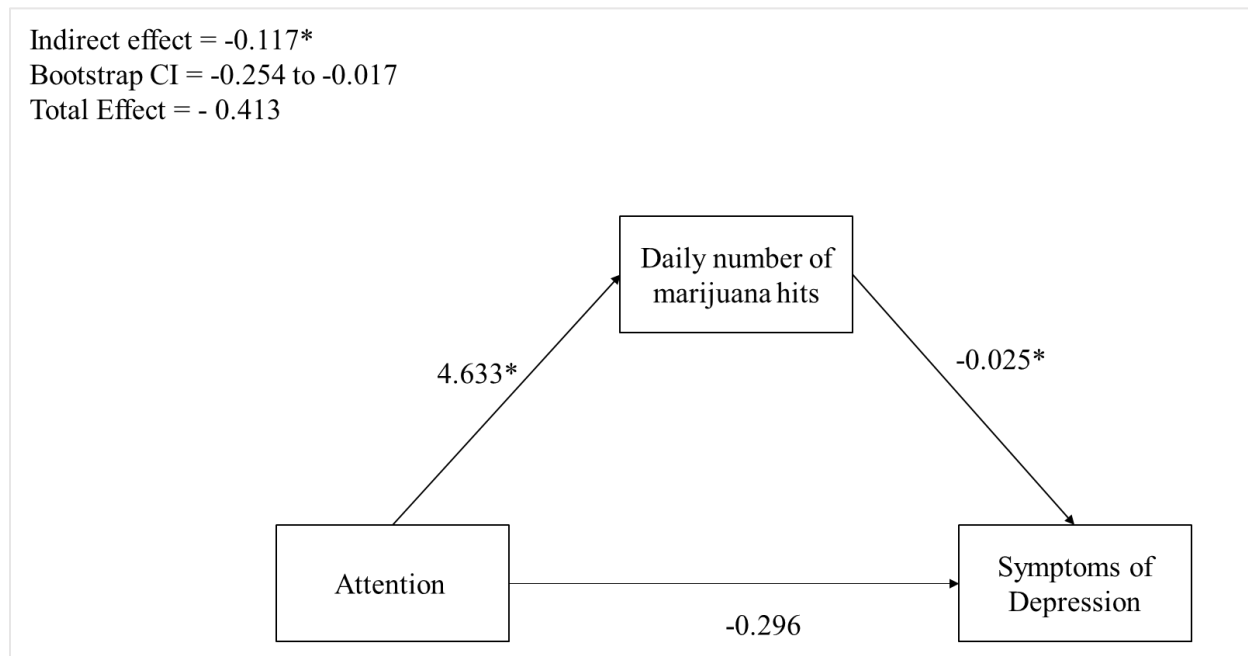


Table 4.43a. Regression of Depressive Symptomatology on Motives of Marijuana Use Mediated by Daily Number of Hits, No Control Variables (n=351)

	Daily Number of Hits (M)					Depressive Symptomatology (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	22.612	6.568	0.001	9.693	35.532	2.165	1.044	0.039	0.111	4.219
Boredom	2.472	1.863	0.186	-1.194	6.137	0.221	0.292	0.450	-0.354	0.795
Availability	-1.552	1.836	0.398	-5.163	2.059	0.179	0.287	0.533	-0.386	0.744
Celebrate	1.157	1.645	0.483	-2.079	4.392	-0.545	0.257	0.035	-1.051	-0.039
Coping	1.155	1.597	0.470	-1.987	4.296	1.926	0.250	0.000	1.435	2.417
Altered Perceptions	-1.592	1.530	0.299	-4.602	1.417	0.086	0.239	0.719	-0.385	0.557
Conformity	-2.637	2.613	0.314	-7.776	2.503	-0.843	0.409	0.040	-1.647	-0.039
Sleep	-0.008	1.495	0.996	-2.949	2.932	0.149	0.234	0.524	-0.310	0.608
Experimentation	-0.122	1.706	0.943	-3.477	3.233	-0.089	0.266	0.738	-0.613	0.435
Enjoyment	-1.163	1.939	0.549	-4.978	2.651	-0.092	0.303	0.762	-0.688	0.504
Alcohol	-2.394	1.876	0.203	-6.084	1.295	0.179	0.294	0.543	-0.399	0.757
Attention	5.088	1.567	0.001	2.006	8.170	-0.312	0.249	0.210	-0.801	0.177
Substitution	-2.193	1.970	0.266	-6.069	1.682	0.127	0.308	0.682	-0.480	0.733
Natural remedy	-3.134	1.574	0.047	-6.230	-0.038	0.224	0.247	0.365	-0.262	0.711
Pain	2.323	1.656	0.162	-0.934	5.579	-0.481	0.259	0.065	-0.991	0.030
Nausea	1.411	1.623	0.385	-1.782	4.604	-0.085	0.254	0.738	-0.584	0.415
Social Anxiety	0.850	1.773	0.632	-2.637	4.337	0.522	0.277	0.060	-0.022	1.067
Relative Low Risk	-0.466	1.539	0.762	-3.494	2.562	-0.193	0.240	0.424	-0.666	0.280
Daily Number of Hits	---	---	---	---	---	-0.024	0.009	0.006	-0.041	-0.007
	R ² =0.109					R ² =0.251				
	F(17,333)=2.417*					F(18,332)=6.174*				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.43b. Indirect and Total Effects of Mediation Analysis of Depressive Symptomatology on Motives of Marijuana Use Mediated by Daily Number of Hits, No Control Variables (n=351)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.059	-0.178	0.017	0.162	0.294	0.582	-0.416	0.740
Availability	0.037	-0.045	0.153	0.216	0.290	0.456	-0.354	0.786
Celebrate	-0.027	-0.125	0.058	-0.572	0.260	0.028	-1.083	-0.062
Coping	-0.027	-0.121	0.050	1.899	0.252	0.000	1.403	2.394
Altered Perceptions	0.038	-0.036	0.141	0.124	0.241	0.608	-0.351	0.599
Conformity	0.063	-0.057	0.199	-0.781	0.412	0.059	-1.591	0.030
Sleep	0.000	-0.071	0.072	0.149	0.236	0.527	-0.315	0.613
Experimentation	0.003	-0.084	0.094	-0.086	0.269	0.748	-0.616	0.443
Enjoyment	0.028	-0.067	0.134	-0.064	0.306	0.834	-0.666	0.538
Alcohol	0.057	-0.034	0.174	0.236	0.296	0.426	-0.346	0.818
Attention	-0.121	-0.252	-0.026	-0.433	0.247	0.081	-0.919	0.053
Substitution	0.052	-0.048	0.168	0.179	0.311	0.566	-0.433	0.790
Natural remedy	0.074	-0.005	0.187	0.299	0.248	0.230	-0.190	0.787
Pain	-0.055	-0.146	0.015	-0.536	0.261	0.041	-1.050	-0.022
Nausea	-0.034	-0.153	0.060	-0.118	0.256	0.644	-0.622	0.385
Social Anxiety	-0.020	-0.119	0.069	0.502	0.280	0.073	-0.048	1.052
Relative Low Risk	0.011	-0.070	0.094	-0.182	0.243	0.455	-0.659	0.296

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.43c. Regression of Depressive Symptomatology on Motives of Marijuana Use Mediated by Daily Number of Hits, With Control Variables (n=346)

	Daily Number of Hits (M)					Depressive Symptomatology (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	35.876	14.956	0.017	6.453	65.300	5.545	2.414	0.022	0.795	10.294
Boredom	1.163	1.891	0.539	-2.558	4.884	0.110	0.303	0.717	-0.486	0.705
Availability	-0.889	1.830	0.627	-4.489	2.710	0.212	0.293	0.470	-0.364	0.788
Celebrate	0.684	1.706	0.689	-2.673	4.040	-0.489	0.273	0.074	-1.027	0.048
Coping	1.601	1.608	0.320	-1.563	4.765	2.017	0.258	0.000	1.510	2.524
Altered Perceptions	-1.367	1.532	0.373	-4.381	1.647	0.032	0.245	0.896	-0.451	0.515
Conformity	-2.437	2.619	0.353	-7.590	2.716	-0.885	0.420	0.036	-1.710	-0.059
Sleep	-0.310	1.506	0.837	-3.273	2.653	0.080	0.241	0.742	-0.395	0.554
Experimentation	-0.154	1.701	0.928	-3.501	3.194	-0.101	0.272	0.710	-0.637	0.434
Enjoyment	-0.401	1.965	0.839	-4.267	3.466	-0.062	0.315	0.843	-0.681	0.556
Alcohol	-1.757	1.864	0.347	-5.425	1.911	0.221	0.299	0.461	-0.367	0.808
Attention	4.633	1.578	0.004	1.529	7.737	-0.296	0.256	0.248	-0.799	0.207
Substitution	-1.945	1.980	0.327	-5.841	1.951	0.099	0.317	0.755	-0.525	0.723
Natural remedy	-3.572	1.624	0.029	-6.767	-0.377	0.201	0.262	0.443	-0.314	0.716
Pain	1.901	1.651	0.251	-1.347	5.149	-0.470	0.265	0.077	-0.991	0.051
Nausea	1.961	1.639	0.233	-1.264	5.186	-0.066	0.263	0.801	-0.584	0.451
Social Anxiety	0.885	1.784	0.620	-2.624	4.395	0.569	0.286	0.047	0.007	1.130
Relative Low Risk	0.064	1.549	0.967	-2.984	3.111	-0.141	0.248	0.571	-0.628	0.347
Daily Number of Hits	---	---	---	---	---	-0.025	0.009	0.005	-0.043	-0.008
Age (today)	-0.798	0.599	0.184	-1.977	0.380	-0.144	0.096	0.134	-0.333	0.045
Non-Hispanic Black/African American**	8.599	4.357	0.049	0.027	17.172	-0.918	0.701	0.192	-2.297	0.462
Non-Hispanic Asian/Pacific Islander**	-7.993	7.726	0.302	-23.192	7.207	-0.894	1.238	0.471	-3.330	1.543
Non-Hispanic Multiethnic**	-7.917	6.470	0.222	-20.645	4.812	-0.583	1.038	0.574	-2.625	1.458
Hispanic Latino**	0.068	3.608	0.985	-7.031	7.166	-0.422	0.577	0.465	-1.558	0.714
Women**	-6.031	3.150	0.057	-12.228	0.167	-0.294	0.507	0.562	-1.291	0.703
User group**	4.838	3.141	0.125	-1.342	11.018	0.132	0.504	0.794	-0.860	1.125
	R ² =0.148					R ² =0.260				
	F(24,321) = 2.329*					F(25,320)=4.508*				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

** Reference categories: Race/ethnicity = Non-Hispanic White; Gender = Men; user group= non-patient

Table 4.43d. Indirect and Total Effects of Mediation Analysis of Depressive Symptomatology on Motives of Marijuana Use Mediated by Daily Number of Hits, With Control Variables (n=346)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.029	-0.145	0.059	0.080	0.306	0.793	-0.521	0.682
Availability	0.022	-0.066	0.131	0.235	0.296	0.429	-0.348	0.817
Celebrate	-0.017	-0.119	0.071	-0.507	0.276	0.067	-1.050	0.036
Coping	-0.040	-0.132	0.042	1.977	0.260	0.000	1.465	2.488
Altered Perceptions	0.035	-0.046	0.141	0.067	0.248	0.789	-0.421	0.554
Conformity	0.061	-0.068	0.198	-0.823	0.424	0.053	-1.656	0.010
Sleep	0.008	-0.062	0.082	0.087	0.244	0.720	-0.392	0.567
Experimentation	0.004	-0.092	0.103	-0.098	0.275	0.723	-0.639	0.444
Enjoyment	0.010	-0.092	0.116	-0.052	0.318	0.870	-0.678	0.573
Alcohol	0.044	-0.054	0.158	0.265	0.302	0.381	-0.328	0.858
Attention	-0.117	-0.254	-0.017	-0.413	0.255	0.107	-0.915	0.089
Substitution	0.049	-0.062	0.174	0.148	0.320	0.644	-0.482	0.778
Natural remedy	0.090	-0.0004	0.211	0.291	0.263	0.268	-0.226	0.808
Pain	-0.048	-0.138	0.028	-0.518	0.267	0.053	-1.043	0.008
Nausea	-0.049	-0.181	0.050	-0.116	0.265	0.663	-0.637	0.406
Social Anxiety	-0.022	-0.132	0.081	0.546	0.289	0.059	-0.021	1.114
Relative Low Risk	-0.002	-0.085	0.082	-0.142	0.251	0.570	-0.635	0.351

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.44. Regression of Symptoms of Anxiety on Motives of Marijuana Use

	Symptoms of Anxiety					
	Without Control Variables (n=350)			With Control Variables (n=350)		
	B	Std. Error	p	B	Std. Error	P
(Constant)	0.797	0.878	0.365	2.351	2.036	0.249
Boredom	0.114	0.247	0.646	0.142	0.253	0.574
Availability	0.010	0.242	0.968	-0.011	0.244	0.963
Celebrate	-0.507	0.224	0.024	-0.464	0.230	0.044
Coping	0.917	0.212	0.000*	0.932	0.215	0.000*
Altered Perceptions	0.158	0.209	0.450	0.134	0.209	0.522
Conformity	-0.513	0.352	0.146	-0.574	0.358	0.110
Sleep	-0.352	0.197	0.075	-0.383	0.200	0.056
Experimentation	-0.046	0.224	0.837	-0.037	0.225	0.871
Enjoyment	0.044	0.263	0.866	-0.046	0.267	0.864
Alcohol	0.249	0.254	0.328	0.270	0.254	0.290
Attention	-0.414	0.211	0.051	-0.322	0.216	0.137
Substitution	-0.041	0.264	0.876	-0.001	0.268	0.997
Natural remedy	0.362	0.210	0.085	0.299	0.220	0.175
Pain	0.167	0.223	0.455	0.208	0.225	0.358
Nausea	0.225	0.219	0.304	0.146	0.222	0.512
Social Anxiety	0.631	0.240	0.009	0.598	0.241	0.013
Relative Low Risk	-0.002	0.206	0.994	0.054	0.210	0.797
Age (today)				-0.036	0.081	0.661
Non-Hispanic Black/African American**	---	---	---	-1.298	0.596	0.030
Non-Hispanic Asian/Pacific Islander**	---	---	---	-0.782	1.057	0.460
Non-Hispanic Multiethnic**	---	---	---	-1.342	0.884	0.130
Hispanic Latino**	---	---	---	-0.908	0.492	0.066
Women**	---	---	---	0.497	0.430	0.249
User group**	---	---	---	-0.027	0.427	0.949
F	4.41*			3.463*		
df	17			24		
R ²	0.184			0.204		

*Significant at Bonferroni corrected $p \leq 0.003$

** Reference categories: Race/ethnicity = Non-Hispanic White; Gender = Men; User group = non-patient

Table 4.45a. Regression of Symptoms of Anxiety on Motives of Marijuana Use Mediated by Past 90 Days Use, No Control Variables (n=355)

	Past 90 Days MJ Use (M)					Symptoms of Anxiety (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	53.090	6.011	0.000	41.267	64.914	1.510	0.969	0.120	-0.396	3.415
Boredom	2.051	1.687	0.225	-1.268	5.370	0.181	0.246	0.461	-0.302	0.665
Availability	-3.663	1.656	0.028	-6.920	-0.405	-0.073	0.242	0.765	-0.549	0.404
Celebrate	2.175	1.502	0.149	-0.780	5.130	-0.423	0.219	0.054	-0.853	0.008
Coping	-0.898	1.445	0.535	-3.740	1.945	0.872	0.210	0.000	0.459	1.285
Altered Perceptions	1.449	1.414	0.306	-1.332	4.231	0.158	0.206	0.443	-0.247	0.563
Conformity	-6.442	2.412	0.008	-11.186	-1.698	-0.576	0.354	0.105	-1.273	0.120
Sleep	0.430	1.344	0.749	-2.214	3.074	-0.343	0.195	0.080	-0.727	0.041
Experimentation	-3.031	1.526	0.048	-6.032	-0.030	-0.053	0.223	0.811	-0.492	0.385
Enjoyment	-0.506	1.782	0.777	-4.011	3.000	0.014	0.259	0.958	-0.496	0.523
Alcohol	0.814	1.730	0.639	-2.590	4.217	0.210	0.251	0.404	-0.284	0.705
Attention	0.390	1.449	0.788	-2.461	3.241	-0.408	0.211	0.053	-0.822	0.006
Substitution	-0.475	1.803	0.792	-4.021	3.071	-0.004	0.262	0.987	-0.520	0.511
Natural remedy	-0.789	1.438	0.584	-3.617	2.039	0.339	0.209	0.106	-0.072	0.750
Pain	3.436	1.527	0.025	0.432	6.441	0.231	0.224	0.302	-0.209	0.671
Nausea	1.259	1.489	0.398	-1.669	4.187	0.238	0.216	0.273	-0.188	0.664
Social Anxiety	3.382	1.616	0.037	0.202	6.561	0.615	0.236	0.010	0.150	1.080
Relative Low Risk	1.995	1.409	0.158	-0.776	4.766	0.005	0.205	0.981	-0.399	0.409
Past 90 Days Marijuana Use	---	---	---	---	---	-0.012	0.008	0.142	-0.027	0.004
	$R^2 = 0.193$					$R^2 = 0.182$				
	$F(17,337) = 4.748^*$					$F(18,336) = 4.155^*$				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.45b. Indirect and Total Effects of Mediation Analysis of Symptoms of Anxiety on Motives of Marijuana Use Mediated by Past 90 Days Use, No Control Variables (n=355)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.024	-0.093	0.018	0.158	0.246	0.522	-0.325	0.640
Availability	0.043	-0.013	0.126	-0.030	0.241	0.902	-0.504	0.444
Celebrate	-0.025	-0.083	0.015	-0.448	0.219	0.041	-0.878	-0.018
Coping	0.011	-0.030	0.058	0.883	0.210	0.000	0.469	1.296
Altered Perceptions	-0.017	-0.073	0.014	0.141	0.206	0.493	-0.264	0.546
Conformity	0.075	-0.019	0.224	-0.501	0.351	0.154	-1.191	0.189
Sleep	-0.005	-0.051	0.031	-0.348	0.196	0.076	-0.732	0.037
Experimentation	0.035	-0.011	0.114	-0.018	0.222	0.936	-0.455	0.419
Enjoyment	0.006	-0.039	0.070	0.020	0.259	0.940	-0.490	0.530
Alcohol	-0.010	-0.060	0.035	0.201	0.252	0.426	-0.295	0.696
Attention	-0.005	-0.046	0.037	-0.413	0.211	0.051	-0.827	0.002
Substitution	0.006	-0.052	0.060	0.001	0.262	0.997	-0.515	0.517
Natural remedy	0.009	-0.026	0.059	0.348	0.209	0.097	-0.063	0.760
Pain	-0.040	-0.123	0.010	0.191	0.222	0.391	-0.246	0.628
Nausea	-0.015	-0.068	0.015	0.223	0.217	0.304	-0.203	0.649
Social Anxiety	-0.039	-0.107	0.013	0.576	0.235	0.015	0.113	1.038
Relative Low Risk	-0.023	-0.088	0.009	-0.018	0.205	0.929	-0.421	0.385

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.45c. Regression of Symptoms of Anxiety on Motives of Marijuana Use Mediated by Past 90 Days Use, With Control Variables (n=350)

	Past 90 Days MJ Use (M)					Symptoms of Anxiety (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	52.181	13.622	0.000	25.382	78.979	2.979	2.078	0.153	-1.109	7.067
Boredom	1.390	1.694	0.413	-1.944	4.723	0.159	0.253	0.530	-0.339	0.657
Availability	-3.064	1.632	0.061	-6.274	0.147	-0.048	0.245	0.844	-0.530	0.434
Celebrate	3.043	1.538	0.049	0.017	6.068	-0.428	0.231	0.065	-0.882	0.026
Coping	-0.780	1.440	0.589	-3.611	2.052	0.923	0.215	0.000	0.500	1.346
Altered Perceptions	1.415	1.401	0.313	-1.341	4.172	0.151	0.209	0.470	-0.261	0.563
Conformity	-5.886	2.395	0.015	-10.597	-1.175	-0.645	0.361	0.075	-1.354	0.065
Sleep	-0.095	1.335	0.944	-2.721	2.532	-0.384	0.199	0.055	-0.776	0.008
Experimentation	-2.907	1.508	0.055	-5.873	0.059	-0.072	0.226	0.752	-0.517	0.373
Enjoyment	-1.123	1.787	0.530	-4.638	2.392	-0.059	0.267	0.825	-0.584	0.466
Alcohol	1.307	1.703	0.443	-2.043	4.656	0.286	0.254	0.262	-0.215	0.786
Attention	0.531	1.444	0.713	-2.310	3.372	-0.315	0.216	0.145	-0.739	0.109
Substitution	0.357	1.795	0.842	-3.174	3.889	0.003	0.268	0.990	-0.524	0.530
Natural remedy	-2.806	1.471	0.057	-5.701	0.089	0.265	0.221	0.231	-0.169	0.700
Pain	3.394	1.508	0.025	0.428	6.361	0.249	0.227	0.274	-0.198	0.695
Nausea	1.491	1.487	0.317	-1.435	4.417	0.164	0.222	0.462	-0.273	0.601
Social Anxiety	2.908	1.612	0.072	-0.263	6.078	0.633	0.242	0.009	0.158	1.109
Relative Low Risk	2.573	1.403	0.068	-0.186	5.333	0.085	0.210	0.687	-0.329	0.499
Past 90 Days MJ Use	---	---	---	---	---	-0.012	0.008	0.147	-0.028	0.004
Age (today)	-0.080	0.545	0.883	-1.153	0.992	-0.037	0.081	0.652	-0.197	0.123
Non-Hispanic Black/African American**	-1.647	3.986	0.680	-9.489	6.194	-1.318	0.595	0.027	-2.488	-0.147
Non-Hispanic Asian/Pacific Islander**	-10.204	7.075	0.150	-24.122	3.714	-0.905	1.059	0.394	-2.988	1.179
Non-Hispanic Multiethnic**	-7.876	5.916	0.184	-19.515	3.762	-1.437	0.885	0.106	-3.178	0.304
Hispanic Latino**	-1.447	3.293	0.661	-7.926	5.031	-0.926	0.492	0.061	-1.893	0.041
Women**	-3.620	2.879	0.210	-9.283	2.044	0.453	0.431	0.293	-0.394	1.301
User group**	12.779	2.860	0.000	7.152	18.406	0.126	0.440	0.774	-0.739	0.991
	R ² =0.257					R ² =0.209				
	F (24,325) =4.679*					F (25,324) =3.421*				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

** Reference categories: Race/ethnicity = Non-Hispanic White; Gender = Men; User group = non-patient

Table 4.45d. Indirect and Total Effects of Mediation Analysis of Symptoms of Anxiety on Motives of Marijuana Use Mediated by Past 90 Days Use, With Control Variables (n=350)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.017	-0.081	0.029	0.142	0.253	0.574	-0.356	0.641
Availability	0.037	-0.015	0.111	-0.011	0.244	0.963	-0.491	0.469
Celebrate	-0.037	-0.107	0.014	-0.465	0.230	0.044	-0.917	-0.012
Coping	0.009	-0.036	0.058	0.932	0.215	0.000	0.509	1.356
Altered Perceptions	-0.017	-0.073	0.013	0.134	0.209	0.522	-0.278	0.546
Conformity	0.071	-0.018	0.211	-0.574	0.358	0.110	-1.278	0.130
Sleep	0.001	-0.041	0.042	-0.383	0.200	0.056	-0.776	0.009
Experimentation	0.035	-0.011	0.114	-0.037	0.225	0.871	-0.480	0.407
Enjoyment	0.014	-0.031	0.086	-0.046	0.267	0.864	-0.571	0.480
Alcohol	-0.016	-0.069	0.030	0.270	0.255	0.290	-0.231	0.770
Attention	-0.006	-0.049	0.036	-0.322	0.216	0.137	-0.746	0.103
Substitution	-0.004	-0.076	0.047	-0.001	0.268	0.997	-0.529	0.527
Natural remedy	0.034	-0.011	0.111	0.299	0.220	0.175	-0.134	0.732
Pain	-0.041	-0.121	0.012	0.208	0.225	0.358	-0.236	0.651
Nausea	-0.018	-0.076	0.014	0.146	0.222	0.512	-0.291	0.583
Social Anxiety	-0.035	-0.102	0.015	0.598	0.241	0.014	0.125	1.072
Relative Low Risk	-0.031	-0.103	0.010	0.054	0.210	0.797	-0.358	0.467

Table 4.46a. Regression of Symptoms of Anxiety on Motives of Marijuana Use Mediated by Daily Number of Hits, No Control Variables (n=351)

	Daily Number of Hits (M)					Symptoms of Anxiety (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	22.612	6.568	0.001	9.693	35.532	1.202	0.901	0.183	-0.571	2.974
Boredom	2.472	1.863	0.186	-1.194	6.137	0.181	0.252	0.472	-0.314	0.677
Availability	-1.552	1.836	0.398	-5.163	2.059	-0.048	0.248	0.846	-0.536	0.439
Celebrate	1.157	1.645	0.483	-2.079	4.392	-0.469	0.222	0.036	-0.905	-0.032
Coping	1.155	1.597	0.470	-1.987	4.296	0.910	0.216	0.000	0.486	1.334
Altered Perceptions	-1.592	1.530	0.299	-4.602	1.417	0.131	0.207	0.527	-0.276	0.537
Conformity	-2.637	2.613	0.314	-7.776	2.503	-0.559	0.353	0.114	-1.253	0.135
Sleep	-0.008	1.495	0.996	-2.949	2.932	-0.368	0.202	0.069	-0.765	0.028
Experimentation	-0.122	1.706	0.943	-3.477	3.233	0.016	0.230	0.944	-0.436	0.469
Enjoyment	-1.163	1.939	0.549	-4.978	2.651	0.024	0.262	0.926	-0.490	0.539
Alcohol	-2.394	1.876	0.203	-6.084	1.295	0.179	0.254	0.481	-0.320	0.678
Attention	5.088	1.567	0.001	2.006	8.170	-0.380	0.215	0.077	-0.802	0.042
Substitution	-2.193	1.970	0.266	-6.069	1.682	-0.077	0.266	0.774	-0.600	0.447
Natural remedy	-3.134	1.574	0.047	-6.230	-0.038	0.368	0.214	0.086	-0.052	0.788
Pain	2.323	1.656	0.162	-0.934	5.579	0.187	0.224	0.404	-0.253	0.627
Nausea	1.411	1.623	0.385	-1.782	4.604	0.247	0.219	0.261	-0.184	0.678
Social Anxiety	0.850	1.773	0.632	-2.637	4.337	0.616	0.239	0.010	0.145	1.086
Relative Low Risk	-0.466	1.539	0.762	-3.494	2.562	-0.056	0.208	0.787	-0.464	0.352
Daily Number of Hits	---	---	---	---	---	-0.008	0.007	0.299	-0.022	0.007
	R ² = 0.110					R ² = 0.179				
	F(17,333) = 2.417*					F(18,332) = 4.018*				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.46b. Indirect and Total Effects of Mediation Analysis of Symptoms of Anxiety on Motives of Marijuana Use Mediated by Daily Number of Hits, No Control Variables (n=351)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.019	-0.090	0.022	0.162	0.251	0.519	-0.332	0.657
Availability	0.012	-0.026	0.071	-0.036	0.248	0.883	-0.523	0.451
Celebrate	-0.009	-0.064	0.028	-0.478	0.222	0.032	-0.914	-0.041
Coping	-0.009	-0.054	0.027	0.901	0.215	0.000	0.477	1.324
Altered Perceptions	0.012	-0.025	0.062	0.143	0.206	0.489	-0.263	0.549
Conformity	0.020	-0.039	0.094	-0.539	0.352	0.127	-1.232	0.154
Sleep	0.000	-0.032	0.033	-0.368	0.202	0.069	-0.765	0.028
Experimentation	0.001	-0.035	0.049	0.017	0.230	0.941	-0.435	0.470
Enjoyment	0.009	-0.028	0.071	0.033	0.262	0.899	-0.481	0.548
Alcohol	0.018	-0.026	0.083	0.197	0.253	0.436	-0.300	0.695
Attention	-0.039	-0.144	0.037	-0.419	0.211	0.048	-0.835	-0.004
Substitution	0.017	-0.032	0.085	-0.060	0.266	0.822	-0.582	0.463
Natural remedy	0.024	-0.022	0.104	0.392	0.212	0.066	-0.026	0.809
Pain	-0.018	-0.071	0.024	0.169	0.223	0.449	-0.270	0.608
Nausea	-0.011	-0.075	0.028	0.236	0.219	0.282	-0.195	0.666
Social Anxiety	-0.007	-0.060	0.028	0.609	0.239	0.011	0.139	1.079
Relative Low Risk	0.004	-0.030	0.044	-0.053	0.208	0.801	-0.461	0.356

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.46c. Regression of Symptoms of Anxiety on Motives of Marijuana Use Mediated by Daily Number of Hits, With Control Variables (n=346)

	Daily Number of Hits (M)					Symptoms of Anxiety (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	35.876	14.956	0.017	6.453	65.300	2.507	2.070	0.227	-1.566	6.580
Boredom	1.163	1.891	0.539	-2.558	4.884	0.161	0.260	0.536	-0.350	0.672
Availability	-0.889	1.830	0.627	-4.489	2.710	-0.019	0.251	0.939	-0.513	0.475
Celebrate	0.684	1.706	0.689	-2.673	4.040	-0.496	0.234	0.035	-0.957	-0.036
Coping	1.601	1.608	0.320	-1.563	4.765	0.956	0.221	0.000	0.522	1.391
Altered Perceptions	-1.367	1.532	0.373	-4.381	1.647	0.130	0.210	0.537	-0.284	0.544
Conformity	-2.437	2.619	0.353	-7.590	2.716	-0.623	0.360	0.084	-1.331	0.085
Sleep	-0.310	1.506	0.837	-3.273	2.653	-0.409	0.207	0.049	-0.815	-0.002
Experimentation	-0.154	1.701	0.928	-3.501	3.194	-0.007	0.233	0.978	-0.466	0.453
Enjoyment	-0.401	1.965	0.839	-4.267	3.466	-0.033	0.270	0.903	-0.563	0.498
Alcohol	-1.757	1.864	0.347	-5.425	1.911	0.253	0.256	0.324	-0.251	0.757
Attention	4.633	1.578	0.004	1.529	7.737	-0.299	0.219	0.174	-0.730	0.133
Substitution	-1.945	1.980	0.327	-5.841	1.951	-0.077	0.272	0.779	-0.612	0.459
Natural remedy	-3.572	1.624	0.029	-6.767	-0.377	0.324	0.225	0.151	-0.118	0.765
Pain	1.901	1.651	0.251	-1.347	5.149	0.198	0.227	0.384	-0.249	0.644
Nausea	1.961	1.639	0.233	-1.264	5.186	0.171	0.225	0.449	-0.273	0.614
Social Anxiety	0.885	1.784	0.620	-2.624	4.395	0.645	0.245	0.009	0.163	1.126
Relative Low Risk	0.064	1.549	0.967	-2.984	3.111	0.013	0.213	0.950	-0.405	0.431
Daily Number of Hits	---	---	---	---	---	-0.007	0.008	0.398	-0.022	0.009
Age (today)	-0.798	0.599	0.184	-1.977	0.380	-0.033	0.082	0.693	-0.195	0.130
Non-Hispanic Black/African American**	8.599	4.357	0.049	0.027	17.172	-1.201	0.601	0.047	-2.384	-0.018
Non-Hispanic Asian/Pacific Islander**	-7.993	7.726	0.302	-23.192	7.207	-0.806	1.062	0.448	-2.895	1.283
Non-Hispanic Multiethnic**	-7.917	6.470	0.222	-20.645	4.812	-1.315	0.890	0.140	-3.065	0.436
Hispanic Latino**	0.068	3.608	0.985	-7.031	7.166	-0.883	0.495	0.075	-1.857	0.091
Women**	-6.031	3.150	0.057	-12.228	0.167	0.492	0.435	0.259	-0.364	1.347
User group**	4.838	3.141	0.125	-1.342	11.018	0.008	0.433	0.986	-0.843	0.859
	R ² =0.148					R ² =0.205				
	F(24,321) = 2.329*					F (25,320) =3.300*				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

** Reference categories: Race/ethnicity = Non-Hispanic White; Gender = Men; user group= non-patient

Table 4.46d. Indirect and Total Effects of Mediation Analysis of Symptoms of Anxiety on Motives of Marijuana Use Mediated by Daily Number of Hits, With Control Variables (n=346)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.008	-0.060	0.028	0.153	0.259	0.555	-0.357	0.664
Availability	0.006	-0.032	0.054	-0.013	0.251	0.958	-0.507	0.480
Celebrate	-0.004	-0.052	0.031	-0.501	0.234	0.033	-0.961	-0.040
Coping	-0.010	-0.055	0.033	0.946	0.221	0.000	0.512	1.380
Altered Perceptions	0.009	-0.031	0.054	0.139	0.210	0.509	-0.275	0.552
Conformity	0.016	-0.047	0.086	-0.607	0.359	0.092	-1.314	0.100
Sleep	0.002	-0.026	0.035	-0.407	0.207	0.050	-0.813	0.000
Experimentation	0.001	-0.032	0.046	-0.006	0.233	0.981	-0.465	0.454
Enjoyment	0.003	-0.035	0.055	-0.030	0.270	0.911	-0.560	0.500
Alcohol	0.011	-0.032	0.068	0.265	0.256	0.301	-0.238	0.768
Attention	-0.030	-0.131	0.045	-0.329	0.216	0.129	-0.755	0.097
Substitution	0.013	-0.037	0.078	-0.064	0.272	0.814	-0.598	0.470
Natural remedy	0.023	-0.033	0.109	0.347	0.223	0.121	-0.092	0.785
Pain	-0.012	-0.064	0.028	0.186	0.226	0.413	-0.260	0.631
Nausea	-0.013	-0.081	0.030	0.158	0.225	0.482	-0.284	0.601
Social Anxiety	-0.006	-0.059	0.031	0.639	0.245	0.009	0.158	1.120
Relative Low Risk	0.000	-0.032	0.038	0.013	0.212	0.952	-0.405	0.431

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.47. Regression of Psychological Distress on Motives of Marijuana Use

	Psychological distress					
	Without Control Variables (n=350)			With Control Variables (n=350)		
	B	Std. Error	p	B	Std. Error	p
(Constant)	2.151	2.225	0.334	7.338	5.183	0.158
Boredom	0.395	0.626	0.528	0.406	0.645	0.530
Availability	-0.026	0.614	0.966	-0.059	0.621	0.924
Celebrate	-1.362	0.567	0.017	-1.143	0.585	0.052
Coping	3.209	0.537	0.000*	3.265	0.548	0.000*
Altered Perceptions	0.212	0.529	0.689	0.167	0.533	0.754
Conformity	-1.688	0.893	0.059	-1.840	0.911	0.044
Sleep	-0.274	0.499	0.583	-0.390	0.508	0.443
Experimentation	-0.096	0.567	0.866	-0.091	0.574	0.874
Enjoyment	0.151	0.666	0.821	-0.071	0.680	0.917
Alcohol	1.005	0.644	0.119	1.033	0.648	0.112
Attention	-0.808	0.536	0.132	-0.680	0.549	0.217
Substitution	-0.026	0.669	0.969	0.115	0.683	0.867
Natural remedy	0.636	0.532	0.232	0.472	0.560	0.400
Pain	-0.187	0.565	0.740	-0.146	0.574	0.799
Nausea	0.653	0.555	0.240	0.515	0.566	0.363
Social Anxiety	1.713	0.609	0.005	1.630	0.613	0.008
Relative Low Risk	-0.255	0.521	0.625	-0.149	0.534	0.781
Age (today)	---	---	---	-0.191	0.207	0.358
Non-Hispanic Black/African American**	---	---	---	-2.690	1.517	0.077
Non-Hispanic Asian/Pacific Islander**	---	---	---	-0.578	2.692	0.830
Non-Hispanic Multiethnic**	---	---	---	-1.595	2.251	0.479
Hispanic Latino**	---	---	---	-1.161	1.253	0.355
Women**	---	---	---	0.966	1.095	0.379
User group**				0.596	1.088	0.584
F	6.118*			4.529*		
df	17			23		
R ²	0.239			0.251		

*Significant at Bonferroni corrected $p \leq 0.003$

** Reference categories: Race/ethnicity = Non-Hispanic White; Gender = Men; User group = non-patient

Table 4.48a. Regression of Psychological distress on Motives of Marijuana Use Mediated by Past 90 Days Use, No Control Variables (n=355)

	Past 90 Days MJ Use (M)					Psychological distress (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	53.090	6.011	0.000	41.267	64.914	4.405	2.449	0.073	-0.412	9.223
Boredom	2.051	1.687	0.225	-1.268	5.370	0.584	0.621	0.348	-0.637	1.805
Availability	-3.663	1.656	0.028	-6.920	-0.405	-0.269	0.612	0.661	-1.473	0.936
Celebrate	2.175	1.502	0.149	-0.780	5.130	-1.162	0.553	0.037	-2.250	-0.074
Coping	-0.898	1.445	0.535	-3.740	1.945	3.122	0.531	0.000	2.078	4.167
Altered Perceptions	1.449	1.414	0.306	-1.332	4.231	0.271	0.520	0.603	-0.752	1.294
Conformity	-6.442	2.412	0.008	-11.186	-1.698	-1.935	0.895	0.031	-3.695	-0.175
Sleep	0.430	1.344	0.749	-2.214	3.074	-0.225	0.494	0.649	-1.196	0.746
Experimentation	-3.031	1.526	0.048	-6.032	-0.030	-0.173	0.564	0.759	-1.282	0.935
Enjoyment	-0.506	1.782	0.777	-4.011	3.000	0.059	0.654	0.929	-1.229	1.346
Alcohol	0.814	1.730	0.639	-2.590	4.217	0.943	0.636	0.139	-0.307	2.193
Attention	0.390	1.449	0.788	-2.461	3.241	-0.791	0.532	0.138	-1.838	0.256
Substitution	-0.475	1.803	0.792	-4.021	3.071	0.076	0.662	0.908	-1.226	1.378
Natural remedy	-0.789	1.438	0.584	-3.617	2.039	0.572	0.528	0.279	-0.466	1.611
Pain	3.436	1.527	0.025	0.432	6.441	-0.006	0.565	0.991	-1.117	1.105
Nausea	1.259	1.489	0.398	-1.669	4.187	0.662	0.547	0.227	-0.414	1.739
Social Anxiety	3.382	1.616	0.037	0.202	6.561	1.690	0.597	0.005	0.515	2.865
Relative Low Risk	1.995	1.409	0.158	-0.776	4.766	-0.216	0.519	0.677	-1.237	0.804
Past 90 Days MJ Use						-0.038	0.020	0.059	-0.077	0.001
	$R^2 = 0.193$					$R^2 = 0.242$				
	$F(17,337) = 4.748^*$					$F(18,336) = 5.960$				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.48b. Indirect and Total Effects of Mediation Analysis of Psychological distress on Motives of Marijuana Use Mediated by Past 90 Days Use, No Control Variables (n=355)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.078	-0.291	0.049	0.506	0.622	0.416	-0.717	1.729
Availability	0.139	-0.011	0.369	-0.129	0.610	0.832	-1.330	1.071
Celebrate	-0.083	-0.251	0.033	-1.245	0.554	0.025	-2.334	-0.155
Coping	0.034	-0.093	0.179	3.156	0.533	0.000	2.109	4.204
Altered Perceptions	-0.055	-0.209	0.041	0.216	0.521	0.679	-0.810	1.241
Conformity	0.245	-0.011	0.656	-1.690	0.889	0.058	-3.439	0.058
Sleep	-0.016	-0.158	0.091	-0.241	0.495	0.626	-1.216	0.733
Experimentation	0.115	-0.015	0.333	-0.058	0.562	0.918	-1.164	1.048
Enjoyment	0.019	-0.120	0.198	0.078	0.657	0.906	-1.214	1.370
Alcohol	-0.031	-0.177	0.115	0.912	0.638	0.154	-0.342	2.167
Attention	-0.015	-0.136	0.114	-0.806	0.534	0.132	-1.856	0.245
Substitution	0.018	-0.154	0.186	0.094	0.664	0.887	-1.213	1.401
Natural remedy	0.030	-0.081	0.183	0.602	0.530	0.256	-0.440	1.645
Pain	-0.131	-0.350	0.009	-0.137	0.563	0.809	-1.244	0.971
Nausea	-0.048	-0.205	0.046	0.615	0.549	0.263	-0.465	1.694
Social Anxiety	-0.128	-0.329	0.007	1.562	0.596	0.009	0.390	2.734
Relative Low Risk	-0.076	-0.256	0.023	-0.292	0.519	0.574	-1.313	0.729

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.48c. Regression of Psychological distress on Motives of Marijuana Use Mediated by Past 90 Days Use, With Control Variables (n=350)

	Past 90 Days MJ Use (M)					Psychological distress (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	52.181	13.622	0.000	25.382	78.979	9.514	5.275	0.072	-0.864	19.891
Boredom	1.390	1.694	0.413	-1.944	4.723	0.464	0.642	0.471	-0.800	1.727
Availability	-3.064	1.632	0.061	-6.274	0.147	-0.187	0.622	0.764	-1.410	1.036
Celebrate	3.043	1.538	0.049	0.017	6.068	-1.016	0.586	0.084	-2.169	0.137
Coping	-0.780	1.440	0.589	-3.611	2.052	3.232	0.546	0.000	2.159	4.305
Altered Perceptions	1.415	1.401	0.313	-1.341	4.172	0.226	0.532	0.671	-0.819	1.272
Conformity	-5.886	2.395	0.015	-10.597	-1.175	-2.085	0.915	0.023	-3.886	-0.284
Sleep	-0.095	1.335	0.944	-2.721	2.532	-0.394	0.506	0.436	-1.389	0.600
Experimentation	-2.907	1.508	0.055	-5.873	0.059	-0.212	0.574	0.712	-1.342	0.918
Enjoyment	-1.123	1.787	0.530	-4.638	2.392	-0.118	0.677	0.862	-1.450	1.215
Alcohol	1.307	1.703	0.443	-2.043	4.656	1.088	0.646	0.093	-0.182	2.357
Attention	0.531	1.444	0.713	-2.310	3.372	-0.658	0.547	0.230	-1.734	0.419
Substitution	0.357	1.795	0.842	-3.174	3.889	0.130	0.680	0.849	-1.208	1.467
Natural remedy	-2.806	1.471	0.057	-5.701	0.089	0.355	0.560	0.527	-0.747	1.458
Pain	3.394	1.508	0.025	0.428	6.361	-0.005	0.576	0.994	-1.137	1.128
Nausea	1.491	1.487	0.317	-1.435	4.417	0.577	0.564	0.307	-0.533	1.687
Social Anxiety	2.908	1.612	0.072	-0.263	6.078	1.751	0.613	0.005	0.544	2.958
Relative Low Risk	2.573	1.403	0.068	-0.186	5.333	-0.042	0.534	0.938	-1.092	1.009
Past 90 Days MJ Use (M)	---	---	---	---	---	-0.042	0.021	0.048	-0.083	0.000
Age (today)	-0.080	0.545	0.883	-1.153	0.992	-0.194	0.207	0.347	-0.601	0.212
Non-Hispanic Black/African American**	-1.647	3.986	0.680	-9.489	6.194	-2.759	1.510	0.069	-5.730	0.212
Non-Hispanic Asian/Pacific Islander**	-10.204	7.075	0.150	-24.122	3.714	-1.004	2.688	0.709	-6.293	4.285
Non-Hispanic Multiethnic**	-7.876	5.916	0.184	-19.515	3.762	-1.924	2.247	0.393	-6.344	2.497
Hispanic Latino**	-1.447	3.293	0.661	-7.926	5.031	-1.222	1.248	0.328	-3.676	1.233
Women**	-3.620	2.879	0.210	-9.283	2.044	0.815	1.093	0.457	-1.336	2.965
User group**	12.779	2.860	0.000	7.152	18.406	1.129	1.116	0.313	-1.067	3.325
	$R^2 = 0.257$					$R^2 = 0.260$				
	$F(24,325) = 4.679^*$					$F(25,324) = 4.545^*$				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

** Reference categories: Race/ethnicity = Non-Hispanic White; Gender = Men; User group = non-patient

Table 4.48d. Indirect and Total Effects of Mediation Analysis of Psychological distress on Motives of Marijuana Use Mediated by Past 90 Days Use, With Control Variables (n=350)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.058	-0.260	0.085	0.406	0.645	0.530	-0.863	1.674
Availability	0.128	-0.021	0.341	-0.059	0.621	0.924	-1.281	1.162
Celebrate	-0.127	-0.343	0.015	-1.143	0.585	0.052	-2.294	0.008
Coping	0.033	-0.122	0.176	3.265	0.548	0.000	2.187	4.342
Altered Perceptions	-0.059	-0.222	0.047	0.167	0.533	0.754	-0.881	1.216
Conformity	0.246	-0.007	0.654	-1.840	0.911	0.044	-3.632	-0.047
Sleep	0.004	-0.132	0.128	-0.391	0.508	0.443	-1.390	0.609
Experimentation	0.121	-0.014	0.358	-0.091	0.574	0.875	-1.219	1.038
Enjoyment	0.047	-0.104	0.254	-0.071	0.680	0.917	-1.408	1.267
Alcohol	-0.055	-0.221	0.091	1.033	0.648	0.112	-0.241	2.308
Attention	-0.022	-0.155	0.113	-0.680	0.550	0.217	-1.761	0.401
Substitution	-0.015	-0.221	0.166	0.115	0.683	0.867	-1.229	1.459
Natural remedy	0.117	-0.013	0.340	0.472	0.560	0.400	-0.629	1.574
Pain	-0.142	-0.363	0.005	-0.146	0.574	0.799	-1.275	0.983
Nausea	-0.062	-0.235	0.041	0.515	0.566	0.364	-0.598	1.628
Social Anxiety	-0.121	-0.318	0.015	1.630	0.613	0.008	0.424	2.836
Relative Low Risk	-0.107	-0.328	0.013	-0.149	0.534	0.781	-1.199	0.901

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.49a. Regression of Psychological distress on Motives of Marijuana Use Mediated by Daily Number of Hits, No Control Variables (n=351)

	Daily Number of Hits (M)					Psychological distress (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	22.612	6.568	0.001	9.693	35.532	3.467	2.272	0.128	-1.003	7.936
Boredom	2.472	1.863	0.186	-1.194	6.137	0.494	0.635	0.437	-0.755	1.743
Availability	-1.552	1.836	0.398	-5.163	2.059	-0.094	0.625	0.881	-1.323	1.135
Celebrate	1.157	1.645	0.483	-2.079	4.392	-1.335	0.560	0.018	-2.436	-0.234
Coping	1.155	1.597	0.470	-1.987	4.296	3.336	0.543	0.000	2.267	4.405
Altered Perceptions	-1.592	1.530	0.299	-4.602	1.417	0.155	0.521	0.767	-0.870	1.179
Conformity	-2.637	2.613	0.314	-7.776	2.503	-1.896	0.889	0.034	-3.646	-0.147
Sleep	-0.008	1.495	0.996	-2.949	2.932	-0.332	0.508	0.514	-1.332	0.668
Experimentation	-0.122	1.706	0.943	-3.477	3.233	0.049	0.580	0.933	-1.092	1.189
Enjoyment	-1.163	1.939	0.549	-4.978	2.651	0.111	0.660	0.867	-1.186	1.408
Alcohol	-2.394	1.876	0.203	-6.084	1.295	0.790	0.639	0.217	-0.467	2.047
Attention	5.088	1.567	0.001	2.006	8.170	-0.659	0.541	0.224	-1.723	0.405
Substitution	-2.193	1.970	0.266	-6.069	1.682	-0.127	0.671	0.850	-1.447	1.193
Natural remedy	-3.134	1.574	0.047	-6.230	-0.038	0.618	0.538	0.252	-0.441	1.677
Pain	2.323	1.656	0.162	-0.934	5.579	-0.098	0.564	0.863	-1.208	1.013
Nausea	1.411	1.623	0.385	-1.782	4.604	0.725	0.552	0.190	-0.361	1.812
Social Anxiety	0.850	1.773	0.632	-2.637	4.337	1.656	0.603	0.006	0.470	2.841
Relative Low Risk	-0.466	1.539	0.762	-3.494	2.562	-0.404	0.523	0.441	-1.433	0.626
Daily Number of Hits						-0.034	0.019	0.073	-0.070	0.003
	R ² = 0.110					R ² = 0.246				
	F(17,333) = 2.417*					F(18,332) = 6*				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.49b. Indirect and Total Effects of Mediation Analysis of Psychological distress on Motives of Marijuana Use Mediated by Daily Number of Hits, No Control Variables (n=351)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.083	-0.292	0.027	0.411	0.636	0.518	-0.839	1.661
Availability	0.052	-0.073	0.250	-0.042	0.626	0.947	-1.273	1.190
Celebrate	-0.039	-0.217	0.090	-1.374	0.561	0.015	-2.477	-0.270
Coping	-0.039	-0.189	0.084	3.297	0.545	0.000	2.226	4.369
Altered Perceptions	0.053	-0.061	0.219	0.208	0.522	0.691	-0.819	1.234
Conformity	0.088	-0.086	0.322	-1.808	0.891	0.043	-3.561	-0.055
Sleep	0.000	-0.103	0.119	-0.332	0.510	0.516	-1.335	0.671
Experimentation	0.004	-0.123	0.154	0.053	0.582	0.928	-1.091	1.197
Enjoyment	0.039	-0.103	0.217	0.150	0.661	0.821	-1.151	1.451
Alcohol	0.080	-0.054	0.269	0.871	0.640	0.174	-0.388	2.129
Attention	-0.171	-0.435	0.015	-0.829	0.534	0.122	-1.880	0.222
Substitution	0.074	-0.078	0.279	-0.054	0.672	0.937	-1.375	1.268
Natural remedy	0.105	-0.017	0.328	0.723	0.537	0.179	-0.333	1.779
Pain	-0.078	-0.234	0.031	-0.176	0.565	0.756	-1.286	0.935
Nausea	-0.047	-0.249	0.088	0.678	0.554	0.221	-0.411	1.767
Social Anxiety	-0.029	-0.199	0.098	1.627	0.605	0.008	0.438	2.816
Relative Low Risk	0.016	-0.113	0.144	-0.388	0.525	0.460	-1.421	0.644

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.49c. Regression of Psychological distress on Motives of Marijuana Use Mediated by Daily Number of Hits, With Control Variables (n=346)

	Daily Number of Hits (M)					Psychological distress (Y)				
	B	SE	p	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
(Constant)	35.876	14.956	0.017	6.453	65.300	8.377	5.244	0.111	-1.941	18.694
Boredom	1.163	1.891	0.539	-2.558	4.884	0.352	0.658	0.593	-0.942	1.646
Availability	-0.889	1.830	0.627	-4.489	2.710	0.025	0.636	0.969	-1.227	1.276
Celebrate	0.684	1.706	0.689	-2.673	4.040	-1.262	0.593	0.034	-2.429	-0.096
Coping	1.601	1.608	0.320	-1.563	4.765	3.458	0.560	0.000	2.357	4.560
Altered Perceptions	-1.367	1.532	0.373	-4.381	1.647	0.121	0.533	0.821	-0.928	1.170
Conformity	-2.437	2.619	0.353	-7.590	2.716	-2.018	0.912	0.028	-3.812	-0.225
Sleep	-0.310	1.506	0.837	-3.273	2.653	-0.511	0.523	0.330	-1.541	0.519
Experimentation	-0.154	1.701	0.928	-3.501	3.194	-0.012	0.591	0.984	-1.175	1.152
Enjoyment	-0.401	1.965	0.839	-4.267	3.466	-0.005	0.683	0.994	-1.349	1.339
Alcohol	-1.757	1.864	0.347	-5.425	1.911	0.924	0.649	0.155	-0.353	2.201
Attention	4.633	1.578	0.004	1.529	7.737	-0.564	0.556	0.311	-1.657	0.530
Substitution	-1.945	1.980	0.327	-5.841	1.951	-0.106	0.689	0.878	-1.462	1.250
Natural remedy	-3.572	1.624	0.029	-6.767	-0.377	0.498	0.569	0.382	-0.621	1.616
Pain	1.901	1.651	0.251	-1.347	5.149	-0.129	0.575	0.823	-1.260	1.002
Nausea	1.961	1.639	0.233	-1.264	5.186	0.654	0.571	0.253	-0.470	1.778
Social Anxiety	0.885	1.784	0.620	-2.624	4.395	1.751	0.620	0.005	0.531	2.972
Relative Low Risk	0.064	1.549	0.967	-2.984	3.111	-0.262	0.538	0.627	-1.321	0.798
Daily Number of Hits	---	---	---	---	---	-0.032	0.019	0.099	-0.070	0.006
Age (today)	-0.798	0.599	0.184	-1.977	0.380	-0.202	0.209	0.334	-0.613	0.209
Non-Hispanic Black/African American**	8.599	4.357	0.049	0.027	17.172	-2.282	1.524	0.135	-5.279	0.716
Non-Hispanic Asian/Pacific Islander**	-7.993	7.726	0.302	-23.192	7.207	-0.765	2.690	0.776	-6.057	4.527
Non-Hispanic Multiethnic**	-7.917	6.470	0.222	-20.645	4.812	-1.666	2.254	0.460	-6.100	2.769
Hispanic Latino**	0.068	3.608	0.985	-7.031	7.166	-1.014	1.254	0.420	-3.481	1.453
Women**	-6.031	3.150	0.057	-12.228	0.167	0.844	1.101	0.444	-1.323	3.010
User group**	4.838	3.141	0.125	-1.342	11.018	0.740	1.096	0.500	-1.416	2.896
	R ² =0.148					R ² =0.261				
	F(24,321) = 2.329*					F(25,320) = 4.528*				

Bolded values indicate 95% Bootstrapped CIs that do not include 0

** Reference categories: Race/ethnicity = Non-Hispanic White; Gender = Men; User group = non-patient

Table 4.49d. Indirect and Total Effects of Mediation Analysis of Psychological distress on Motives of Marijuana Use Mediated by Daily Number of Hits, With Control Variables (n=346)

	Indirect Effect			Total Effect				
	B	Lower CI	Upper CI	B	SE	p	Lower CI	Upper CI
Boredom	-0.037	-0.218	0.081	0.314	0.659	0.634	-0.982	1.611
Availability	0.029	-0.088	0.202	0.053	0.638	0.934	-1.201	1.308
Celebrate	-0.022	-0.180	0.100	-1.284	0.595	0.032	-2.454	-0.115
Coping	-0.051	-0.191	0.067	3.407	0.560	0.000	2.305	4.510
Altered Perceptions	0.044	-0.068	0.201	0.165	0.534	0.758	-0.886	1.215
Conformity	0.078	-0.103	0.298	-1.940	0.913	0.034	-3.736	-0.144
Sleep	0.010	-0.086	0.128	-0.501	0.525	0.340	-1.534	0.531
Experimentation	0.005	-0.126	0.159	-0.007	0.593	0.991	-1.173	1.160
Enjoyment	0.013	-0.132	0.190	0.008	0.685	0.991	-1.340	1.356
Alcohol	0.056	-0.079	0.224	0.980	0.650	0.132	-0.298	2.259
Attention	-0.149	-0.409	0.021	-0.712	0.550	0.196	-1.794	0.370
Substitution	0.062	-0.084	0.273	-0.043	0.690	0.950	-1.401	1.315
Natural remedy	0.115	-0.022	0.352	0.612	0.566	0.280	-0.501	1.726
Pain	-0.061	-0.219	0.050	-0.190	0.575	0.742	-1.322	0.942
Nausea	-0.063	-0.286	0.063	0.591	0.571	0.302	-0.533	1.715
Social Anxiety	-0.028	-0.201	0.097	1.723	0.622	0.006	0.500	2.946
Relative Low Risk	-0.002	-0.120	0.118	-0.264	0.540	0.626	-1.326	0.798

Bolded values indicate 95% Bootstrapped CIs that do not include 0

Table 4.50. Result of Moderation Analysis for Motives of Use on Symptoms of Depression by Gender

Symptoms of Depression		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Constant	i_y	0.987	1.074	0.919	0.359	4.315	2.431	1.774	0.076
Boredom	b_1	0.405	0.314	1.292	0.197	0.318	0.323	0.984	0.325
Gender	b_2	1.333	1.079	1.235	0.218	1.208	1.102	1.096	0.273
Boredom x Gender	b_3	-0.627	0.399	-1.573	0.117	-0.571	0.405	-1.407	0.160
Age	b_4					-0.135	0.096	-1.405	0.160
Non Hispanic Black/African American	b_5					-1.096	0.708	-1.546	0.123
Non-Hispanic Asian/Pacific Islander	b_6					-0.569	1.255	-0.453	0.650
Non-Hispanic Multiethnic	b_7					-0.423	1.046	-0.405	0.685
Hispanic Latino	b_8					-0.450	0.583	-0.772	0.440
User group	b_9					0.0143	0.5058	0.0283	0.977
		R ² = 0.232, MSE= 16.884				R ² =0.240, MSE=17.106			
Constant	i_y	0.908	1.087	0.835	0.404	4.166	2.440	1.707	0.089
Availability	b_1	0.415	0.321	1.293	0.197	0.421	0.328	1.283	0.200
Gender	b_2	1.710	1.271	1.345	0.180	1.682	1.292	1.301	0.194
Availability x Gender	b_3	-0.673	0.418	-1.612	0.108	-0.658	0.422	-1.557	0.121
Age	b_4					-0.134	0.096	-1.389	0.166
Non Hispanic Black/African American	b_5					-1.135	0.705	-1.609	0.109
Non-Hispanic Asian/Pacific Islander	b_6					-0.624	1.251	-0.499	0.618
Non-Hispanic Multiethnic	b_7					-0.427	1.045	-0.408	0.683
Hispanic Latino	b_8					-0.460	0.583	-0.789	0.431
User group	b_9					0.052	0.505	0.103	0.918
		R ² = 0.232, MSE= 16.878				R ² =0.241, MSE=17.078			
Constant	i_y	1.690	1.109	1.524	0.129	5.048	2.454	2.057	0.041*
Celebration	b_1	-0.556	0.292	-1.906	0.058	-0.491	0.306	-1.603	0.110
Gender	b_2	-0.829	1.372	-0.604	0.546	-0.888	1.396	-0.636	0.525
Celebration x Gender	b_3	0.206	0.407	0.507	0.613	0.229	0.414	0.554	0.580
Age	b_4					-0.136	0.097	-1.407	0.161
Non Hispanic Black/African American	b_5					-1.215	0.706	-1.721	0.086
Non-Hispanic Asian/Pacific Islander	b_6					-0.737	1.254	-0.588	0.557
Non-Hispanic Multiethnic	b_7					-0.469	1.048	-0.447	0.655
Hispanic Latino	b_8					-0.501	0.584	-0.859	0.391
User group	b_9					0.037	0.507	0.072	0.943
		R ² = 0.227, MSE= 16.996				R ² =0.236, MSE=17.190			
Constant	i_y	1.038	1.062	0.978	0.329	4.396	2.419	1.818	0.070
Coping	b_1	2.071	0.291	7.130	0.000*	2.129	0.296	7.203	0.000*
Gender	b_2	1.447	1.105	1.310	0.191	1.428	1.130	1.264	0.207

Symptoms of Depression		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Coping x Gender	b_3	-0.687	0.418	-1.643	0.101	-0.674	0.426	-1.582	0.115
Age	b_4					-0.137	0.096	-1.424	0.155
Non Hispanic Black/African American	b_5					-1.126	0.706	-1.595	0.112
Non-Hispanic Asian/Pacific Islander	b_6					-0.754	1.249	-0.604	0.546
Non-Hispanic Multiethnic	b_7					-0.369	1.047	-0.353	0.725
Hispanic Latino	b_8					-0.545	0.582	-0.936	0.350
User group	b_9					0.058	0.505	0.116	0.908
		R ² = 0.236, MSE= 16.873				R ² =0.241, MSE=17.074			
Constant	i_y	1.666	1.066	1.563	0.119	5.118	2.447	2.092	0.037*
Altered Perceptions	b_1	0.041	0.273	0.149	0.882	-0.030	0.280	-0.107	0.915
Gender	b_2	-1.002	1.319	-0.760	0.448	-1.127	1.341	-0.841	0.401
Altered Perceptions x Gender	b_3	0.264	0.393	0.671	0.503	0.309	0.400	0.774	0.440
Age	b_4					-0.140	0.097	-1.443	0.150
Non Hispanic Black/African American	b_5					-1.216	0.706	-1.722	0.086
Non-Hispanic Asian/Pacific Islander	b_6					-0.721	1.253	-0.576	0.565
Non-Hispanic Multiethnic	b_7					-0.400	1.052	-0.380	0.704
Hispanic Latino	b_8					-0.507	0.583	-0.870	0.385
User group	b_9					0.037	0.507	0.072	0.943
		R ² = 0.227, MSE= 16.986				R ² = 0.237, MSE=17.174			
Constant	i_y	1.189	1.105	1.075	0.283	4.439	2.508	1.770	0.078
Conformity	b_1	-0.487	0.512	-0.951	0.342	-0.600	0.530	-1.132	0.259
Gender	b_2	0.503	1.053	0.477	0.633	0.341	1.085	0.314	0.754
Conformity x Gender	b_3	-0.512	0.698	-0.733	0.464	-0.379	0.714	-0.531	0.596
Age	b_4					-0.129	0.097	-1.331	0.184
Non Hispanic Black/African American	b_5					-1.189	0.707	-1.682	0.094
Non-Hispanic Asian/Pacific Islander	b_6					-0.669	1.258	-0.532	0.595
Non-Hispanic Multiethnic	b_7					-0.452	1.049	-0.431	0.667
Hispanic Latino	b_8					-0.481	0.587	-0.819	0.413
User group	b_9					0.054	0.507	0.106	0.916
		R ² = 0.228, MSE= 16.982				R ² =0.236, MSE=17.191			
Constant	i_y	1.750	1.081	1.620	0.106	5.327	2.457	2.168	0.031*
Sleep	b_1	0.103	0.251	0.410	0.682	0.007	0.258	0.026	0.979
Gender	b_2	-1.326	1.483	-0.894	0.372	-1.753	1.524	-1.150	0.251
Sleep x Gender	b_3	0.326	0.398	0.819	0.414	0.451	0.409	1.103	0.271
Age	b_4					-0.140	0.097	-1.450	0.148
Non Hispanic Black/African American	b_5					-1.304	0.711	-1.835	0.068
Non-Hispanic Asian/Pacific Islander	b_6					-0.966	1.271	-0.760	0.448
Non-Hispanic Multiethnic	b_7					-0.555	1.049	-0.529	0.597

Symptoms of Depression		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Hispanic Latino	b_8					-0.585	0.586	-0.997	0.319
User group	b_9					0.073	0.507	0.144	0.886
		R ² = 0.228, MSE= 16.975				R ² =0.238, MSE=17.142			
Constant	i_y	1.294	1.082	1.196	0.233	4.557	2.468	1.846	0.066
Experimentation	b_1	-0.098	0.296	-0.332	0.740	-0.105	0.304	-0.345	0.730
Gender	b_2	0.326	1.016	0.321	0.748	0.263	1.045	0.252	0.801
Experimentation x Gender	b_3	-0.246	0.431	-0.570	0.569	-0.208	0.440	-0.473	0.637
Age	b_4					-0.132	0.097	-1.357	0.176
Non Hispanic Black/African American	b_5					-1.193	0.707	-1.687	0.093
Non-Hispanic Asian/Pacific Islander	b_6					-0.686	1.256	-0.546	0.585
Non-Hispanic Multiethnic	b_7					-0.446	1.050	-0.425	0.671
Hispanic Latino	b_8					-0.507	0.584	-0.869	0.386
User group	b_9					0.048	0.507	0.095	0.924
		R ² = 0.227, MSE= 16.992				R ² =0.236, MSE=17.194			
Constant	i_y	0.999	1.128	0.885	0.377	4.261	2.466	1.728	0.085
Enjoyment	b_1	0.028	0.331	0.083	0.934	0.023	0.340	0.067	0.947
Gender	b_2	1.766	1.925	0.917	0.360	1.791	1.958	0.915	0.361
Enjoyment x Gender	b_3	-0.505	0.483	-1.046	0.297	-0.508	0.491	-1.036	0.301
Age	b_4					-0.134	0.097	-1.389	0.166
Non Hispanic Black/African American	b_5					-1.163	0.707	-1.647	0.101
Non-Hispanic Asian/Pacific Islander	b_6					-0.641	1.255	-0.511	0.610
Non-Hispanic Multiethnic	b_7					-0.498	1.047	-0.476	0.634
Hispanic Latino	b_8					-0.467	0.584	-0.799	0.425
User group	b_9					0.046	0.506	0.092	0.927
		R ² = 0.229, MSE= 16.954				R ² =0.238, MSE=17.149			
Constant	i_y	1.056	1.083	0.975	0.330	4.270	2.468	1.730	0.085
Alcohol	b_1	0.505	0.356	1.421	0.156	0.497	0.364	1.363	0.174
Gender	b_2	0.978	1.045	0.936	0.350	0.784	1.072	0.731	0.465
Alcohol x Gender	b_3	-0.667	0.531	-1.256	0.210	-0.553	0.548	-1.009	0.314
Age	b_4					-0.128	0.097	-1.320	0.188
Non Hispanic Black/African American	b_5					-1.114	0.711	-1.566	0.118
Non-Hispanic Asian/Pacific Islander	b_6					-0.599	1.258	-0.477	0.634
Non-Hispanic Multiethnic	b_7					-0.417	1.049	-0.398	0.691
Hispanic Latino	b_8					-0.511	0.583	-0.878	0.381
User group	b_9					0.028	0.506	0.055	0.957
		R ² = 0.23, MSE= 16.930				R ² =0.238, MSE=17.152			
Constant	i_y	1.585	1.060	1.496	0.136	4.912	2.423	2.027	0.043*
Attention	b_1	-0.478	0.283	-1.688	0.092	-0.465	0.290	-1.604	0.110

Symptoms of Depression		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Gender	b_2	-0.595	1.106	-0.538	0.591	-0.694	1.120	-0.620	0.536
Attention x Gender	b_3	0.159	0.380	0.418	0.676	0.203	0.384	0.528	0.598
Age	b_4					-0.134	0.097	-1.384	0.167
Non Hispanic Black/African American	b_5					-1.235	0.708	-1.744	0.082
Non-Hispanic Asian/Pacific Islander	b_6					-0.753	1.255	-0.601	0.549
Non-Hispanic Multiethnic	b_7					-0.465	1.048	-0.444	0.658
Hispanic Latino	b_8					-0.513	0.583	-0.879	0.380
User group	b_9					0.038	0.507	0.076	0.940
		R ² = 0.227, MSE=17				R ² =0.236, MSE=17.191			
Constant	i_y	1.547	1.082	1.430	0.154	4.896	2.431	2.014	0.045*
Substitution	b_1	0.209	0.350	0.597	0.551	0.168	0.360	0.465	0.642
Gender	b_2	-0.379	1.118	-0.339	0.735	-0.514	1.147	-0.448	0.655
Substitution x Gender	b_3	0.086	0.435	0.198	0.843	0.149	0.444	0.336	0.737
Age	b_4					-0.133	0.097	-1.380	0.169
Non Hispanic Black/African American	b_5					-1.237	0.712	-1.738	0.083
Non-Hispanic Asian/Pacific Islander	b_6					-0.774	1.263	-0.613	0.540
Non-Hispanic Multiethnic	b_7					-0.480	1.049	-0.457	0.648
Hispanic Latino	b_8					-0.528	0.585	-0.902	0.368
User group	b_9					0.033	0.507	0.065	0.948
		R ² = 0.226, MSE= 17.007				R ² =0.235, MSE=17.147			
Constant	i_y	1.950	1.059	1.841	0.067	5.269	2.418	2.179	0.030*
Natural Remedy	b_1	-0.030	0.288	-0.106	0.916	-0.047	0.302	-0.155	0.877
Gender	b_2	-1.995	1.129	-1.767	0.078	-1.971	1.148	-1.716	0.087
Natural Remedy x Gender	b_3	0.636	0.357	1.784	0.075	0.635	0.363	1.751	0.081
Age	b_4					-0.134	0.096	-1.394	0.164
Non Hispanic Black/African American	b_5					-1.213	0.703	-1.724	0.086
Non-Hispanic Asian/Pacific Islander	b_6					-0.992	1.258	-0.789	0.431
Non-Hispanic Multiethnic	b_7					-0.532	1.044	-0.509	0.611
Hispanic Latino	b_8					-0.553	0.581	-0.951	0.343
User group	b_9					0.050	0.505	0.099	0.921
		R ² = 0.234, MSE= 16.850				R ² =0.242, MSE=16.993			
Constant	i_y	1.882	1.087	1.731	0.084	5.238	2.439	2.148	0.032*
Pain	b_1	-0.648	0.287	-2.254	0.025*	-0.635	0.292	-2.174	0.030*
Gender	b_2	-1.500	1.259	-1.191	0.235	-1.539	1.283	-1.199	0.231
Pain x Gender	b_3	0.415	0.365	1.138	0.256	0.432	0.371	1.164	0.245
Age	b_4					-0.135	0.096	-1.400	0.162
Non Hispanic Black/African American	b_5					-1.248	0.706	-1.767	0.078
Non-Hispanic Asian/Pacific Islander	b_6					-0.870	1.258	-0.692	0.490

Symptoms of Depression		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Non-Hispanic Multiethnic	b_7					-0.547	1.048	-0.522	0.602
Hispanic Latino	b_8					-0.538	0.583	-0.923	0.357
User group	b_9					0.049	0.506	0.097	0.923
		R ² = 0.229, MSE= 16.943				R ² =0.238, MSE=17.134			
Constant	i_y	1.483	1.067	1.389	0.166	4.848	2.462	1.969	0.050*
Nausea	b_1	-0.133	0.300	-0.442	0.659	-0.161	0.309	-0.521	0.603
Gender	b_2	-0.182	0.980	-0.186	0.853	-0.252	1.003	-0.251	0.802
Nausea x Gender	b_3	0.001	0.367	0.002	0.998	0.037	0.379	0.097	0.922
Age	b_4					-0.136	0.097	-1.399	0.163
Non Hispanic Black/African American	b_5					-1.210	0.707	-1.711	0.088
Non-Hispanic Asian/Pacific Islander	b_6					-0.743	1.268	-0.586	0.559
Non-Hispanic Multiethnic	b_7					-0.479	1.050	-0.456	0.648
Hispanic Latino	b_8					-0.515	0.584	-0.881	0.379
User group	b_9					0.044	0.508	0.086	0.931
		R ² = 0.226, MSE= 17.009				R ² =0.235, MSE=17.206			
Constant	i_y	2.022	1.050	1.926	0.055	5.562	2.413	2.305	0.022*
Social Anxiety	b_1	0.118	0.319	0.369	0.712	0.101	0.331	0.304	0.762
Gender	b_2	-2.663	1.186	-2.245	0.025*	-2.859	1.218	-2.348	0.020*
Social Anxiety x Gender	b_3	0.866	0.377	2.297	0.022*	0.946	0.389	2.429	0.016*
Age	b_4					-0.140	0.096	-1.456	0.146
Non Hispanic Black/African American	b_5					-1.446	0.707	-2.045	0.042*
Non-Hispanic Asian/Pacific Islander	b_6					-1.025	1.249	-0.821	0.412
Non-Hispanic Multiethnic	b_7					-0.493	1.039	-0.475	0.635
Hispanic Latino	b_8					-0.561	0.579	-0.969	0.333
User group	b_9					0.097	0.503	0.194	0.847
		R ² = 0.238, MSE= 16.745				R ² =0.249, MSE=16.898			
Constant	i_y	1.079	1.074	1.005	0.316	4.234	2.449	1.729	0.085
Relative Low Risk	b_1	0.015	0.268	0.055	0.956	0.063	0.277	0.227	0.821
Gender	b_2	1.487	1.376	1.080	0.281	1.512	1.411	1.072	0.285
Relative Low Risk x Gender	b_3	-0.517	0.399	-1.297	0.196	-0.519	0.407	-1.276	0.203
Age	b_4					-0.130	0.097	-1.343	0.180
Non Hispanic Black/African American	b_5					-1.172	0.705	-1.661	0.098
Non-Hispanic Asian/Pacific Islander	b_6					-0.581	1.256	-0.462	0.644
Non-Hispanic Multiethnic	b_7					-0.529	1.047	-0.505	0.614
Hispanic Latino	b_8					-0.447	0.585	-0.764	0.445
User group	b_9					0.067	0.506	0.132	0.895
		R ² = 0.230, MSE= 16.924				R ² =0.239, MSE=17.1202			

* significant at $p \leq 0.05$

Figure 4.21. Visual Representation of the Moderation of the Effect of the Social Anxiety Motive of Use on Symptoms of Depression by Gender

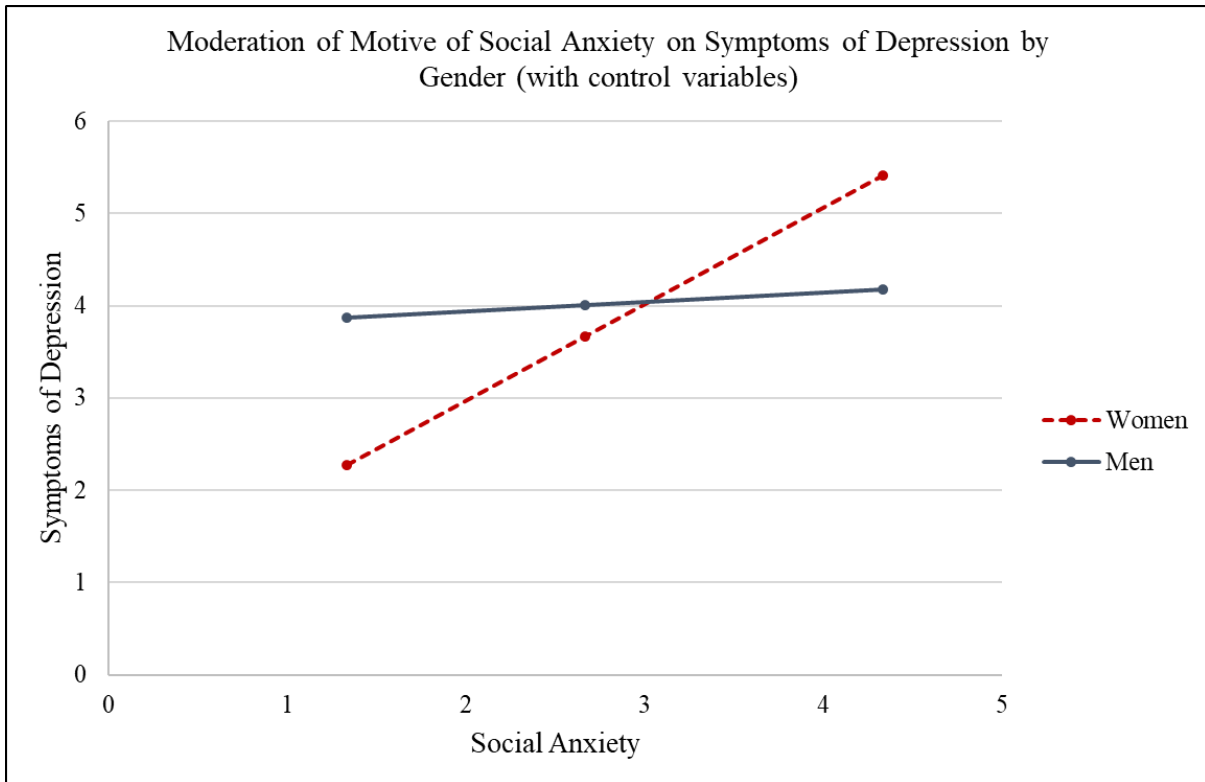
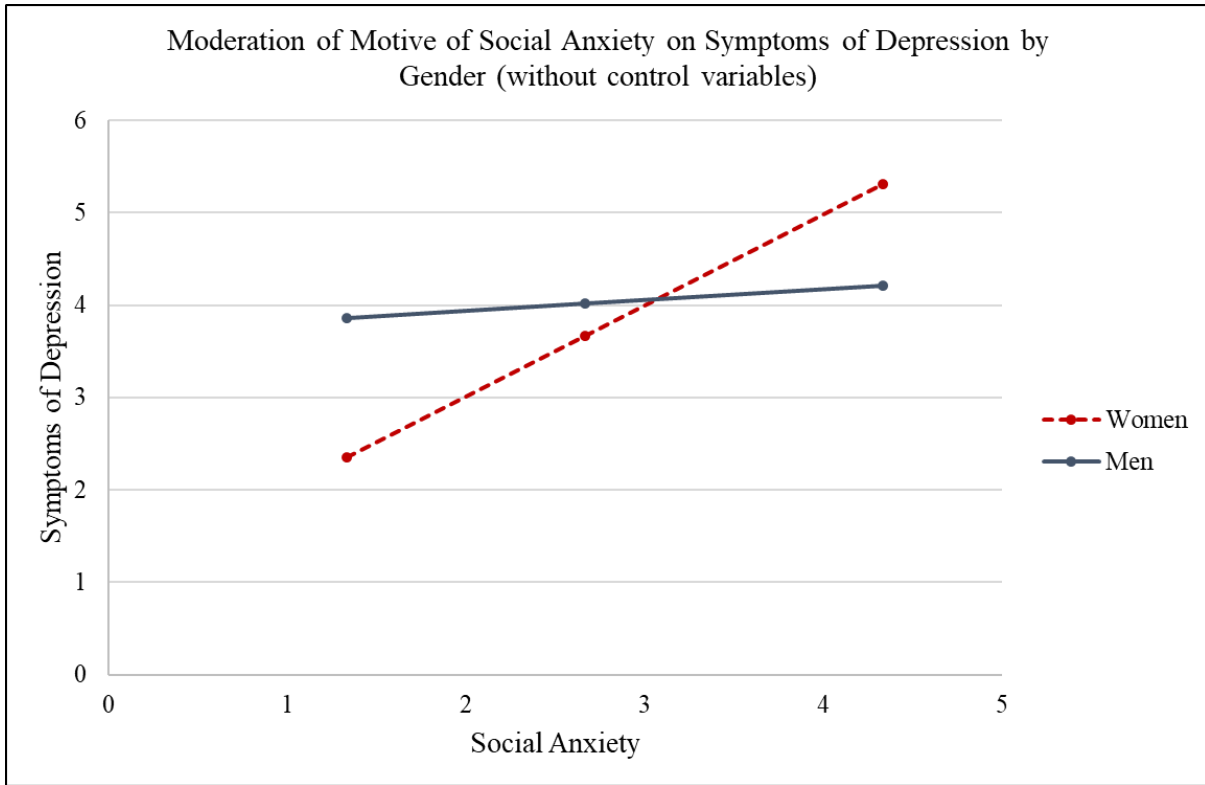


Table 4.51. Result of Moderation Analysis for Motives of Use on Symptoms of Anxiety by Gender

Symptoms of Anxiety		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Constant	i_y	0.344	0.908	0.379	0.705	1.798	2.049	0.878	0.381
Boredom	b_1	0.424	0.265	1.598	0.111	0.337	0.272	1.238	0.217
Gender	b_2	2.418	0.912	2.650	0.008*	2.062	0.929	2.221	0.027*
Boredom x Gender	b_3	-0.745	0.337	-2.212	0.028*	-0.650	0.342	-1.900	0.058
Age	b_4					-0.036	0.081	-0.447	0.655
Non Hispanic Black/African American	b_5					-1.172	0.597	-1.962	0.051*
Non-Hispanic Asian/Pacific Islander	b_6					-0.605	1.057	-0.573	0.567
Non-Hispanic Multiethnic	b_7					-1.284	0.881	-1.457	0.146
Hispanic Latino	b_8					-0.838	0.492	-1.705	0.089
User group	b_9					-0.058	0.426	-0.135	0.892
		R ² = 0.194, MSE=12.067				R ² = 0.212, MSE= 12.136			
Constant	i_y	0.272	0.919	0.296	0.768	1.651	2.055	0.803	0.422
Availability	b_1	0.250	0.272	0.921	0.358	0.257	0.276	0.930	0.353
Gender	b_2	2.791	1.075	2.596	0.010*	2.536	1.088	2.330	0.020*
Availability x Gender	b_3	-0.773	0.353	-2.189	0.029*	-0.725	0.356	-2.038	0.042*
Age	b_4					-0.034	0.081	-0.424	0.672
Non Hispanic Black/African American	b_5					-1.219	0.594	-2.051	0.041*
Non-Hispanic Asian/Pacific Islander	b_6					-0.672	1.054	-0.637	0.524
Non-Hispanic Multiethnic	b_7					-1.289	0.880	-1.465	0.144
Hispanic Latino	b_8					-0.850	0.491	-1.733	0.084
User group	b_9					-0.015	0.426	-0.036	0.972
		R ² = 0.194, MSE=12.071				R ² = 0.214, MSE= 12.115			
Constant	i_y	0.634	0.940	0.675	0.500	2.051	2.071	0.990	0.323
Celebration	b_1	-0.356	0.247	-1.439	0.151	-0.370	0.258	-1.433	0.153
Gender	b_2	1.551	1.163	1.334	0.183	1.374	1.178	1.166	0.244
Celebration x Gender	b_3	-0.296	0.345	-0.858	0.392	-0.279	0.349	-0.800	0.424
Age	b_4					-0.035	0.082	-0.425	0.671
Non Hispanic Black/African American	b_5					-1.288	0.596	-2.160	0.032*
Non-Hispanic Asian/Pacific Islander	b_6					-0.767	1.058	-0.725	0.469
Non-Hispanic Multiethnic	b_7					-1.350	0.885	-1.525	0.128
Hispanic Latino	b_8					-0.922	0.493	-1.871	0.062
User group	b_9					-0.022	0.428	-0.052	0.959
		R ² = 0.184, MSE= 12.216				R ² = 0.205, MSE=12.247			
Constant	i_y	0.753	0.904	0.833	0.406	2.185	2.049	1.067	0.287
Coping	b_1	0.946	0.247	3.827	0.000*	1.030	0.250	4.116	0.000*
Gender	b_2	1.278	0.941	1.358	0.175	1.152	0.957	1.204	0.229

Symptoms of Anxiety		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Coping x Gender	b_3	-0.278	0.356	-0.781	0.436	-0.277	0.361	-0.767	0.444
Age	b_4					-0.037	0.082	-0.450	0.653
Non Hispanic Black/African American	b_5					-1.265	0.598	-2.116	0.035*
Non-Hispanic Asian/Pacific Islander	b_6					-0.794	1.058	-0.751	0.454
Non-Hispanic Multiethnic	b_7					-1.299	0.887	-1.465	0.144
Hispanic Latino	b_8					-0.922	0.493	-1.870	0.062
User group	b_9					-0.020	0.428	-0.048	0.962
		R ² = 0.184, MSE= 12.221				R ² =0.205, MSE=12.249			
Constant	i_y	0.964	0.905	1.065	0.288	2.349	2.068	1.136	0.257
Altered Perceptions	b_1	0.143	0.232	0.617	0.538	0.135	0.237	0.571	0.568
Gender	b_2	0.478	1.120	0.427	0.670	0.505	1.133	0.446	0.656
Altered Perceptions x Gender	b_3	0.045	0.334	0.136	0.892	-0.003	0.338	-0.008	0.994
Age	b_4					-0.036	0.082	-0.437	0.662
Non Hispanic Black/African American	b_5					-1.298	0.597	-2.175	0.030*
Non-Hispanic Asian/Pacific Islander	b_6					-0.782	1.059	-0.738	0.461
Non-Hispanic Multiethnic	b_7					-1.343	0.889	-1.510	0.132
Hispanic Latino	b_8					-0.908	0.493	-1.843	0.066
User group	b_9					-0.027	0.428	-0.064	0.949
		R ² = 0.182, MSE= 12.243				R ² = 0.204, MSE=12.271			
Constant	i_y	0.573	0.937	0.611	0.542	1.902	2.117	0.899	0.370
Conformity	b_1	-0.244	0.434	-0.561	0.575	-0.365	0.447	-0.816	0.415
Gender	b_2	1.456	0.893	1.631	0.104	1.128	0.916	1.231	0.219
Conformity x Gender	b_3	-0.627	0.592	-1.059	0.291	-0.470	0.603	-0.780	0.436
Age	b_4					-0.029	0.082	-0.351	0.726
Non Hispanic Black/African American	b_5					-1.276	0.597	-2.138	0.033*
Non-Hispanic Asian/Pacific Islander	b_6					-0.714	1.062	-0.672	0.502
Non-Hispanic Multiethnic	b_7					-1.314	0.886	-1.483	0.139
Hispanic Latino	b_8					-0.869	0.495	-1.755	0.080
User group	b_9					-0.011	0.428	-0.026	0.979
		R ² = 0.185, MSE= 12.202				R ² = 0.205, MSE=12.248			
Constant	i_y	0.912	0.918	0.994	0.321	2.450	2.078	1.179	0.239
Sleep	b_1	-0.349	0.213	-1.641	0.102	-0.405	0.219	-1.852	0.065
Gender	b_2	0.706	1.260	0.560	0.576	0.200	1.290	0.155	0.877
Sleep x Gender	b_3	-0.025	0.338	-0.073	0.942	0.085	0.346	0.244	0.807
Age	b_4					-0.037	0.082	-0.450	0.653
Non Hispanic Black/African American	b_5					-1.316	0.601	-2.189	0.029*
Non-Hispanic Asian/Pacific Islander	b_6					-0.827	1.075	-0.769	0.442
Non-Hispanic Multiethnic	b_7					-1.357	0.888	-1.529	0.127

Symptoms of Anxiety		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Hispanic Latino	b_8					-0.922	0.496	-1.859	0.064
User group	b_9					-0.022	0.429	-0.050	0.960
		R ² = 0.182, MSE= 12.243				R ² =0.204, MSE=12.269			
Constant	i_y	0.270	0.911	0.296	0.767	1.389	2.070	0.671	0.503
Experimentation	b_1	0.273	0.249	1.098	0.273	0.232	0.254	0.910	0.363
Gender	b_2	2.404	0.855	2.811	0.005*	2.196	0.876	2.507	0.013*
Experimentation x Gender	b_3	-0.865	0.363	-2.384	0.018*	-0.820	0.369	-2.223	0.027*
Age	b_4					-0.022	0.081	-0.273	0.785
Non Hispanic Black/African American	b_5					-1.241	0.593	-2.094	0.037*
Non-Hispanic Asian/Pacific Islander	b_6					-0.632	1.053	-0.600	0.549
Non-Hispanic Multiethnic	b_7					-1.230	0.880	-1.397	0.163
Hispanic Latino	b_8					-0.888	0.489	-1.814	0.071
User group	b_9					0.001	0.425	0.003	0.998
		R ² = 0.196, MSE= 12.039				R ² = 0.216, MSE=12.087			
Constant	i_y	0.676	0.958	0.705	0.481	2.099	2.085	1.007	0.315
Enjoyment	b_1	0.026	0.281	0.092	0.927	0.015	0.288	0.053	0.958
Gender	b_2	1.652	1.635	1.011	0.313	1.414	1.655	0.854	0.394
Enjoyment x Gender	b_3	-0.268	0.410	-0.653	0.514	-0.238	0.415	-0.574	0.567
Age	b_4					-0.035	0.082	-0.434	0.665
Non Hispanic Black/African American	b_5					-1.278	0.597	-2.139	0.033*
Non-Hispanic Asian/Pacific Islander	b_6					-0.743	1.061	-0.700	0.484
Non-Hispanic Multiethnic	b_7					-1.353	0.885	-1.529	0.127
Hispanic Latino	b_8					-0.887	0.494	-1.796	0.074
User group	b_9					-0.025	0.428	-0.058	0.954
		R ² = 0.183, MSE = 12.228				R ² =0.205, MSE=12.221			
Constant	i_y	0.866	0.921	0.940	0.348	2.302	2.087	1.103	0.271
Alcohol	b_1	0.232	0.302	0.766	0.444	0.289	0.308	0.938	0.349
Gender	b_2	0.801	0.888	0.902	0.368	0.585	0.906	0.646	0.519
Alcohol x Gender	b_3	-0.104	0.451	-0.231	0.818	-0.051	0.463	-0.110	0.912
Age	b_4					-0.035	0.082	-0.429	0.668
Non Hispanic Black/African American	b_5					-1.289	0.602	-2.143	0.033*
Non-Hispanic Asian/Pacific Islander	b_6					-0.770	1.064	-0.724	0.470
Non-Hispanic Multiethnic	b_7					-1.337	0.887	-1.507	0.133
Hispanic Latino	b_8					-0.908	0.493	-1.843	0.066
User group	b_9					-0.029	0.428	-0.067	0.947
		R ² = 0.182, MSE=12.241				R ² =0.204, MSE=12.271			
Constant	i_y	0.999	0.899	1.112	0.267	2.421	2.046	1.183	0.238
Attention	b_1	-0.442	0.240	-1.841	0.067	-0.367	0.245	-1.498	0.135

Symptoms of Anxiety		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Gender	b_2	0.349	0.939	0.372	0.710	0.165	0.946	0.174	0.862
Attention x Gender	b_3	0.104	0.322	0.322	0.748	0.128	0.325	0.395	0.693
Age	b_4					-0.035	0.082	-0.429	0.668
Non Hispanic Black/African American	b_5					-1.315	0.598	-2.199	0.029*
Non-Hispanic Asian/Pacific Islander	b_6					-0.800	1.060	-0.755	0.451
Non-Hispanic Multiethnic	b_7					-1.336	0.886	-1.509	0.132
Hispanic Latino	b_8					-0.909	0.493	-1.844	0.066
User group	b_9					-0.029	0.428	-0.068	0.946
		R ² = 0.182, MSE= 12.240				R ² =0.204, MSE=12.265			
Constant	i_y	0.803	0.917	0.875	0.382	2.300	2.053	1.120	0.264
Substitution	b_1	0.104	0.297	0.349	0.727	0.030	0.304	0.099	0.921
Gender	b_2	1.017	0.948	1.072	0.284	0.685	0.969	0.707	0.480
Substitution x Gender	b_3	-0.172	0.369	-0.466	0.641	-0.081	0.375	-0.217	0.829
Age	b_4					-0.037	0.082	-0.448	0.655
Non Hispanic Black/African American	b_5					-1.281	0.601	-2.131	0.034*
Non-Hispanic Asian/Pacific Islander	b_6					-0.755	1.066	-0.708	0.480
Non-Hispanic Multiethnic	b_7					-1.340	0.886	-1.513	0.131
Hispanic Latino	b_8					-0.900	0.494	-1.820	0.070
User group	b_9					-0.023	0.429	-0.054	0.957
		R ² = 0.183, MSE=12.235				R ² =0.204, MSE=12.269			
Constant	i_y	0.939	0.903	1.041	0.299	2.360	2.052	1.150	0.251
Natural Remedy	b_1	0.347	0.245	1.413	0.159	0.294	0.256	1.148	0.252
Gender	b_2	0.592	0.963	0.615	0.539	0.465	0.974	0.477	0.634
Natural Remedy x Gender	b_3	0.010	0.304	0.032	0.975	0.011	0.308	0.037	0.971
Age	b_4					-0.036	0.082	-0.438	0.662
Non Hispanic Black/African American	b_5					-1.298	0.597	-2.175	0.030*
Non-Hispanic Asian/Pacific Islander	b_6					-0.787	1.067	-0.737	0.462
Non-Hispanic Multiethnic	b_7					-1.343	0.886	-1.516	0.131
Hispanic Latino	b_8					-0.909	0.493	-1.843	0.066
User group	b_9					-0.027	0.428	-0.064	0.949
		R ² = 0.182, MSE= 12.243				R ² =0.204, MSE=12.271			
Constant	i_y	0.794	0.924	0.859	0.391	2.234	2.063	1.083	0.280
Pain	b_1	0.224	0.244	0.916	0.361	0.245	0.247	0.991	0.323
Gender	b_2	1.076	1.070	1.005	0.316	0.866	1.086	0.797	0.426
Pain x Gender	b_3	-0.144	0.310	-0.463	0.644	-0.116	0.314	-0.370	0.712
Age	b_4					-0.036	0.082	-0.438	0.662
Non Hispanic Black/African American	b_5					-1.287	0.597	-2.155	0.032*
Non-Hispanic Asian/Pacific Islander	b_6					-0.743	1.064	-0.698	0.486

Symptoms of Anxiety		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Non-Hispanic Multiethnic	b_7					-1.323	0.887	-1.491	0.137
Hispanic Latino	b_8					-0.902	0.493	-1.828	0.069
User group	b_9					-0.030	0.428	-0.069	0.945
		R ² = 0.183, MSE=12.235				R ² =0.204, MSE=12.266			
Constant	i_y	0.694	0.904	0.767	0.443	1.949	2.076	0.939	0.349
Nausea	b_1	0.313	0.254	1.235	0.218	0.281	0.261	1.076	0.283
Gender	b_2	1.352	0.830	1.629	0.104	1.216	0.846	1.438	0.151
Nausea x Gender	b_3	-0.317	0.311	-1.020	0.309	-0.315	0.319	-0.988	0.324
Age	b_4					-1.275	0.596	-2.138	0.033*
Non Hispanic Black/African American	b_5					-0.626	1.069	-0.585	0.559
Non-Hispanic Asian/Pacific Islander	b_6					-1.307	0.885	-1.477	0.141
Non-Hispanic Multiethnic	b_7					-0.886	0.493	-1.798	0.073
Hispanic Latino	b_8					-0.053	0.428	-0.123	0.903
User group	b_9					-1.275	0.596	-2.138	0.033
		R ² = 0.185, MSE= 12.205				R ² =0.206, MSE=12.234			
Constant	i_y	1.203	0.895	1.345	0.180	2.736	2.050	1.335	0.183
Social Anxiety	b_1	0.384	0.272	1.412	0.159	0.387	0.282	1.374	0.171
Gender	b_2	-0.628	1.011	-0.621	0.535	-0.864	1.034	-0.836	0.404
Social Anxiety x Gender	b_3	0.435	0.322	1.354	0.177	0.478	0.331	1.447	0.149
Age	b_4					-0.038	0.081	-0.468	0.640
Non Hispanic Black/African American	b_5					-1.419	0.601	-2.362	0.019*
Non-Hispanic Asian/Pacific Islander	b_6					-0.934	1.061	-0.880	0.379
Non-Hispanic Multiethnic	b_7					-1.352	0.883	-1.531	0.127
Hispanic Latino	b_8					-0.933	0.492	-1.897	0.059
User group	b_9					0.001	0.427	0.003	0.998
		R ² = 0.187, MSE= 12.177				R ² = 0.209, MSE=12.192			
Constant	i_y	0.577	0.911	0.633	0.527	1.841	2.068	0.891	0.374
Relative Low Risk	b_1	0.116	0.228	0.510	0.611	0.195	0.234	0.834	0.405
Gender	b_2	2.091	1.168	1.791	0.074	2.008	1.191	1.686	0.093
Relative Low Risk x Gender	b_3	-0.456	0.338	-1.349	0.178	-0.467	0.343	-1.360	0.175
Age	b_4					-0.031	0.081	-0.380	0.705
Non Hispanic Black/African American	b_5					-1.266	0.595	-2.126	0.034*
Non-Hispanic Asian/Pacific Islander	b_6					-0.653	1.060	-0.615	0.539
Non-Hispanic Multiethnic	b_7					-1.391	0.884	-1.574	0.117
Hispanic Latino	b_8					-0.849	0.493	-1.721	0.086
User group	b_9					-0.004	0.427	-0.010	0.992
		R ² = 0.187, MSE= 12.177				R ² =0.208, MSE=12.201			

* significant at $p \leq 0.05$

Figure 4.22. Visual Representation of the Moderation of the Effect of the Experimentation Motive of Use on Symptoms of Anxiety by Gender

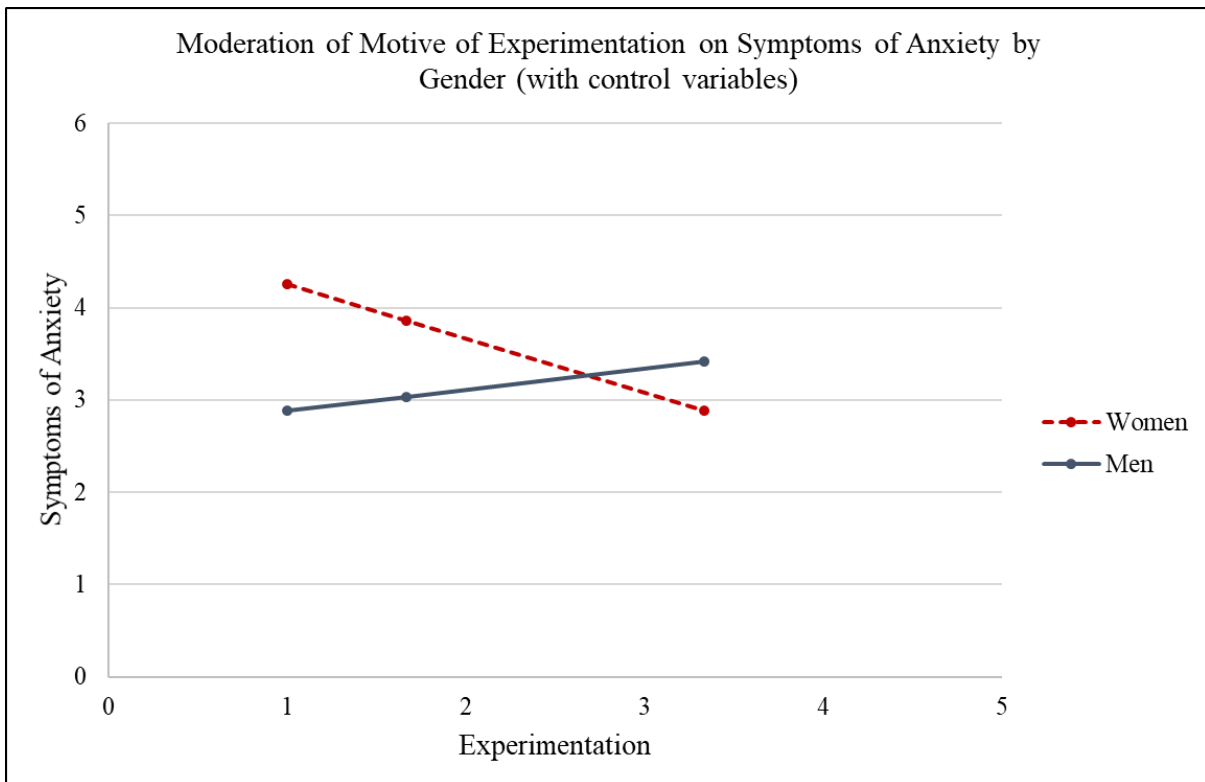
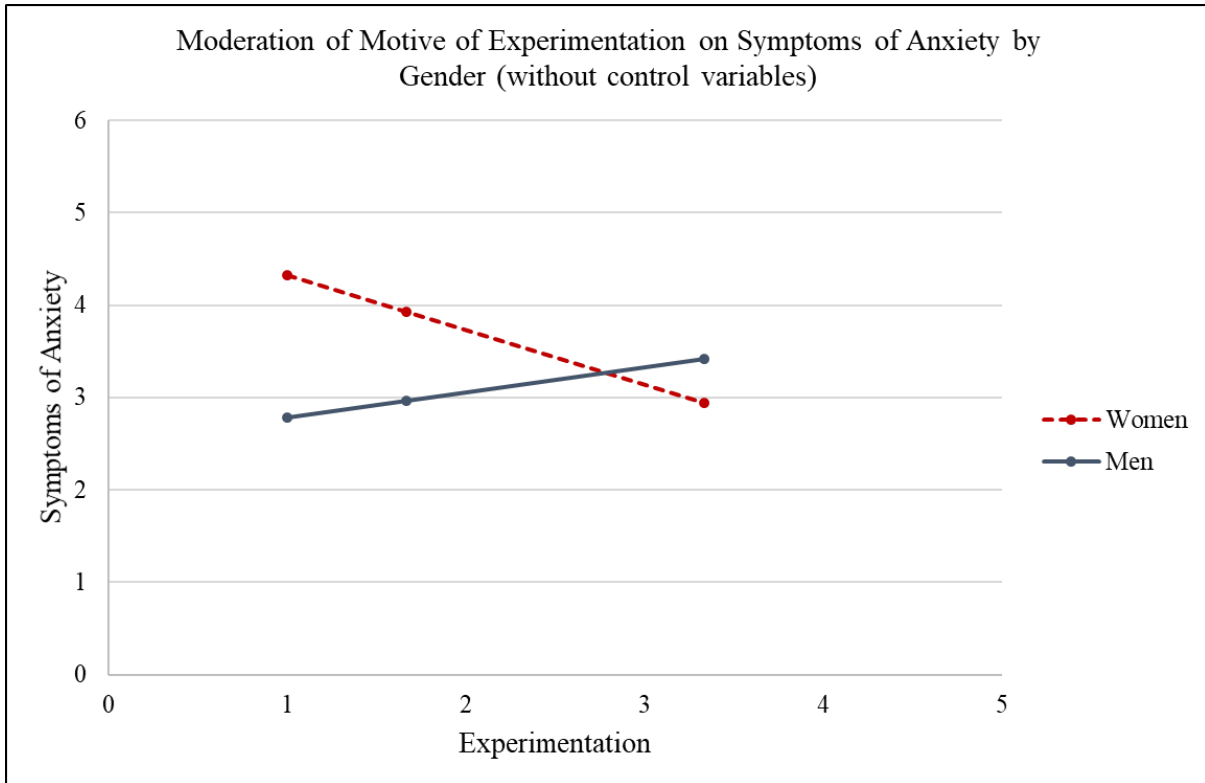


Figure 4.23. Visual Representation of the Moderation of the Effect of the Availability Motive of Use on Symptoms of Anxiety by Gender

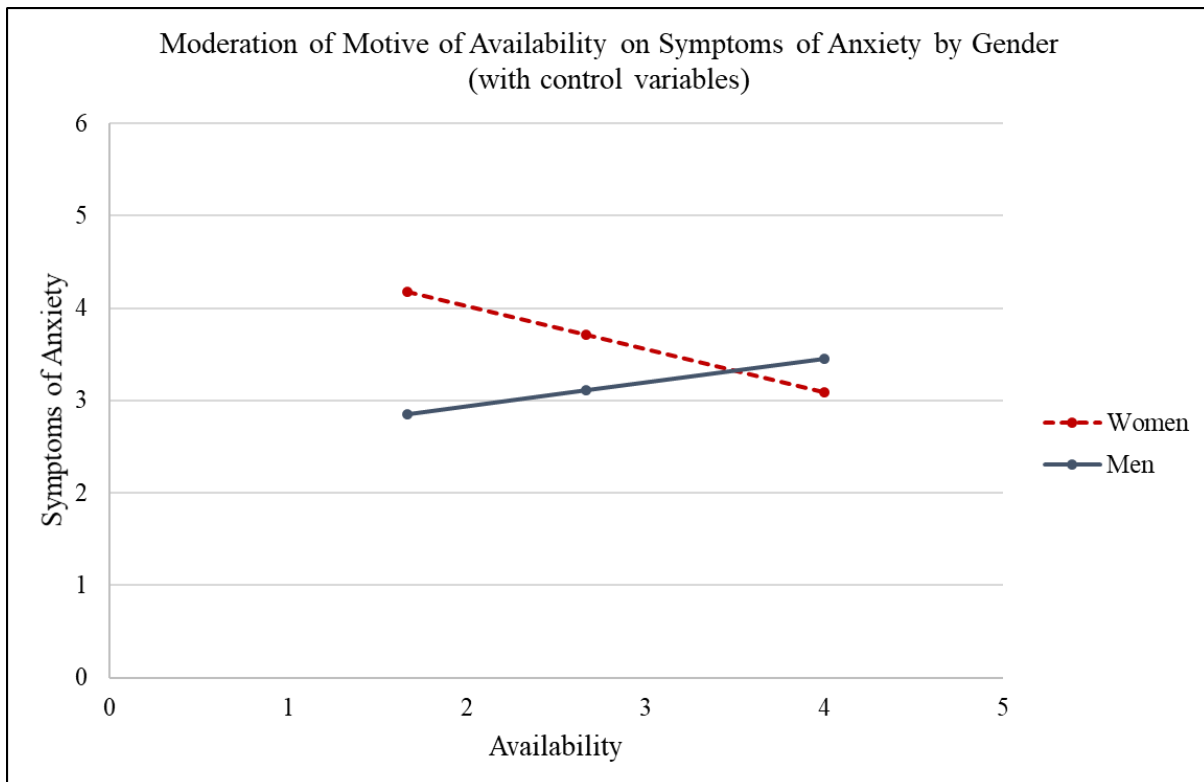
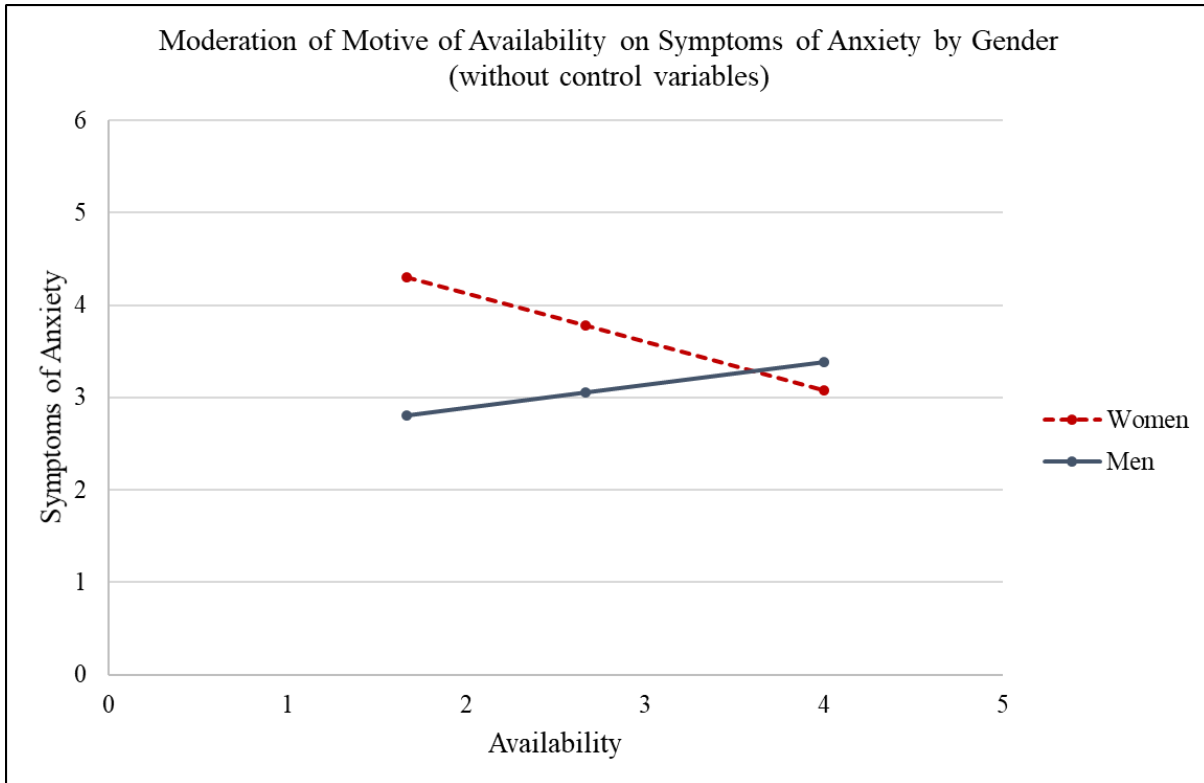


Table 4.52. Result of Moderation Analysis for Motives of Use on Overall Psychological Distress by Gender

Psychological distress		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Constant	i_y	1.036	2.306	0.449	0.654	5.942	5.216	1.139	0.255
Boredom	b_1	1.120	0.674	1.662	0.098	0.896	0.693	1.293	0.197
Gender	b_2	5.402	2.317	2.332	0.020*	4.916	2.364	2.080	0.038*
Boredom x Gender	b_3	-1.803	0.856	-2.107	0.036*	-1.639	0.870	-1.884	0.061
Age	b_4					-0.192	0.207	-0.931	0.353
Non Hispanic Black/African American	b_5					-2.371	1.520	-1.560	0.120
Non-Hispanic Asian/Pacific Islander	b_6					-0.133	2.692	-0.049	0.961
Non-Hispanic Multiethnic	b_7					-1.449	2.244	-0.646	0.519
Hispanic Latino	b_8					-0.984	1.252	-0.786	0.432
User group	b_9					0.520	1.085	0.479	0.632
		R ² = 0.246, MSE= 77.826				R ² =0.259, MSE= 78.665			
Constant	i_y	0.914	2.336	0.391	0.696	5.616	5.234	1.073	0.284
Availability	b_1	0.528	0.691	0.764	0.445	0.599	0.703	0.852	0.395
Gender	b_2	6.135	2.731	2.246	0.025*	5.978	2.772	2.157	0.032
Availability x Gender	b_3	-1.810	0.897	-2.017	0.045*	-1.782	0.906	-1.967	0.050*
Age	b_4					-0.188	0.207	-0.909	0.364
Non Hispanic Black/African American	b_5					-2.495	1.513	-1.649	0.100
Non-Hispanic Asian/Pacific Islander	b_6					-0.307	2.684	-0.114	0.909
Non-Hispanic Multiethnic	b_7					-1.465	2.242	-0.654	0.514
Hispanic Latino	b_8					-1.019	1.250	-0.815	0.416
User group	b_9					0.626	1.084	0.578	0.564
		R ² = 0.245, MSE= 77.911				R ² = 0.260, MSE= 78.588			
Constant	i_y	2.095	2.388	0.877	0.381	6.988	5.277	1.324	0.186
Celebration	b_1	-1.135	0.628	-1.808	0.072	-1.033	0.658	-1.569	0.118
Gender	b_2	2.191	2.954	0.742	0.459	1.987	3.002	0.662	0.509
Celebration x Gender	b_3	-0.362	0.877	-0.413	0.680	-0.325	0.889	-0.365	0.715
Age	b_4					-0.190	0.208	-0.913	0.362
Non Hispanic Black/African American	b_5					-2.678	1.519	-1.763	0.079
Non-Hispanic Asian/Pacific Islander	b_6					-0.561	2.696	-0.208	0.835
Non-Hispanic Multiethnic	b_7					-1.604	2.254	-0.712	0.477
Hispanic Latino	b_8					-1.177	1.255	-0.938	0.349
User group	b_9					0.602	1.090	0.553	0.581
		R ² = 0.237, MSE= 78.817				R ² = 0.251, MSE= 74.493			
Constant	i_y	1.678	2.289	0.733	0.464	6.617	5.207	1.271	0.205
Coping	b_1	3.530	0.626	5.636	0.000*	3.689	0.636	5.799	0.000*
Gender	b_2	3.915	2.383	1.643	0.101	3.807	2.432	1.566	0.118

Psychological distress		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Coping x Gender	b_3	-1.209	0.902	-1.340	0.181	-1.200	0.917	-1.308	0.192
Age	b_4					-0.195	0.207	-0.940	0.348
Non Hispanic Black/African American	b_5					-2.545	1.519	-1.676	0.095
Non-Hispanic Asian/Pacific Islander	b_6					-0.632	2.689	-0.235	0.814
Non-Hispanic Multiethnic	b_7					-1.407	2.253	-0.624	0.533
Hispanic Latino	b_8					-1.219	1.252	-0.973	0.331
User group	b_9					0.627	1.087	0.577	0.565
		R ² = 0.240, MSE= 78.437				R ² = 0.255, MSE= 79.108			
Constant	i_y	2.615	2.296	1.139	0.256	7.561	5.265	1.436	0.152
Altered Perceptions	b_1	0.172	0.589	0.292	0.771	0.096	0.603	0.160	0.873
Gender	b_2	0.354	2.843	0.125	0.901	0.290	2.885	0.101	0.920
Altered Perceptions x Gender	b_3	0.224	0.846	0.264	0.792	0.218	0.860	0.253	0.800
Age	b_4					-0.194	0.208	-0.934	0.351
Non Hispanic Black/African American	b_5					-2.696	1.519	-1.775	0.077
Non-Hispanic Asian/Pacific Islander	b_6					-0.576	2.696	-0.214	0.831
Non-Hispanic Multiethnic	b_7					-1.543	2.264	-0.681	0.496
Hispanic Latino	b_8					-1.158	1.255	-0.923	0.357
User group	b_9					0.593	1.090	0.544	0.587
		R ² = 0.236, MSE= 78.841				R ² = 0.251, MSE=79.510			
Constant	i_y	1.567	2.378	0.659	0.510	6.051	5.388	1.123	0.262
Conformity	b_1	-1.040	1.103	-0.943	0.346	-1.241	1.138	-1.091	0.276
Gender	b_2	3.127	2.266	1.380	0.169	2.773	2.331	1.189	0.235
Conformity x Gender	b_3	-1.556	1.503	-1.036	0.301	-1.346	1.533	-0.878	0.381
Age	b_4					-0.171	0.209	-0.820	0.413
Non Hispanic Black/African American	b_5					-2.626	1.519	-1.729	0.085
Non-Hispanic Asian/Pacific Islander	b_6					-0.383	2.702	-0.142	0.888
Non-Hispanic Multiethnic	b_7					-1.513	2.254	-0.672	0.502
Hispanic Latino	b_8					-1.048	1.260	-0.832	0.406
User group	b_9					0.642	1.090	0.589	0.556
		R ² = 0.239, MSE= 78.606				R ² = 0.252, MSE= 79.337			
Constant	i_y	2.766	2.329	1.188	0.236	8.019	5.288	1.517	0.130
Sleep	b_1	-0.346	0.540	-0.642	0.521	-0.540	0.556	-0.971	0.332
Gender	b_2	-0.259	3.196	-0.081	0.935	-1.089	3.281	-0.332	0.740
Sleep x Gender	b_3	0.372	0.857	0.435	0.664	0.585	0.881	0.664	0.507
Age	b_4					-0.198	0.208	-0.951	0.342
Non Hispanic Black/African American	b_5					-2.815	1.530	-1.841	0.067
Non-Hispanic Asian/Pacific Islander	b_6					-0.891	2.735	-0.326	0.745
Non-Hispanic Multiethnic	b_7					-1.700	2.258	-0.753	0.452

Psychological distress		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Hispanic Latino	b_8					-1.255	1.262	-0.995	0.321
User group	b_9					0.637	1.091	0.584	0.559
		R ² = 0.237, MSE= 78.813				R ² = 0.252, MSE=79.418			
Constant	i_y	1.139	2.319	0.491	0.624	5.377	5.283	1.018	0.310
Experimentation	b_1	0.518	0.633	0.817	0.414	0.456	0.650	0.702	0.483
Gender	b_2	4.610	2.177	2.117	0.035*	4.426	2.235	1.980	0.049
Experimentation x Gender	b_3	-1.726	0.924	-1.867	0.063	-1.670	0.942	-1.774	0.077
Age	b_4					-0.163	0.207	-0.788	0.432
Non Hispanic Black/African American	b_5					-2.574	1.513	-1.701	0.090
Non-Hispanic Asian/Pacific Islander	b_6					-0.272	2.689	-0.101	0.920
Non-Hispanic Multiethnic	b_7					-1.366	2.247	-0.608	0.544
Hispanic Latino	b_8					-1.119	1.249	-0.896	0.371
User group	b_9					0.655	1.085	0.603	0.547
		R ² = 0.244, MSE= 78.045				R ² = 0.258, MSE=78.761			
Constant	i_y	1.468	2.430	0.604	0.546	6.213	5.303	1.172	0.242
Enjoyment	b_1	0.232	0.713	0.326	0.745	0.200	0.731	0.274	0.784
Gender	b_2	5.044	4.146	1.217	0.225	5.049	4.210	1.199	0.231
Enjoyment x Gender	b_3	-1.036	1.040	-0.996	0.320	-1.060	1.055	-1.005	0.316
Age	b_4					-0.189	0.207	-0.912	0.362
Non Hispanic Black/African American	b_5					-2.599	1.519	-1.711	0.088
Non-Hispanic Asian/Pacific Islander	b_6					-0.404	2.697	-0.150	0.881
Non-Hispanic Multiethnic	b_7					-1.645	2.251	-0.730	0.466
Hispanic Latino	b_8					-1.067	1.256	-0.849	0.396
User group	b_9					0.608	1.088	0.558	0.577
		R ² = 0.238, MSE= 78.625				R ² = 0.253, MSE=79.279			
Constant	i_y	1.773	2.334	0.760	0.448	6.443	5.308	1.214	0.226
Alcohol	b_1	1.298	0.766	1.694	0.091	1.381	0.784	1.762	0.079
Gender	b_2	2.918	2.251	1.296	0.196	2.568	2.305	1.114	0.266
Alcohol x Gender	b_3	-1.075	1.144	-0.939	0.348	-0.931	1.178	-0.790	0.430
Age	b_4					-0.179	0.208	-0.860	0.391
Non Hispanic Black/African American	b_5					-2.534	1.530	-1.656	0.099
Non-Hispanic Asian/Pacific Islander	b_6					-0.368	2.707	-0.136	0.892
Non-Hispanic Multiethnic	b_7					-1.498	2.256	-0.664	0.507
Hispanic Latino	b_8					-1.160	1.254	-0.925	0.356
User group	b_9					0.574	1.089	0.527	0.599
		R ² = 0.238, MSE= 78.651				R ² = 0.252, MSE=79.373			
Constant	i_y	3.098	2.277	1.361	0.175	7.911	5.197	1.522	0.129
Attention	b_1	-1.146	0.608	-1.883	0.061	-1.054	0.622	-1.693	0.091

Psychological distress		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Gender	b_2	-1.522	2.378	-0.640	0.523	-1.761	2.402	-0.733	0.464
Attention x Gender	b_3	0.986	0.816	1.208	0.228	1.051	0.824	1.275	0.203
Age	b_4					-0.185	0.207	-0.892	0.373
Non Hispanic Black/African American	b_5					-2.834	1.519	-1.865	0.063
Non-Hispanic Asian/Pacific Islander	b_6					-0.729	2.692	-0.271	0.787
Non-Hispanic Multiethnic	b_7					-1.545	2.249	-0.687	0.493
Hispanic Latino	b_8					-1.163	1.252	-0.929	0.354
User group	b_9					0.583	1.087	0.536	0.592
		R ² = 0.239, MSE= 78.515				R ² = 0.254, MSE=79.129			
Constant	i_y	2.340	2.329	1.005	0.316	7.307	5.226	1.398	0.163
Substitution	b_1	0.219	0.754	0.290	0.772	0.133	0.775	0.172	0.863
Gender	b_2	1.419	2.408	0.589	0.556	1.079	2.467	0.437	0.662
Substitution x Gender	b_3	-0.159	0.936	-0.170	0.865	-0.049	0.955	-0.051	0.959
Age	b_4					-0.192	0.208	-0.921	0.358
Non Hispanic Black/African American	b_5					-2.680	1.531	-1.750	0.081
Non-Hispanic Asian/Pacific Islander	b_6					-0.562	2.715	-0.207	0.836
Non-Hispanic Multiethnic	b_7					-1.594	2.255	-0.707	0.480
Hispanic Latino	b_8					-1.156	1.259	-0.918	0.359
User group	b_9					0.599	1.091	0.549	0.584
		R ² = 0.236, MSE= 78.851				R ² = 0.251, MSE= 79.525			
Constant	i_y	3.221	2.285	1.410	0.160	8.060	5.210	1.547	0.123
Natural Remedy	b_1	0.169	0.621	0.273	0.785	0.055	0.651	0.085	0.933
Gender	b_2	-1.907	2.436	-0.783	0.434	-1.815	2.474	-0.734	0.464
Natural Remedy x Gender	b_3	1.037	0.770	1.348	0.179	0.979	0.781	1.253	0.211
Age	b_4					-0.190	0.207	-0.916	0.361
Non Hispanic Black/African American	b_5					-2.699	1.515	-1.781	0.076
Non-Hispanic Asian/Pacific Islander	b_6					-0.992	2.710	-0.366	0.715
Non-Hispanic Multiethnic	b_7					-1.683	2.250	-0.748	0.455
Hispanic Latino	b_8					-1.224	1.253	-0.977	0.330
User group	b_9					0.610	1.087	0.561	0.575
		R ² = 0.240, MSE= 78.432				R ² = 0.254, MSE= 79.143			
Constant	i_y	2.936	2.344	1.252	0.211	7.839	5.251	1.493	0.136
Pain	b_1	-0.322	0.619	-0.519	0.604	-0.306	0.629	-0.486	0.627
Gender	b_2	-0.519	2.715	-0.191	0.849	-0.607	2.762	-0.220	0.826
Pain x Gender	b_3	0.494	0.787	0.628	0.530	0.496	0.799	0.620	0.536
Age	b_4					-0.191	0.208	-0.921	0.358
Non Hispanic Black/African American	b_5					-2.736	1.520	-1.800	0.073
Non-Hispanic Asian/Pacific Islander	b_6					-0.745	2.708	-0.275	0.783

Psychological distress		No controls (n=355)				With controls (n=350)			
		Coeff	SE	t	p	Coeff	SE	t	p
Non-Hispanic Multiethnic	b_7					-1.679	2.257	-0.744	0.458
Hispanic Latino	b_8					-1.190	1.255	-0.948	0.344
User group	b_9					0.605	1.089	0.556	0.579
		R ² = 0.237, MSE= 78.765				R ² =0.252, MSE=79.432			
Constant	i_y	2.392	2.298	1.041	0.299	7.204	5.294	1.361	0.175
Nausea	b_1	0.581	0.645	0.900	0.369	0.560	0.665	0.842	0.401
Gender	b_2	1.260	2.109	0.597	0.551	1.204	2.156	0.559	0.577
Nausea x Gender	b_3	-0.090	0.791	-0.114	0.909	-0.105	0.814	-0.129	0.898
Age	b_4					-0.189	0.209	-0.905	0.366
Non Hispanic Black/African American	b_5					-2.682	1.520	-1.765	0.079
Non-Hispanic Asian/Pacific Islander	b_6					-0.527	2.726	-0.193	0.847
Non-Hispanic Multiethnic	b_7					-1.584	2.256	-0.702	0.483
Hispanic Latino	b_8					-1.154	1.256	-0.918	0.359
User group	b_9					0.588	1.092	0.538	0.591
		R ² = 0.236, MSE= 78.855				R ² = 0.251, MSE=79.522			
Constant	i_y	3.491	2.264	1.542	0.124	8.771	5.199	1.687	0.093
Social Anxiety	b_1	0.844	0.687	1.228	0.220	0.842	0.714	1.180	0.239
Gender	b_2	-3.695	2.558	-1.445	0.149	-4.102	2.623	-1.563	0.119
Social Anxiety x Gender	b_3	1.657	0.813	2.037	0.043*	1.781	0.839	2.123	0.035*
Age	b_4					-0.200	0.206	-0.967	0.334
Non Hispanic Black/African American	b_5					-3.139	1.523	-2.061	0.040*
Non-Hispanic Asian/Pacific Islander	b_6					-1.144	2.691	-0.425	0.671
Non-Hispanic Multiethnic	b_7					-1.630	2.239	-0.728	0.467
Hispanic Latino	b_8					-1.252	1.247	-1.004	0.316
User group	b_9					0.702	1.084	0.648	0.517
		R ² = 0.246, MSE= 77.893				R ² = 0.261, MSE=78.435			
Constant	i_y	1.618	2.314	0.699	0.485	6.075	5.264	1.154	0.249
Relative Low Risk	b_1	0.026	0.578	0.045	0.964	0.200	0.595	0.336	0.737
Gender	b_2	4.533	2.964	1.529	0.127	4.708	3.033	1.552	0.122
Relative Low Risk x Gender	b_3	-1.079	0.859	-1.257	0.210	-1.157	0.874	-1.323	0.187
Age	b_4					-0.179	0.207	-0.863	0.389
Non Hispanic Black/African American	b_5					-2.611	1.516	-1.722	0.086
Non-Hispanic Asian/Pacific Islander	b_6					-0.258	2.700	-0.096	0.924
Non-Hispanic Multiethnic	b_7					-1.716	2.250	-0.762	0.446
Hispanic Latino	b_8					-1.015	1.256	-0.808	0.420
User group	b_9					0.654	1.088	0.601	0.548
		R ² = 0.240, MSE= 78.488				R ² = 0.255, MSE=79.099			

* significant at $p \leq 0.05$

Figure 4.24. Visual Representation of the Moderation of the Effect of the Social Anxiety Motive of Use on Psychological Distress by Gender

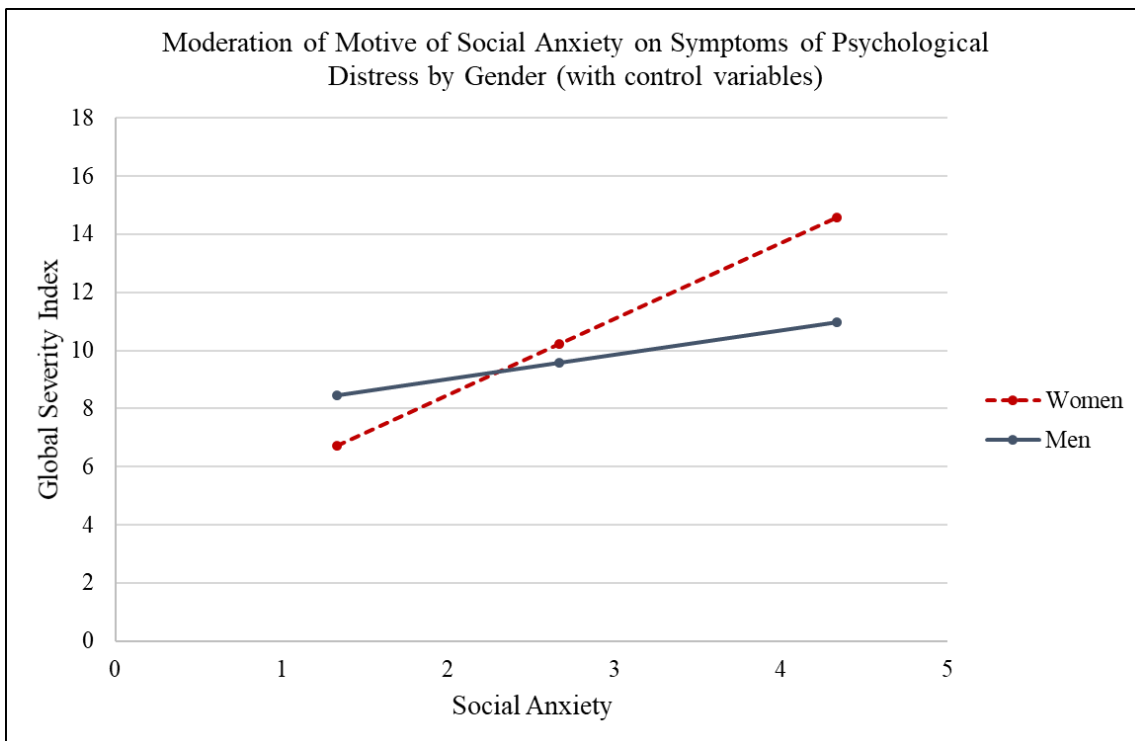
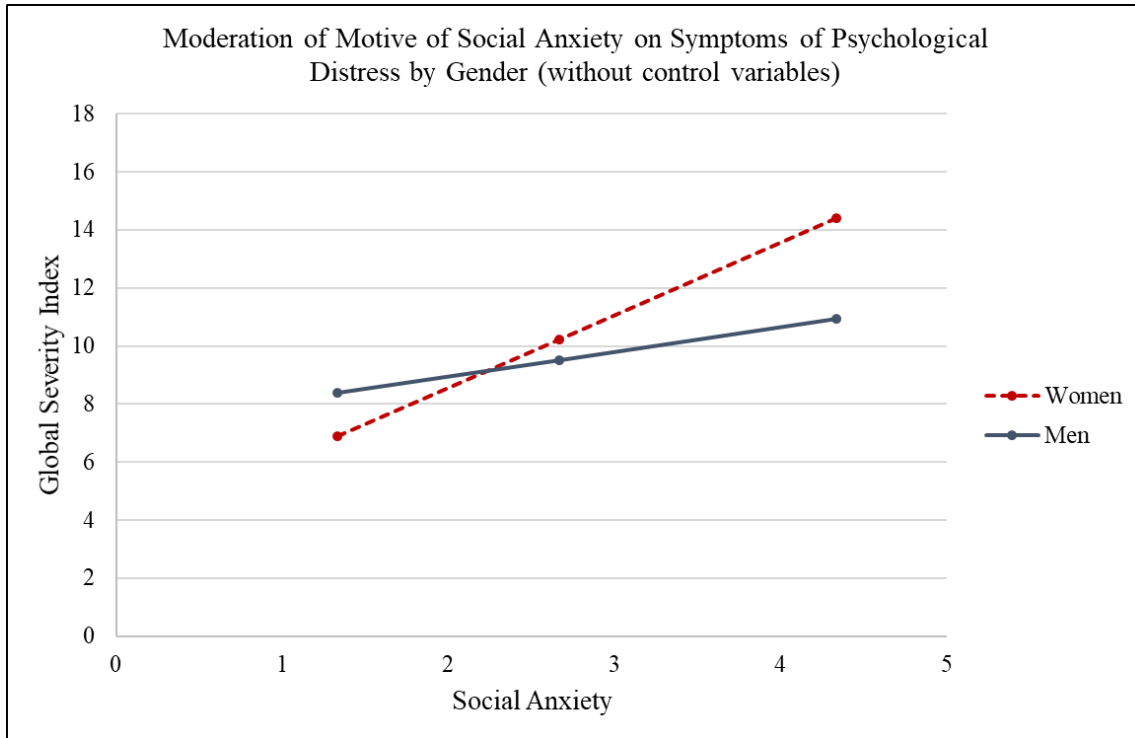


Figure 4.25. Visual Representation of the Moderation of the Effect of the Coping Motive of Use on Symptoms of Depression by Gender

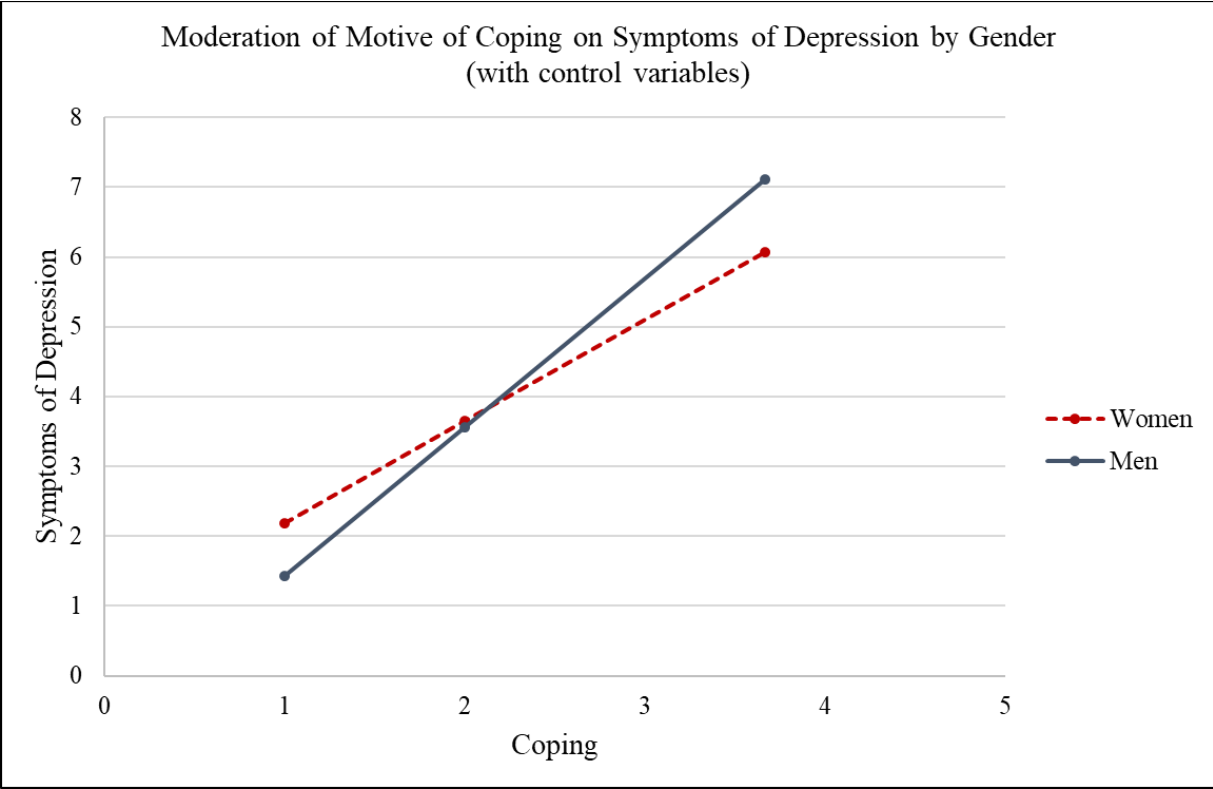


Table 4.53. Results of Conditional Process Analysis of Motive of Conformity on Symptoms of Depression, Through Past 90 Days Use, and by Gender

	No Control Variables (n=355)								With Control Variables** (n=350)							
	Past 90 days mj use			Symptoms of Depression					Past 90 days mj use			Symptoms of Depression				
		Coeff.	SE	p		Coeff.	SE	p		Coeff.	SE	p		Coeff.	SE	p
Conformity	<i>a1</i>	-5.600	2.988	0.062	<i>c'1</i>	-0.706	0.510	0.167	<i>a1</i>	-5.396	3.077	0.080	<i>c'1</i>	-0.826	0.525	0.117
Gender	<i>a2</i>	-2.400	6.141	0.696	<i>c'2</i>	-2.490	1.746	0.155	<i>a2</i>	-3.039	6.28	0.629	<i>c'2</i>	-2.971	1.783	0.097
Conformity x Gender	<i>a3</i>	-1.691	4.072	0.678	<i>c'3</i>	-0.335	0.697	0.631	<i>a3</i>	-1.633	4.14	0.694	<i>c'3</i>	-0.1641	0.7102	0.82
Past 90 days mj use					<i>b1</i>	-0.037	0.011	0.001*					<i>b1</i>	-0.039	0.011	0.001*
Past 90 days mj use x Gender					<i>b3</i>	0.038	0.018	0.037*					<i>b2</i>	0.042	0.019	0.025*
Constant	<i>iM</i>	51.810	6.445	0.000	<i>iy</i>	3.329	1.262	0.009*	<i>iM</i>	52.732	7.640	0.000	<i>iy</i>	4.604	1.461	0.002*
	R ² = 0.2								R ² = 0.253							
	F(19,335) = 4.407 p < 0.001								F(21,333)=5.373, p <0.001							
	R ² = 0.212				R ² = 0.263				R ² = 0.212				R ² = 0.263			
	F(24,325) =3.633, p < 0.001				F(26, 323) = 4.433, p <0.001				F(24,325) =3.633, p < 0.001				F(26, 323) = 4.433, p <0.001			

* significant at $p \leq 0.05$

** control variables are: age, race/ethnicity, and user group. Reference categories for categorical variables are: Race/ethnicity = Non-Hispanic White; User group = non-patient

Table 4.54. Results of Conditional Process Analysis of Motive of Pain on Symptoms of Depression, Through Past 90 Days Use, and by Gender

	No Control Variables (n=355)								With Control Variables** (n=350)							
	Past 90 days mj use				Symptoms of Depression				Past 90 days mj use				Symptoms of Depression			
		Coeff.	SE	p		Coeff.	SE	p		Coeff.	SE	p		Coeff.	SE	p
Pain	<i>a1</i>	3.507	1.677	0.037	<i>c'1</i>	-0.500	0.287	0.083	<i>a1</i>	3.426	1.701	0.045	<i>c'1</i>	-0.488	0.291	0.095
Gender	<i>a2</i>	-5.014	7.353	0.496	<i>c'2</i>	-3.386	1.549	0.030	<i>a2</i>	-7.413	7.466	0.322	<i>c'2</i>	-3.611	1.571	0.022
Pain x Gender	<i>a3</i>	0.113	2.131	0.958	<i>c'3</i>	0.176	0.382	0.030	<i>a3</i>	0.690	2.161	0.750	<i>c'3</i>	0.186	0.388	0.633
Past 90 days mj use					<i>b1</i>	-0.037	0.011	0.001*					<i>b1</i>	-0.038	0.012	0.001*
Past 90 days mj use x Gender					<i>b2</i>	0.036	0.019	0.057					<i>b2</i>	0.039	0.019	0.044*
Constant	<i>iM</i>	52.889	6.349	0.000	<i>iy</i>	3.655	1.207	0.003*	<i>iM</i>	54.568	7.406	0.000	<i>iy</i>	4.856	1.381	0.001*
	R ² = 0.120				R ² = 0.253				R ² = 0.211				R ² = 0.263			
	F(19,335)= 4.396 p < 0.001				F(21,333) = 5.372, p <0.001				F(24,325) =3.630, p < 0.001				F(26, 323) =4.442, p <0.001			

* significant at $p \leq 0.05$

** control variables are: age, race/ethnicity, and user group. Reference categories for categorical variables are: Race/ethnicity = Non-Hispanic White; User group = non-patient

Table 4.55. Results of Conditional Process Analysis of Motive of Attention on Symptoms of Depression, Through Daily Number of Hits, and by Gender

	No Control Variables (n=351)								With Control Variables** (n=346)							
	Daily number of hits				Symptoms of Depression				Daily number of hits				Symptoms of Depression			
		Coeff.	SE	p		Coeff.	SE	p		Coeff.	SE	p		Coeff.	SE	p
Attention	<i>a1</i>	4.950	1.784	0.006	<i>c'1</i>	-0.406	0.284	0.154	<i>a1</i>	4.627	1.800	0.011	<i>c'1</i>	-0.402	0.291	0.168
Gender	<i>a2</i>	-6.870	6.983	0.326	<i>c'2</i>	-1.005	1.113	0.367	<i>a2</i>	-6.266	6.940	0.367	<i>c'2</i>	-1.117	1.124	0.321
Gender x Attention	<i>a3</i>	0.173	2.399	0.943	<i>c'3</i>	0.258	0.389	0.509	<i>a3</i>	-0.150	2.390	0.949	<i>c'3</i>	0.281	0.393	0.475
Daily number of hits					<i>b1</i>	-0.025	0.010	0.018*					<i>b1</i>	-0.026	0.011	0.015*
Daily number of hits x Gender					<i>b2</i>	0.001	0.019	0.966					<i>b2</i>	0.004	0.019	0.855
Constant	<i>iM</i>	22.266	6.737	0.001	<i>iy</i>	2.331	1.077	0.031*	<i>iM</i>	23.331	7.736	0.003	<i>iy</i>	3.312	1.252	0.009*
	R ² = 0.121								R ² = 0.253							
	F(19,331)= 2.404 p < 0.001								F(21,329) = 5.302, p < 0.001							
	R ² = 0.142								R ² = 0.262							
	F(24,321)= 2.214 p < 0.001								F(26,319) = 4.351, p < 0.001							

* significant at $p \leq 0.05$

** control variables are: age, race/ethnicity, and user group. Reference categories for categorical variables are: Race/ethnicity = Non-Hispanic White; User group = non-patient

Table 4.56. Summary of Results for the Direct and Indirect Associations between Motives of Use and Symptoms of Depression

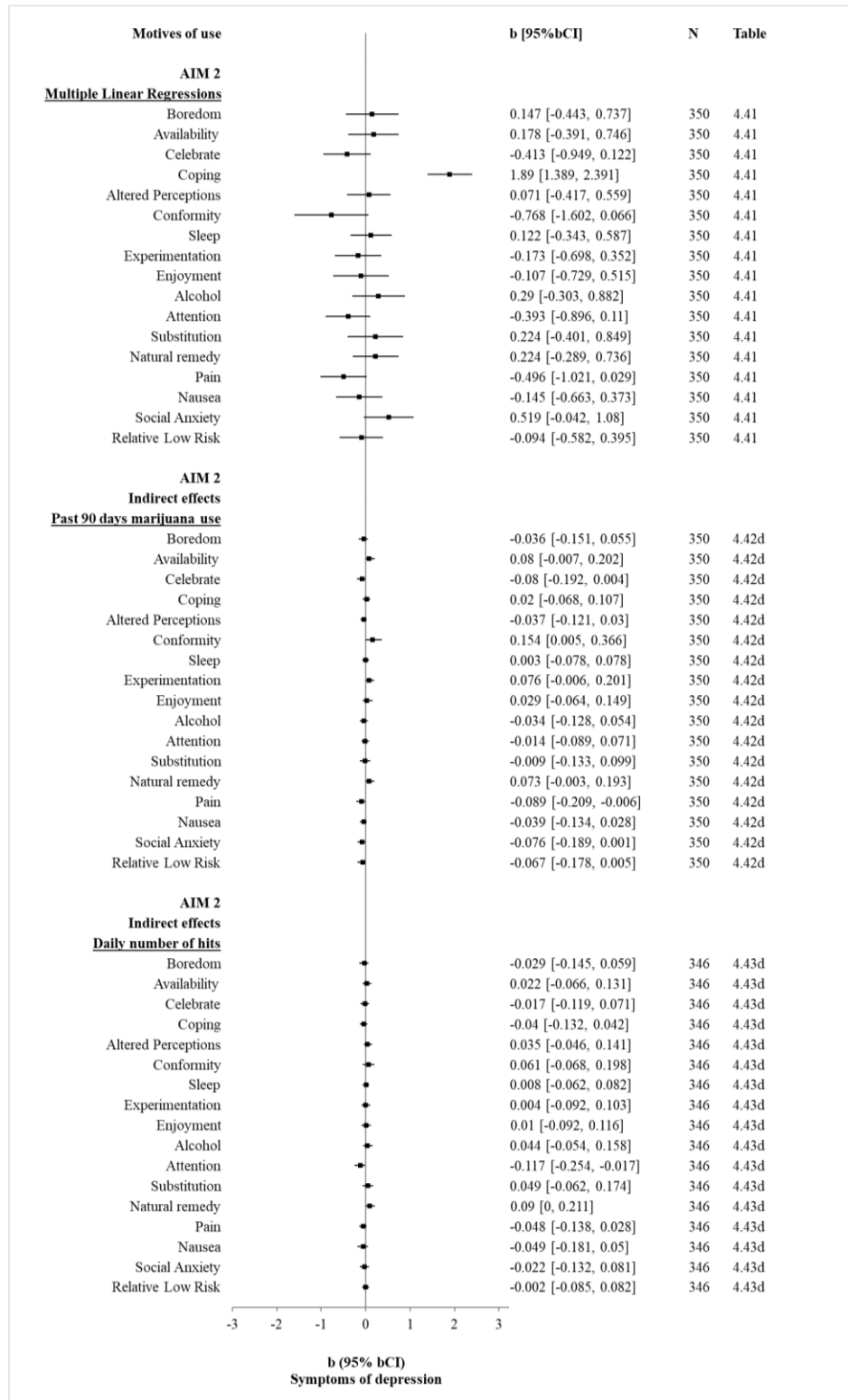


Table 4.57. Summary of Results for the Effect of Gender on the Associations Between Motives of Use and Symptoms of Depression

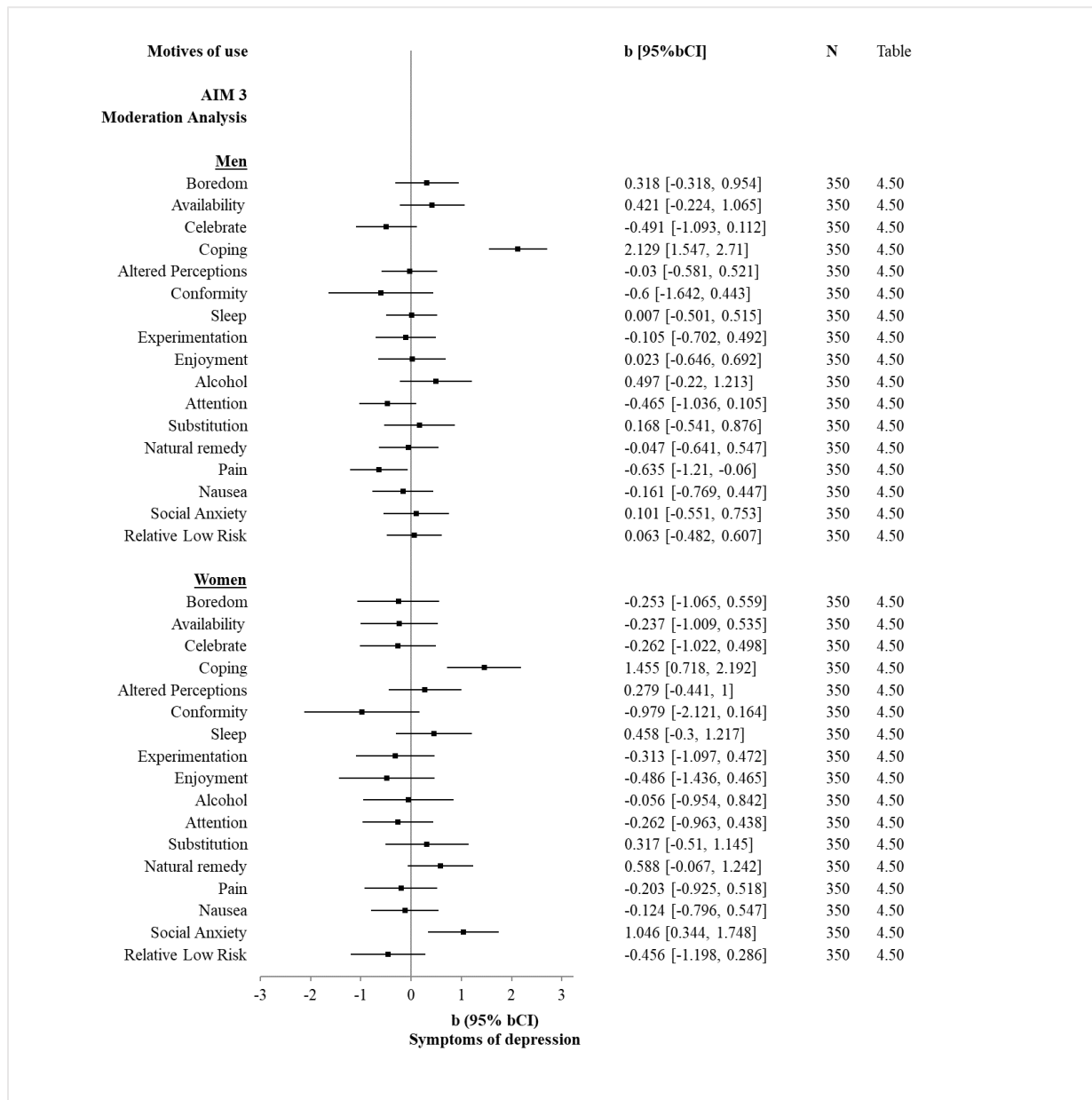


Table 4.58. Summary of Results for the Direct and Indirect Associations between Motives of Use and Symptoms of Anxiety

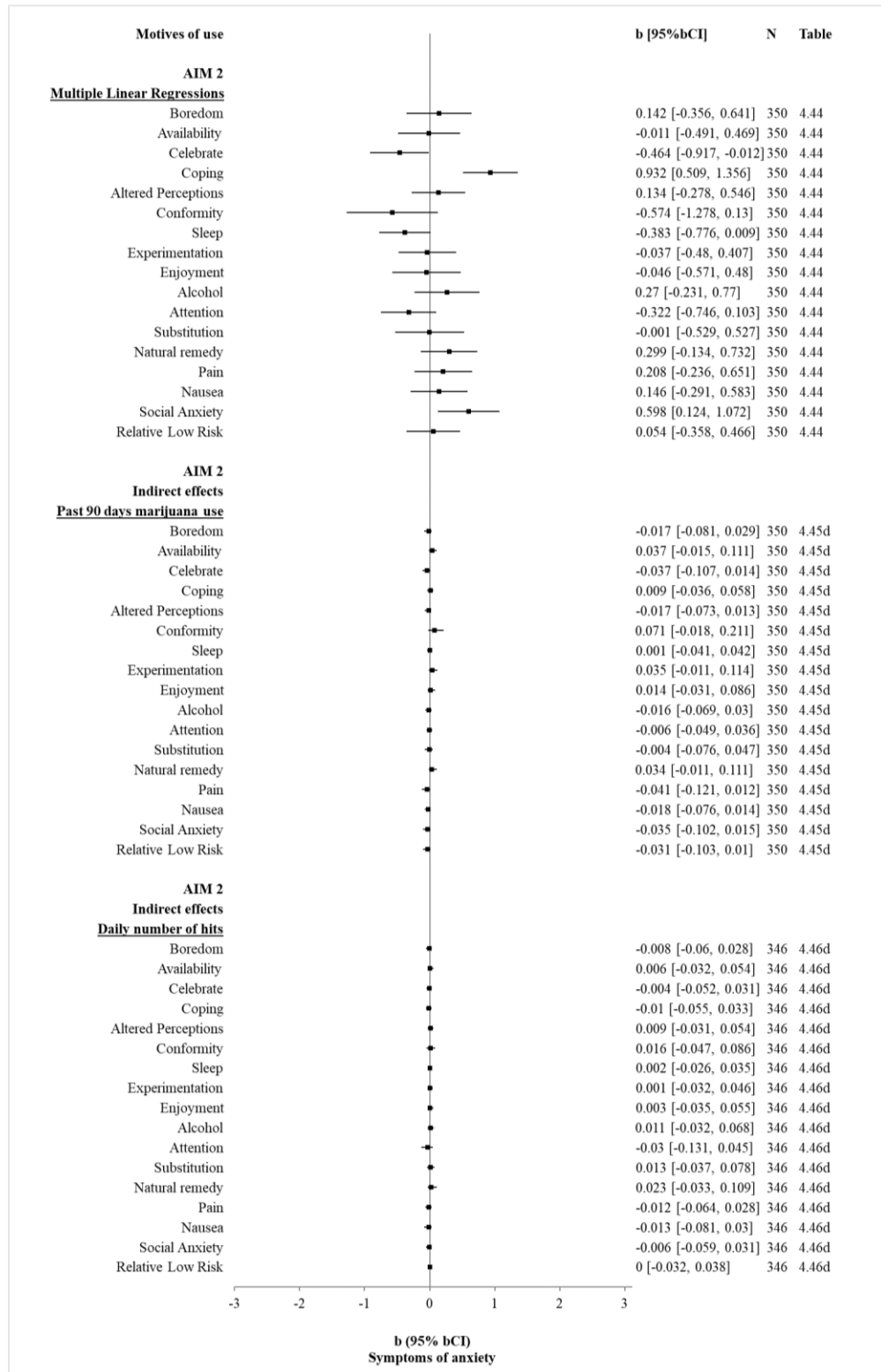


Table 4.59. Summary of Results for the Effect of Gender on the Associations Between Motives of Use and Symptoms of Anxiety

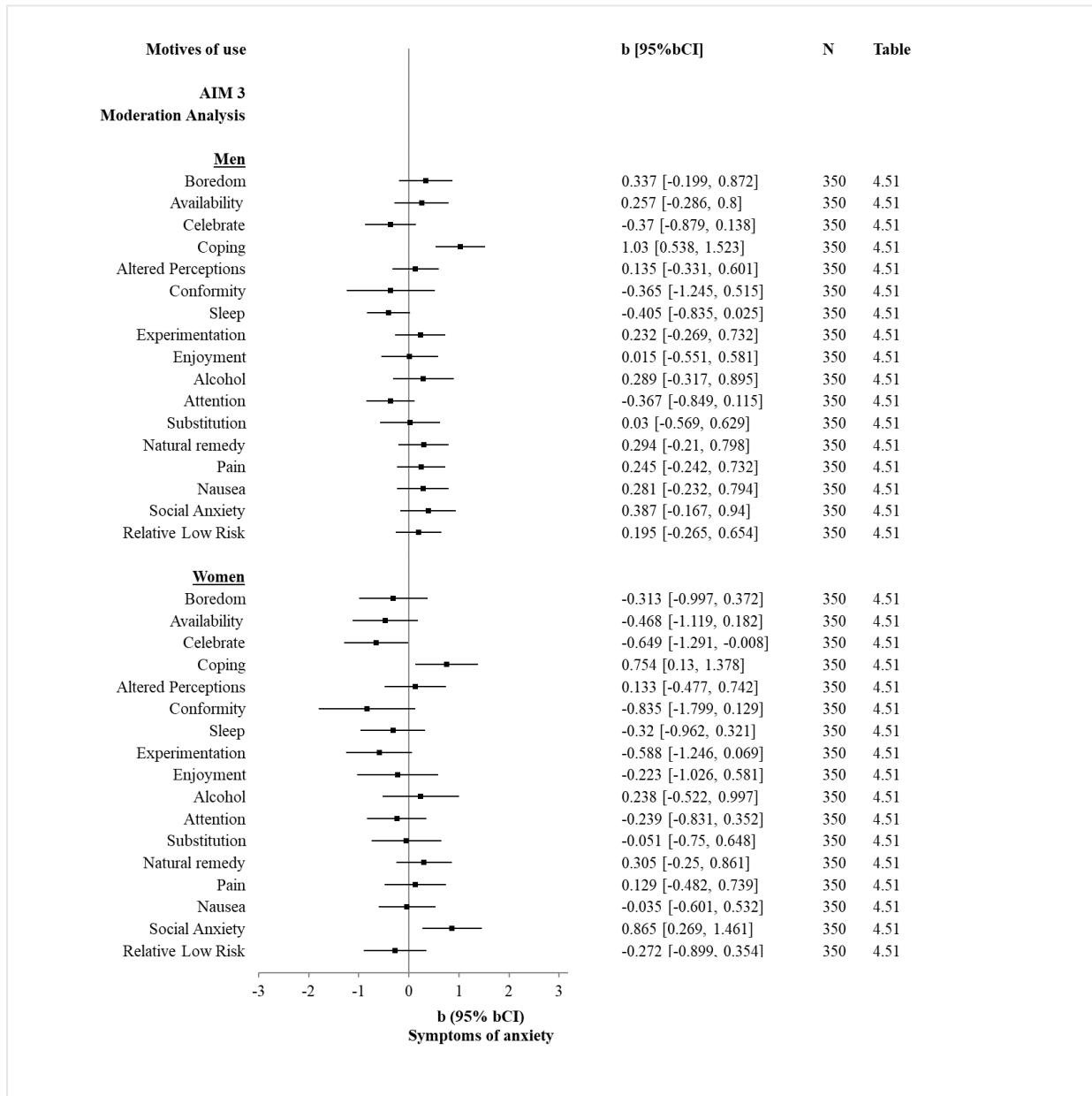


Table 4.60. Summary of Results for the Direct and Indirect Associations between Motives of Use and Overall Psychological Distress

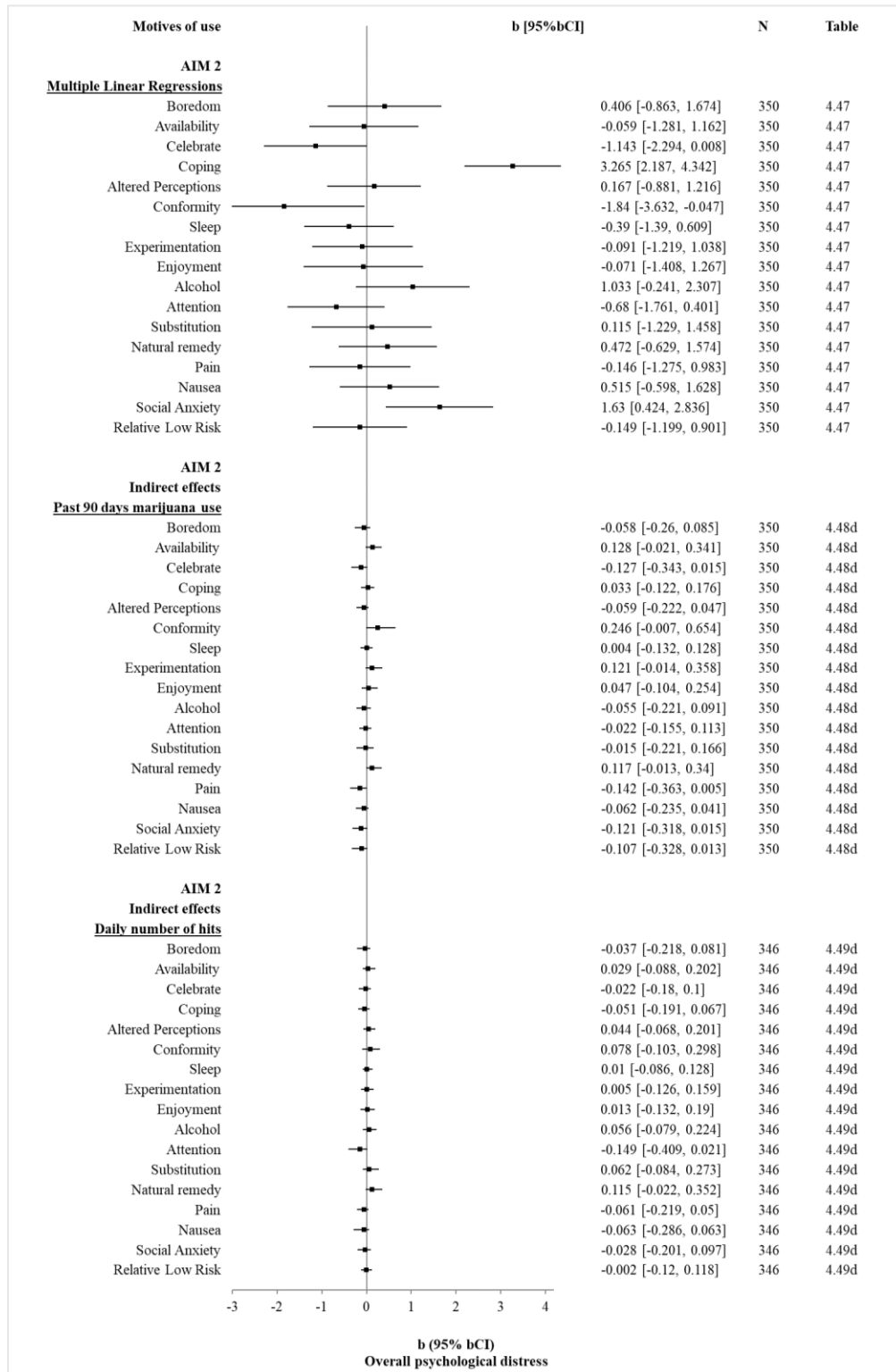
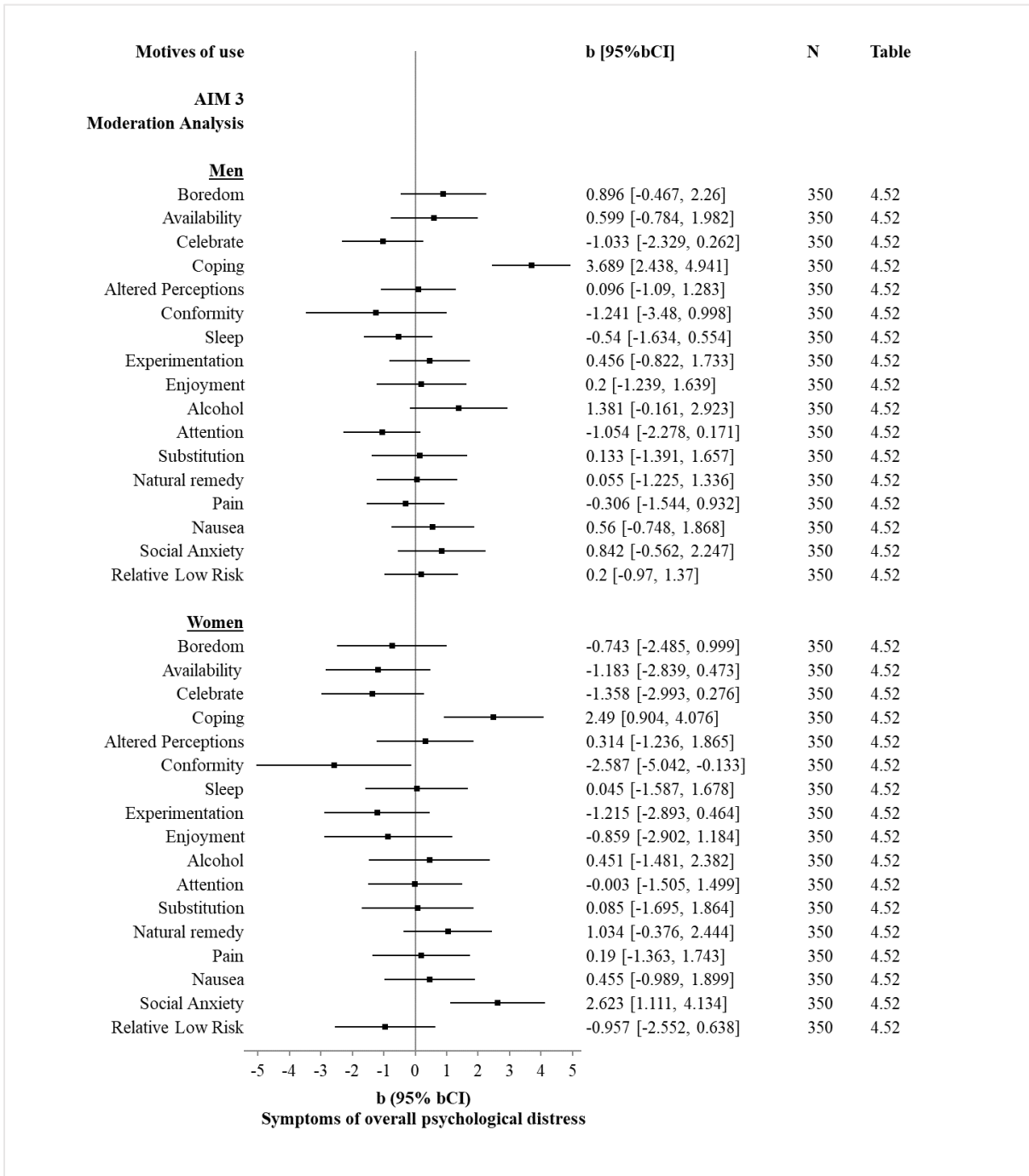


Table 4.61. Summary of Results for the Effect of Gender on the Associations Between Motives of Use and Overall Psychological Distress



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