The Language Content of Computer-Mediated versus Face-To-Face Motivational-Type Interviews

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THE LANGUAGE CONTENT OF COMPUTER-MEDIATED VERSUS FACE-TO-FACE
MOTIVATIONAL TYPE INTERVIEWS

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Dedication

I dedicate my thesis to my parents, Mague and Mando. I also dedicate my thesis to my older sister, Dina.
THE LANGUAGE CONTENT OF COMPUTER-MEDIATED VERSUS FACE-TO-FACE
MOTIVATIONAL TYPE INTERVIEWS

by

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THESIS

Presented to the Faculty of the Graduate School of
The University of Texas at El Paso
in Partial Fulfillment
of the Requirements
for the Degree of

MASTER OF ARTS

Department of Psychology
THE UNIVERSITY OF TEXAS AT EL PASO
August 2019
Acknowledgments

I would like to thank my mentor, Dr. Lawrence D. Cohn. Your patience, wisdom, enthusiasm, and guidance all these years have made me become more rigorous in my work. I valued our regular meetings, each one with an opportunity to grow as a researcher and writer.

I would like to thank my mom, dad, and sister for always being supportive in my decision to pursue a degree in Psychology.

I would also like to thank my committee members of experts in Motivational Interviewing and Statistics: Dr. Lawrence D. Cohn, Dr. Paul C. Amrhein, Dr. Craig Field, and Dr. James M. Wood. To Dr. Amrhein, thank you for giving up a lot of your time to train us in using your coding manual and for serving on my thesis committee.

I would also like to thank several lab members: Eugene Lopez, Katherina Arteaga, Roberto Moran, Miguel Garcia, Hatty Lara, Emilio Acosta, Angie Ibarra, Krystal Ceniceros, Cinthia Munoz, Sean Silva, Kiran Misra, Candice Coffman, Gabriel Frietze, Mosi Dane’el, and Kevin Gutierrez. Your contributions made this study possible.

Lastly, I would like to thank Dr. Jon Amastae and Dr. Edward Castañeda. To Dr. Jon Amastae, for your dedication and Linguistics expertise. To Dr. Castañeda, for funding and allowing me to be part of this NIDA training grant.
Abstract

Motivational Interviewing (MI) is an extensively used technique to facilitate behavior change by increasing a person’s own motivation and commitment toward change. Recently, several innovative and effective ways to conduct motivational interviews have emerged. However, one potential option has not been investigated: the utility of conducting a motivational interview via computer. The current study begins to address this gap in knowledge by comparing the language content of computer-mediated motivational-type interviews and face-to-face motivational-type interviews. The motivational-type interviews were conducted with young adults who reported ambivalence about their level of recreational marijuana use. Specifically, non-marijuana users, occasional marijuana users, and frequent marijuana users were recruited to discuss their ambivalence regarding their level of marijuana use. One-hundred and fifty young adults from a large urban university were randomly assigned to receive either a computer-mediated motivational-type interview (CM-MTI) or a face-to-face motivational-type interview (FTF-MTI). A two-month follow-up survey assessed their marijuana use during the two-months following the MI-type interviews. Transcripts were scored for sustain talk and change talk using Amrhein’s (2003) coding system. Word count and the number of independent language units were higher in FTF-MTIs than CM-MTIs. FTF-MTIs took less time to administer than CM-MTIs. FTF-MTIs and CM-MTIs did not differ significantly in the proportion and average strength of sustain talk and change talk. Future studies should investigate if FTF-MTIs and CM-MTIs differ in drug-related content and affect-related content.
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Introduction

The Language Content of Computer-Mediated versus Face-To-Face Motivational-Type Interviews

Motivational Interviewing (MI) is an extensively used technique to facilitate behavior change by increasing a person’s own motivation and commitment toward change. Since the first MI article was published in 1982, more than 25,000 articles reference motivational interviewing (Miller & Rollnick, 2012). A literature search using Google Scholar database yielded 79,300 results when specifying the search term “motivational interviewing” during the years 1980 to 2017. Two hundred controlled clinical trials support its efficacy (Miller & Rollnick, 2012). Motivational interviewing was developed in the context of substance abuse research;

MI is effective for addressing many other behavioral health problems. For example, MI is effective for reducing alcohol-related problems, substance use problems, and diet and exercise problems (Burke, Arkowitz, & Menchola, 2003). The efficacy of MI is similar to other evidence-based interventions, but MI takes less time to administer, and its effects are long-lasting (Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010). MI has been adapted to incorporate effective components of other successful interventions, such as delivering personalized feedback. In substance abuse and alcohol interventions, for example, individuals are provided personalized feedback consisting of their current drug use relative to the general population. Several studies suggest that giving such feedback improves MI efficacy. One potentially viable option that has not been investigated is the utility of conducting a motivational interview via computer.

The onset of computer technologies led investigators to examine the advantages and disadvantages of computer-mediated (CM) and face-to-face (FTF) communications. One study found that computer-mediated communications elicit greater self-disclosure than face-to-face
communications (Joinson, 2001). In the context of clinical interviews, computer-mediated interventions are more effective in changing health behaviors compared to receiving no treatment (Carey et al., 2009). Despite the increased use of computer-mediated communication, no study has compared the language content or behavioral outcomes of face-to-face motivational interviews and computer-mediated motivational interviewing. The following study begins to address this gap in knowledge. Specifically, the current study uses a college sample to compare face-to-face motivational-type interviews (FTF-MTIs) and computer-mediated motivational-type interviews (CM-MTIs) along three dimensions: language content, word count, and the time it takes to conduct the interview with college students who were ambivalent about changing their marijuana use. The motivational-type interviews that were conducted in the current study contained many, but not all, of the major components of standard motivational interviewing techniques outlined in training manuals, scientific articles, and books (Miller & Rollnick, 2012). Specifically, the motivational-type interviews that were conducted in the current study were guided by four of the five major principles of MI. Specifically the current motivational-type interviews sought to 1) be non-confrontational, 2) be non-judgmental 3) help participants explore their ambivalence towards behavior change, and 4) invite at least two reflections from participants for every question posed by the interviewer. However, unlike standard motivational interviewing, the current motivational-type interviews did not seek to subtly guide a participant’s behavior towards reduced recreational marijuana use. The logic, and importance, of the latter decision is presented on page 21.

**Motivational Interviewing (MI)**

MI is a “collaborative, person-centered approach used to increase intrinsic motivation and reduce ambivalence about behavioral change” (Miller & Rollnick, 2012). MI differs from
traditional confrontational approaches by adopting a directive, humanistic approach (Miller & Rollnick, 2012). Ambivalence regarding behavior change is viewed as non-pathological. For this reason, a person is asked to discuss their barriers and strengths toward making a behavior change. Clinicians do not confront or advise clients to make a change. Instead, a clinician guides an individual to commit to change by increasing the client’s own motivation and strengthening commitment toward change. To facilitate change, MI uses the following four MI principles: 1) “express empathy” by reflective listening; 2) “develop discrepancy” between current behavior and future goals by asking evocative questions (i.e., open-ended questions); 3) “roll with resistance” by exploring a client’s ambivalence about making a behavioral change; 4) “support self-efficacy” by viewing the person as capable of making the behavioral change (Miller & Rollnick, 2012). The clinician seeks to increases a client’s own motivation to change by asking evocative questions and reflecting what was said by the client in a supportive and empathetic approach. By exploring a client’s own reasons for the change, ambivalence reduces and leads to a strengthening of commitment to behavioral change.

Efficacy of MI. Numerous studies have established the efficacy of motivational interviewing. Prior meta-analyses suggest that motivational interviews are effective for promoting health behaviors (Burke et al., 2003; Lundahl et al. 2010). Lundahl et al. (2010) conducted a meta-analysis of 119 studies investigating the efficacy of motivational interviewing. On average, motivational interviewing improved health outcomes by 0.22 standard deviation units compared to interventions not implementing motivational interviewing (Lundhal et al. 2010). Motivational interviewing was compared to weaker interventions (i.e., an intervention that used pamphlets, unspecified treatment as usual, or waitlist) and strong interventions known to be efficacious (e.g., cognitive behavioral therapy and 12 steps addiction programs). MI was
significantly more effective than weaker interventions \((g=0.28)\), but not more effective than strong treatments \((g=0.09)\). MI took less time to administer (three sessions that adds up to approximately 180 minutes) than other active treatments. Motivational interviewing was significantly more effective than weak treatments in increasing motivation \((g=0.23)\) and increasing engagement in treatment \((g=0.35)\). Also, MI was significantly more effective than weaker treatments at a two-year follow-up \((g=0.24)\).

Adaptive motivational interviewing refers to the use of normative feedback in addition to MI or interventions using motivational interviewing philosophy. Based on 50 studies, motivational interviewing with normative feedback had an average effect size of \(g=0.32\), which suggests that MI with a feedback component is effective (Lundhal et al., 2010). Burke et al. (2003) conducted another meta-analysis of 30 controlled clinical trials to determine if adaptive motivational interviewing (AMI) is effective across different behavioral outcomes. AMI was statistically more effective than no treatment in reducing alcohol frequency that was measured in standard ethanol content \((d=0.25)\). Also, AMI significantly reduced intoxication levels that were measured in blood alcohol content \((d=0.53)\), reduced drug addiction \((d=0.56)\), increased diet and exercise \((d=0.53)\), and reduced social problematic behavior \((d=0.47)\) compared to no treatment. Similar to the meta-analytic finding reported by Lundhal et al. (2010), there was no significant difference between AMI and other active (strong) treatments, which suggests adapted motivational interviewing is equivalent to other effective treatments. Compared to no treatment, AMI is effective for reducing alcohol problems, increasing diet and exercise, and reducing addicting behavior. Both meta-analyses suggest MI is more effective compared to no treatment across different health outcomes. Compared to other widely used, evidence-based interventions
(e.g., Cognitive Behavioral therapy), MI did not differ in efficacy but took less time to administer.

Client factors also influence whether behavior change will occur as a result of MI. Ambivalence is often experienced when changing a behavior. It is normal for an individual to express arguments supporting or opposing the targeted behavior change (Miller & Rollnick, 2012). Thus, clinicians are faced with the dilemma of identifying which client will change or not change. Many clients say they want to change but not all clients do change. The language used during an MI session may help predict behavior change. Toward this end, Paul Amrhein developed a coding system to distinguish between statements that encourage behavioral change (i.e., change talk) or discourage behavioral change (i.e., sustain talk) as a means for predicting behavioral change (Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003).

**Change Talk and Sustain Talk.** The client’s language during motivational interviewing can reveal whether the client is ready to make a behavioral change or resist making a behavioral change. Change talk in motivational interviewing refers to language statements in the direction of behavioral change. Change talk is categorized into language statements expressing the client’s desire (e.g., “I want to cut back on using marijuana”), ability (e.g., “I am capable of living without marijuana”), reasons (e.g., “I’m going to lose my kids”), need (e.g., “I need to reduce my use”), readiness (e.g., “I’m ready to reduce my use”), and commitment (e.g., “I swear I will never use marijuana”) to change their behavior (Amrhein et al., 2003). Contrary to change talk, sustain talk in motivational interviewing refers to statements that support increasing or maintaining drug use. Sustain talk is similarly categorized into language statements expressing the clients desire, ability, reasons, need, readiness, and commitment to maintaining their behavior. Each language statement is also assigned a strength (valence) value between “+ 5” and
“-5”. Values between “-1” and “-5” reflect the strength of statements that support continued drug use. Values between “+1” and “+5” reflect the strength of statements that support reducing or abstaining from drug use. For example, a commitment statement such as “I will probably quit” is assigned a valence of “+2” and is distinct from the statement “There is no doubt about it I will quit,” which would be assigned a valence of “+5”. The second statement reflects a stronger commitment to change that is captured by assigning a higher strength value.

Change talk and sustain talk expressed by the client in motivational interviews is predictive of behavioral change (Amrhein et al., 2003). Amrhein et al. (2003) randomly assigned 84 inpatient and outpatient illicit substance users to receive a 45-90-minute MI session. Drug use was assessed at baseline, three, six, nine, and twelve months. Each statement during an MI session was categorized as desire, ability, reasons, need, readiness, commitment, or not codeable (i.e., not an example of desire, ability, reasons, need, readiness, or commitment statements). Each language statement was assigned a valence between “-5” and “+5”. On average, commitment statements occurred more frequently ($M=2.86$) than reasons ($M=1.85$), ability ($M=1.48$), desire ($M=1.46$), need ($M=.68$) and readiness statements ($M=.16$). Amrhein et al. (2003) posited that commitment language strengthens from the beginning toward the end of the interview. Therefore, interviews were divided into ten equal time segments called time deciles to examine the strength of commitment language in the beginning, middle, and end of the MI session. The strength of commitment language predicted the frequency of drug use at follow-up, but only for the 7th time-decile and 10th time-decile. The strength of commitment language at the other time-deciles (1-6, 8, 9) did not significantly predict the number of days abstinent in the past 90 days ($p$-values less than .05 for the change in $R^2$). The strength of other language statements, known as preparatory change talk (i.e., desire, ability, reasons, needs, readiness), did not predict drug
use abstinence. However, the strength of preparatory change talk was associated with the strength of commitment language, which suggests these categories may play an underlying role in increasing commitment strength.

A study of 24 cocaine-dependent patients receiving cognitive behavioral therapy revealed similar results: the strength of commitment language significantly predicted a reduction in cocaine use as indexed by negative urine tests (Aharonovich, Amrhein, Bisaga, Nunes, & Hasin, 2008). A recent study of 75 cocaine-dependent patients also found that the strength of commitment language predicted reduced cocaine use (Carpenter et al., 2016). Participants were trained to associate negative consequences words with cocaine-related words and complete a word relation task afterward. Performance on word relation task was used to group participants by high ability to relate cocaine-related words with negative consequences or low ability. The association between strength of commitment language (10th time-decile) and cocaine use was dependent on the performance of the word relation task. For those who learned to relate cocaine use words with negative consequences words, the strength of commitment language significantly predicted less cocaine use (β = -17.8, p = .03). Commitment language did not predict cocaine use for individual’s low in the ability to associate cocaine-related words with negative consequences. Also, the strength of other language categories did not predict a reduction in cocaine use. The study by Carpenter et al. (2016) suggests that training individuals to relate cocaine use with negative consequences reduces cocaine use.

Several additional studies report no association between commitment language and behavioral change. For example, Gaume, Gmel, and Daeppen (2008) coded 97 brief motivational interviews of emergency room patients regarding their alcohol use. The investigators found that only the strength in ability statements (e.g., “I am capable of living without drugs”) significantly
predicted changes in alcohol consumption at a 12-month follow-up ($\beta=2.78$, $p<.05$). Also, Baer et al. (2008) did not find an association between commitment language and reducing illicit drug use. A sample of 54 homeless adolescents (ages 13-19) received a brief MI and completed a measure that assessed their drug abstinent during a 30-day period at baseline, one-month, and three-month follow-up. The strength of reasons for abstaining from illicit drug use (change talk) predicted a higher number of days abstinent at one-month follow-up. Yet, sustain talk for desire language and ability language predicted a reduction in the number of days abstinent at one-month and three-month follow-up. Descriptive statistics revealed that reasons against illicit drug use ($M=1.01$) were more frequently expressed than desire/ability sustain talk ($M=.61$), and commitment sustain talk ($M=.27$).

A related study of 61 marijuana-dependent adults examined if the language used during MI predicted subsequent marijuana use (Walker, Stephens, Rowland, & Roffman, 2011). Participants were randomly assigned to complete nine sessions of Motivational Interviewing Enhancement Therapy (MET), Cognitive Behavioral Therapy (CBT), and Case Management (CM) in four weeks or 12 weeks. Participants in the MET condition received a brief motivational interview session with personalized feedback regarding a participant’s drug use relative to the general population. The number of days abstinent was measured at baseline, 4, 16, and 34 months. After controlling for baseline drug use and participant’s motivation to change, desire statements (e.g., “I want to stop using”) significantly predicted a decrease in marijuana use at 4, 16, and 34 months ($\beta=.24$, $\beta=.23$, $\beta=.37$, respectively). Reasons for changing marijuana use significantly predicted a decline in marijuana use at 4 and 16 months ($\beta=.24$, $\beta=.27$, respectively). Only desire and reason statements predicted a reduction in marijuana use long-term.
There are several methods to measure sustain talk and change talk, which could explain the conflicting results among studies. For example, the studies by Amrhein et al. (2003), Aharonovich et al. (2008), and Carpenter et al. (2016) computed the average strength values for each of the following categories: desire, ability, reasons, need commitment, and readiness categories. However, other investigators counted the number of the language statements in the desire, ability, reasons, need, commitment, and readiness category. For example, Baer et al. (2008) found the frequency of commitment statements predict changes in health outcomes. Finally, other investigators ignore the individual categories (i.e., desire, ability, reasons, need, commitment, and readiness). Instead, these investigators count the number of language statements that reflect sustain talk and change talk separately. For example, Moyer et al. (2007) examined the impact of change talk and sustain talk separately. Forty-five sessions from Project MATCH were used to code sustain talk and change talk. The sessions consisted of Cognitive-Behavioral therapy (n=15), Twelve-Step facilitation (n=15) and Motivational interviewing with a feedback component (n=15). Both sustain talk and change talk predicted drinking outcomes, as measured by drinks per drinking day. Sustain talk significantly predicted an increase in drinking outcomes (β=.455) and change talk significantly predicted a reduction in drinking outcomes (β=-.325). Another study found similar results (Vader, Walters, Prabhu, Houck, & Field, 2010). College students (N=143) were randomly assigned to receive a motivational interview session or a motivational interview with a feedback session and report their drinking frequency at a three-month follow-up. Both change talk (β=-0.011) and sustain talk (β=0.029) significantly predicted drinking outcomes for the motivational interviewing sessions with a feedback component.

Magill et al. (2014) conducted a meta-analysis based on 12 studies examining if sustain talk and change talk separately predicts behavior outcomes (i.e., alcohol, illicit drug use, and
Sustain talk was negatively associated with worse behavioral outcomes \((r = -0.24, p = 0.001)\), but change talk was not associated with positive behavioral change outcomes \((r = 0.06, p = 0.41)\). Magill et al. (2014) also conducted another meta-analysis on six independent studies to examine if the strength of commitment language predicts behavioral health outcomes (i.e., that is treating sustain talk and change talk as a unidimensional variable, from -5 to +5). The findings from these six studies suggest that combining both sustain talk and change talk by averaging strength (valence) values was associated with positive behavioral outcomes \((r = 0.12, p = 0.006)\).

The above findings reveal conflicting evidence regarding the type of language statements that predict positive behavioral change. For example, *commitment-related statements* predicted positive behavioral change in three studies, *desire-related statements* predicted positive behavioral change in one study, and *reason-related statements* predicted positive behavioral change in one additional study. These conflicting results may be in part due to the type of language investigators use in their analyses. Some investigators analyze the frequency of each type of language statements (e.g., desire) produced in MI, while other investigators analyze the valence assigned to each language statement. The study by Vader et al. (2010) suggests that adaptive motivational interviews with a feedback component influence the association between change talk and sustain talk and behavioral health outcomes. The last study addresses an important question. “Does the type of motivational interview conducted influence change talk and behavioral outcomes?”

**Computer-Mediated Communications, Computer-Mediated Interventions, and Implications for Motivational Interviews**
The technological advances of the internet and the availability of innovative media devices changed how individuals seek information, communicate, and receive treatment (Bordia, 1997). In a 2014 national survey on internet use, 87% of U.S. adults reported using the Internet at least occasionally, and 81% reported having access to a desktop or laptop (PEW Research Center, 2014). One notable change in the communication medium landscape is the adoption of computer-mediated communications and computer-mediated interventions.

**Computer-mediated communications.** Computer-mediated communications (CMC) and face-to-face communications (FTF) are two distinct communication mediums. Computer-mediated communication (CMC) refers to the use of email, chat rooms, instant messenger, computer bulletin boards, or computer servers linking multiple computers to communicate (Baltes, Dickson, Sherman, Bauer, & LaGanke, 2002). CMC is referred to as text-based mediums because their messages are typed and are presented visually on a screen (Herring, Barab, Kling, & Gray, 2004). Computer-mediated communications are diverse. For example, some CMC use more synchronized communication mediums that require less of a delay in receiving messages (e.g., instant messenger) than asynchronized mediums (e.g., email).

According to Herring et al. (2004), each type of CMC (i.e., email, chat, online discussion boards) has a social context for its use. For example, email has a more formal setting and is influenced by the delay of receiving messages. The delay in time for this CMC allows its users to edit messages before sending.

Contrary to CMC, FTF communication provides information visually and auditorily. Computer-mediated communications are often viewed as more impersonal because nonverbal cues are absent (Kiesler, Zubrow, Moses, & Geller, 1985). In FTF communication, non-verbal cues (e.g., facial expressions, voice tone, nodding) clarify if the message is understood and also
reveals the social characteristics of communicators (Herring et al., 2004). These social characteristics (e.g., status, age, or gender) are concealed in CMC (Herring et al., 2004). Although CMC lack nonverbal cues compared to FTF, there is mixed evidence that CMC are more impersonal than FTF. For example, some findings suggest CMC are as interpersonal as face-to-face communications but require more time for users to become familiar with the communication medium and conversation style of the person they are communicating with (Walther, 1996; Bordia, 1997). The inconsistency in the literature is often attributed to not distinguishing between asynchronized and synchronized types of CMC and not providing users with enough time to adapt to CMC.

CMC are either asychronized or synchronized. Asynchronized types of CMC have a delayed response (e.g., email). Synchronized CMC (e.g., online chat rooms and messengers) closely resemble FTF communication in the ability to provide immediate responses that facilitate interpersonal interactions. For example, using more interactive forms of computer-mediated communications like instant messengers was associated with enhanced existing friendships (Valkenburg & Peter, 2007; Valkenburg & Peter, 2009). In Valkenburg and Peter’s (2009) study, 794 Dutch adolescents (i.e., 10-16 years old) completed surveys assessing online communication use and experienced closeness to existing friendship. They found that 30% of adolescents thought that online communication was more effective in disclosing intimate information. The use of online communication increased the closeness of existing friendships for adolescents who reported using the internet to connect with friends via instant messenger, \( r = .23 \) (Valkenburg & Peter, 2009). CMC is also effective in becoming acquainted with strangers, which can facilitate the building of new relationships (Tidwell & Walther, 2009).
CMC users adapt to initially unavailable social information (e.g., age, gender, emotion expression) by actively seeking information, or by using contextual cues in the text to make social inferences (Herring et al., 2004; Tidwell & Walther, 2002; Walther, 1996). For example, Tidwell and Walther (2002) found that more direct strategies are adopted for obtaining more information about a stranger when communicating via computer. Individuals getting to know strangers via computer asked significantly more questions (18%) compared to individuals communicating face-to-face (13%). Also, individuals significantly disclosed more personal information in the CMC condition (69%) than the FTF condition (59%).

Two studies suggests the anonymity associated with CMC also results in more self-disclosure (Joinson, 2001). In Joinson’s (2001) study, for example, transcripts from dyads discussing a dilemma of whom to let live in the event of nuclear war were analyzed. Dyads of the same gender were randomly assigned to discuss the dilemma either face-to-face or via computer using a chat program. Joinson (2001) concluded that the mean self-disclosure within each dyad per session was significantly greater in the synchronized computer-mediated communication ($M = 3.10$) compared to face-to-face communication transcripts ($M = .70$). In the second study by Joinson (2001), dyads randomly assigned to the synchronized computer-mediated communication group self-disclosed significantly more ($M = 3.05$) than the video link communication group ($M = .63$). These studies demonstrate that anonymity can influences the extent of information disclosure by an individual.

**Computer-Mediated (CM) Interventions.** A meta-analysis of 35 studies compared drinking behaviors of college students assigned to either a computer-delivered intervention or control condition (Carey et al., 2009). The control groups consisted of waitlists, or no treatment. The computer-delivered interventions were delivered via the internet, intranet, or CD-ROM
DVD. Compared to a control condition, computer-delivered interventions with a five-week or less follow-up significantly reduced the quantity of drinks ($d=.16$), the quantity of drinks during drinking days ($d=.15$), the frequency of heavy drinking ($d=.21$), and frequency of drinking days ($d=.19$). At a long-term follow-up, greater than six weeks, the reduction was maintained in quantity ($d=.20$) and frequency of drinking days ($d=.28$).

Meta-analyses comparing other computer-delivered interventions also show similar results. Rodriguez et al. (2015) conducted a meta-analysis of six studies examining the efficacy of personalized feedback interventions in college students. College students received computer-based personalized feedback regarding their drinking behavior in a lab setting (i.e., in-person) or remotely. Remote computer-mediated interventions are described as cost-effective, flexible, anonymous, and wider-reaching interventions (Rodriguez et al., 2015). In contrast, more control of environmental distractors characterizes in-person computer-mediated interventions because a set time and location is specified. Rodriguez et al. (2015) found that in-person computer-mediated interventions were more effective at reducing the total number of alcohol drinks per week ($\beta=-2.185, p=.007$) and reducing alcohol-related problems ($\beta=-1.749, p=.023$) compared to remote computer-mediated interventions. There was no difference between both modalities in reducing perceived drinking norms ($p=.133$). Although remote computer-mediated interventions can be effective, these results showed that several characteristics make in-person interventions more effective.

**Potential Links to Computer-Mediated Motivational Interviews.** Despite the increased use of computer-mediated interventions, face-to-face motivational interviewing has not been compared to computer-delivered motivational interviewing in which a therapist provides MI via computer. Two studies preprogrammed a software to administer assessments based on a
motivational interviewing philosophy. For example, Agostinelli, Brown, & Miller (1995) delivered individualized feedback via email using a non-confrontational and empathetic approach. Another study by Hester, Squires, and Delaney (2005) developed a web-based brief motivational intervention called the Drinker’s Check-up (DCU). The Drinker’s Check-up is a web application that includes assessment of drinking risks, individualized feedback, the decisional balance exercise, menu of options to reduce drinking, change plan worksheet, and follow-up assessment. After completing the assessment of drinking risk electronically, the computer program provides participants with individualized feedback in a non-confrontational and empathetic approach. To test the efficacy of DCU, the participants were randomly assigned to receive DCU or a four-week delayed DCU. The DCU reduced drinking compared to a delayed condition after four weeks, $d = .21$.

Although the above computer approaches are innovative, it is important to note that therapists in the studies were not providing MI therapy sessions via computer; nor were researchers in the above studies comparing computer-mediated motivational interviews and face-to-face motivational interviews. Thus, it is not known if motivational interviewing administered via computer elicits different language content than face-to-face motivational interviews. Obtaining accurate information from clients is a challenge for clinicians. Clients are often hesitant to disclose sensitive information because of anonymity concerns that can pose a threat to their self-image. A safe environment where clients can express themselves comfortably could promote truthful disclosure. To date, however, no studies have investigated if computer-mediated MIs and face-to-face MIs elicit the same type of language and language content. The current study begins to address this gap in research by analyzing the language content of computer mediated motivational-type interviews and face-to-face motivational-type interviews that were
conducted with young adults who were ambivalent about their level of recreational marijuana use.

**Marijuana Use in Young Adults.**

Regardless of its negative consequences, marijuana is the most commonly used illicit drug. Approximately 26 million Americans aged 12 years or older are current marijuana users (SAMSHA, 2017). Marijuana use is highest among 18-25-year-old young adults; 7.6 million young adults reported using marijuana in the past month (SAMSHA, 2017). Marijuana use is associated with short-term and long-term negative health outcomes. Short-term use of marijuana is linked with impaired short-term memory, motor function, and judgment (Volkow, Baler, Compton, & Weiss, 2014). Regular, heavy, marijuana use can lead to addiction, bronchitis, mental disorders (e.g., psychosis if used in high doses), and cognitive impairment (Volkow et al., 2014).

Since 2014, thirty-three states have legalized the medicinal use of marijuana (National Conference of State Legislatures [NCSL], 2019). Currently, the recreational use of marijuana is legal in ten states and the District of Columbia (NCSL, 2019). Marijuana use is expected to increase as more states legalize the recreational use of marijuana. In fact, the annual prevalence rate of marijuana use in college students increased from 32.7% in 2010 to 38.3% in 2017 (Schulenburg et al., 2018). The increase in use may be attributed to a decrease in the perceived harm (Schulenburg et al., 2018). That is, in 2017 only 7-10% of young adults perceived using marijuana once or twice as harmful, and 23-27% young adults perceive regular use as harmful (Schulenburg et al. 2018). According to Schulenburg et al. (2018), the annual marijuana use in 19-30 year olds is higher in men than women between the ages of 19-30 (39.7% vs. 34%,
respectively). The increasing legalization of recreational marijuana warrants research into factors that lead to changes in marijuana use among non-users, occasional users, and frequent users.

**Current Study**

The current study compares the language content of computer-mediated motivational-type interviews and face-to-face motivational-type interviews. As noted earlier, the motivational-type interviews that were conducted in the current study employed the traditional MI conversational style of expressing empathy, respecting a participant’s autonomy, and exploring the participant’s perceived benefits and costs of using marijuana recreationally. Notably, standard motivational interviewing is direction-oriented and the therapist intentionally guides a client towards making a targeted behavioral change, such as decreasing their drug use (Rollnick & Miller, 2002). The motivational-type interviews that were conducted in the current study, however, *did not* subtly guide participants away from recreational marijuana use; nor did the MI-type interviews subtly guide participants towards increased recreational marijuana use. Instead, the interviewer adopted a neutral role, helping participants explore their ambivalence about increasing or decreasing their recreational marijuana use without favoring either behavioral outcome. Thus, the direction-oriented component of MI was intentionally omitted from motivational-type interviews conducted in the current study. Stated differently, our motivational-type interview did not emphasize the discrepancy between a participant’s potential increased recreational use of marijuana and their goals. Deciding to omit the direction-oriented component of motivational interviewing was guided by a single consideration: the national trend towards legalizing recreational marijuana use. The trend towards legalization may have prompted some ‘non-marijuana users’ to consider using the drug if legalized in their state. Similarly, the trend towards legalization may have prompted some ‘occasional marijuana users’ to consider
increasing their marijuana use if recreational use was legalized in their state. For this reason, we omitted the directional component of MI and let participants freely explore their own ambivalence regarding their level of marijuana use.

Non-marijuana users, occasional marijuana users, and frequent marijuana users were recruited to discuss their ambivalence regarding their marijuana use status. Participants were randomly assigned to receive either a computer-mediated motivational-type interview (CM-MTI) or a face-to-face motivational-type interview (FTF-MTI). A two-month follow-up survey assessed their marijuana use during the two-month period following the interview.

Hypothesis 1: We hypothesized that face-to-face motivational-type interviews (FTF-MTIs) and computer-mediated motivational-type interviews (CM-MTIs) will differ in word count and completion time. Specifically, CM-MTIs will elicit fewer words and will take more time than FTF-MTIs.

Hypothesis 2: Commitment language will predict changes in marijuana use at a two-month follow-up in both CM-MTIs and FTF-MTIs. Specifically, the increased strength of commitment language will be associated with reduced marijuana use.

Hypothesis 3: We hypothesized that FTF-MTIs and CM-MTIs will not differ statistically in participants use sustain talk and change talk (e.g., desire, ability, reasons, need, commitment, and readiness statements). The latter hypothesis was exploratory because no prior research has investigated it.
**Method**

**Participants**

One hundred and fifty young adults (52.7% males) were recruited from a large urban university. Recruitment flyers were distributed across several venues on campus, including the campus library, the campus Student Health Center, and the campus bus stop. The ages ranged from 18-29 years old ($M=21.3$, $SD=2.73$). Reflecting the demographics of the University of Texas at El Paso, 83.3% of students were Hispanic, 5.3% non-Hispanic White, 5.3% African-American, 0.7% other, and 5.3% mixed (i.e., two or more ethnicities selected). Sixteen percent of participants were freshman, 26% sophomores, 26% juniors, 30% seniors, and 2% not sure.

Three types of participants were eligible to participate: *non-marijuana users, occasional marijuana users,* and *frequent marijuana users.* The *non-marijuana user* ($n=47$) was defined as a person who had no history of marijuana use. The *occasional marijuana user* ($n=47$) was defined as a person who used marijuana less than 24 times in the past year and one to five times in the last two months. The *frequent marijuana user* ($n=50$) was defined as a person who used marijuana more than seven times during the past two months, and greater than 24 times in the past year. Six marijuana users reported not using marijuana in the year preceding the study. The latter participants were classified as *lapsed marijuana users.* Eligible participants also had to express ambivalence about their level of marijuana use, as determined by responses to the ambivalence questionnaire (see page 23). Participants were compensated $20 for the first assessment and $30 for a two-month follow-up assessment.
Power Analyses

The required sample size needed to detect an effect size of $r = .25$ between the strength of commitment language and the behavioral outcome at 80% power using a two-tailed test with $\alpha = 0.05$ was $N = 150$.

Design

A between subjects (i.e., FTF-MTI versus CM-MTI) repeated measures design was used. Participants were randomly assigned to receive either the face-to-face motivational-type interview ($n = 75$) or a computer-mediated motivational-type interview ($n = 75$). However, 78 motivational-type interviews were conducted face-to-face, and 72 were conducted via computer. Three interviews originally assigned to the computer-mediated condition were conducted in the face-to-face format due to computer software issues (i.e., the interviewer’s prompt would not appear on the participant's screen). Each participant’s marijuana use was assessed at a two-month follow-up.

Measures and Materials

Self-generated ID Number Questionnaire (see Appendix B). Participants completed a short 7-item survey assessing their favorite color, favorite type of car, and related personal information. Each response was assigned a numeric value, which was used to generate a confidential 7-digit ID number. The survey was completed during the eligibility, baseline, and two-month follow-up assessment. The 7-digit ID number was used to match surveys completed by each participant at baseline and two-month follow-up. Sample item: What was your favorite subject in high school?

Eligibility Assessment (see Appendix C).

Demographic Questionnaire. A two-item measure assessed age and gender. Young adults between the ages 18-29 were eligible to participate in the study.
Drug use Questionnaire (Adapted from Monitoring the Future, 2014). An 8-item measure assessed lifetime drug use (i.e., alcohol, cigarettes, and marijuana use), past year marijuana use, and past two-months marijuana. Response options for lifetime use were 1 = “Yes” and 0 = “No.” Response options for the past year and past two months ranged from “0 times” to “more than 50 times.” Sample item: *During the past two months, approximately how many times (if any) have you smoked or consumed marijuana?*

Ambivalence Questionnaire. A 9-item measure assessed each participant’s ambivalence toward changing marijuana use during the past year. Sample item: *During the past year I’ve had mixed emotions about my level of marijuana use or non-use.* The ambivalence items were developed by the Cohn lab and consists of 7 Likert-type items with response scales ranging from 0 = “not at all” to 10 = “a lot.” Young adults were eligible to participate in the study if ratings in 2 out of the 9 items were at least five or higher.

Baseline Assessment (see Appendix D-J).

Demographics questionnaire. A 6-item measure assessed age, gender, ethnicity, and language proficiency (see Appendix D). The questionnaire was completed anonymously and did not including any identifying information.

Drug use questionnaire (Adapted from Monitoring the Future, 2014). A 10-item measure assessed lifetime drug use (i.e., alcohol, cigarettes, and marijuana use), past year marijuana use, and past two-months marijuana. Response options for lifetime marijuana use were 1 = “Yes” and 0 = “No.” Response options for the past year and past two months ranged from “0 times” to “more than 50 times” (see Appendix E). Sample item: During the past two months, approximately how many times (if any) have you smoked or consumed marijuana?

Brief Motivational-Type Interviews (see Appendix I).
Training Interviewers in Motivational Interviewing. Three doctoral students (two females and one male) trained in motivational interviewing conducted the interviews. Doctoral students attended a two-day MI workshop on May 9, 2013, and May 10, 2013. The workshop was delivered by Dr. Bob Phillips. Dr. Phillips is a member of the Association for Addiction Professionals and the Motivational Interviewing Network of Trainers (MINT). Interviewers also watched the Professional Training DVD Series developed by Miller and Rollnick and directed by Theresa Moyer (Center on Alcoholism, Substance Abuse, and Addictions, 1998). The DVDs provided six hours of motivational interviewing training on developing motivational interviewing skills. Interviewers also watched four additional sets of DVDs by an expert practicing motivational interviewing (Cole, 2014). After watching the videos and attending MI workshops, senior trainee (Llanes) observed the junior trainees during six role-playing sessions and provided the trainees with feedback on their MI skills. The MI trainee role-played as “the interviewer,” and a research assistant role played “the marijuana user or non-user”.

Face-To-Face Motivational-Type Interviews (FTF-MTIs): There were 78 recorded motivational-type interviews conducted in a private lab space. The interviewers were guided by a 4-page single spaced script developed for the study. The script was based on the guiding principles of motivational interviews developed by Miller and Rollnick (1991). The same humanistic conversation style of expressing empathy by engaging in reflective listening, respecting the autonomy of the person, and exploring the benefits and costs of using marijuana use was adapted. The script consisted of an equal number of open-ended questions addressing the benefits and costs of using marijuana. However, the motivational-type interviews were not intended as a clinical intervention.
and thus did not seek to reduce marijuana use among college students in the study who identified as non-users, occasional users, or ‘regular’ users of marijuana. Instead, the interviewer adopted a neutral role, helping participants explore their ambivalence about increasing or decreasing their recreational marijuana use without favoring either behavioral outcome. That is, the interviewer did not reinforce change talk more than sustain talk.

The face-to-face interviews were audio recorded, transcribed, and proofread. Trained research assistants transcribed words verbatim. In addition, utterances (e.g., um, uh) and nonverbal sounds (e.g., laughter, crying) were also indicated in the transcript. In addition, long pauses between statements were also indicated in the transcript. The transcript of the interview was only identified by the self-generated ID number. Identifying information that participants provided accidentally during the course of the interview was deleted (e.g., the name of their high school). In addition, the transcripts were read by research assistants to identify errors not identified by Microsoft Word’s Spellcheck (e.g., adding “d” to word “coul” to correctly spell the word “could”). Lastly, material was removed from the transcript when it revealed the type of interview that was conducted (e.g., filler words like um, ah, uh; beginning/end prompts; and bracket material conveying emotion, change of tone, crosstalk). These modified transcripts were subsequently used to code for commitment language.

*Computer-Mediated Motivational-Type Interviews (CM-MTIs):* There were 72 computer-mediated interviews. The computer-mediated interviews were conducted using the identical script used for the face-to-face motivational-type interviews (see Appendix I). However, participants in the computer-mediated interviews only interacted with the
interviewer via computer. Participants were greeted by a research assistant who asked the participant to complete the paper surveys. After all surveys were completed, the research assistant told the participant that another interviewer would communicate with them via computer located in another room. The participants and interviewer did not see each other to ensure anonymity of both the student and the interviewer. The research assistant showed the participant how to use the LAN Instant Messenger (version 1.2.35), which is a free instant messaging software that was used to conduct the 72 computer-mediated interviews. The participant was reassured in the informed consent and again during the interview that the computer interviews could not be linked to any participant.

Interviews that were completed via computer automatically produced a transcript of the interview. Here, too, the transcript of the interview was only identified by the self-generated ID number. A doctoral student (Llanes) changed the font and text to be equivalent to the FTF-MTI transcripts. Three undergraduate and post-baccalaureate research assistants and one doctoral student (Llanes) proofread the files for accuracy by using Microsoft Word’s Spellcheck and Track changes to document the changes made. In addition, proofreaders read each computer transcript to identify errors not identified by Microsoft Word’s Spellcheck. Lastly, transcripts were read again to remove material that revealed the transcripts were computer-mediated MIs (e.g., time stamps, emoji’s, beginning and end prompts). These modified transcripts were used when coding for commitment language.

**Commitment Language Coding**

**Category Assignment:** The transcript of each motivational-type interview was divided into independent language units. Each language unit represented a unique thought or emotion
which was assigned to one of seven categories (Desire, Ability, Reason, Need, Readiness, Commitment, and Not Coded) using Amrhein’s coding manual (2003).

**Valence Rating:** Each language unit was also coded for its strength (valence) by assigning a numeric code between “-5” to “+5”, where negative ratings reflected a language statement that encouraged marijuana use, and positive ratings reflected a language unit that discouraged marijuana use.

**Two-Month Follow-Up Assessment.**

*Marijuana Use Questionnaire (Adapted from Monitoring the Future, 2014).* A 10-item questionnaire assessed lifetime and past two months’ marijuana use. Response options for lifetime marijuana use were 1= “Yes” and 0= “No.” The response options for the past two months ranged from 0= “0 times” to 50= “more than 50 times” (see Appendix K). Sample item: “During the past two months, approximately how many times (if any) have you smoked or consumed marijuana?”

**Procedure**

*Eligibility Assessment.* Participants initially completed the self-generated ID number questionnaire, followed by completion of the drug use questionnaire, and the ambivalence questionnaire. The latter two questionnaires were used to determine if the respondent was eligible to participate in the study.

*Baseline Assessment.* If eligible, participants again completed the self-generated ID number questionnaire, as well as the demographic questionnaire, and then the drug use questionnaire. Participants also completed several questions regarding their history of driving after using small amounts of marijuana and alcohol during the same two hours window. These questions were part of a larger study conducted by Amastae, Cohn, and Llanes, and will not be
reported here (see Appendix J). After completing the drug use questionnaire, participants were randomly assigned to receive either a face-to-face motivational-type interviews or a computer-mediated motivational-type interviews.

**Two-Month Follow-Up Assessment.** At two-month follow-up, participants completed the self-generated ID number questionnaire and marijuana use questionnaire.

**Procedure for Training Coders.** Two professors (Lawrence Cohn, Department of Psychology; and Jon Amastae, Department of Language and Linguistics), one doctoral student (Karla Llanes) in the Psychology Department, and four undergraduate assistants in the Psychology Department received training in the use of Paul Amrhein’s coding manual for assessing commitment language in motivational interviews (Amrhein et al., 2003). Practice interviews that were used to train MTI interviewers were coded for change talk and sustain talk. ICC values were computed to assess the level of agreement between each trainee and the expert rater (Amrhein). Trainees were permitted to rate the study’s 150 interviews when achieving an ICC of at least 0.70, which signified an adequate rating skill.

Three lab members (Amastae, Cohn, and Llanes) divided each transcript into a series of independent language statements (units). Each language statement represented a unique thought or emotion. Each language statement was then coded by two independent raters who assigned each language statement to one of seven categories (Desire, Ability, Reason, Need, Readiness, Commitment, and Not Coded). Each language statement was also coded for its strength (valence) by assigning a numeric value between “-5” to “+5”, where negative values reflected a language statement that encouraged marijuana use, and positive values reflected a language unit that encouraged marijuana use reduction or cessation. Each pair of raters subsequently identified all instances where their ‘category’ and/or ‘strength’ ratings differed. Each pair of raters discussed
their rating differences, which were resolved through discussion and a ‘final category’ and ‘final valence’ rating was assigned. When the two raters could not agree upon a final rating, then a third rater was used to reach consensus and establish a final rating.

The first 30 interviews were rated using a slightly different procedure to determine how often independent coders identified the same language statements within a transcript. Thus, each pair of raters was initially asked to independently read a transcript and identify all independent language statements (units). Each coder then rated the language statement that he/she had identified. The degree to which each pair of coders identified the same language statements within each transcript will not be analyzed or reported here.
Results

Level of Agreement Between Raters

The 120 interviews discussed above were used to calculate the level of agreement between raters. The kappa statistic ($k$) was used to determine the level of agreement between raters for each of the language categories (i.e., Desire, Ability, Reasons, Need, Readiness, Commitment, and Not Coded). The reliability estimate for all the categories combined was adequate ($kappa= 0.58$). The intraclass correlation coefficient ($ICC$) was used to measure the level of agreement between coders for the valence ratings assigned to each language statement. The level of agreement between coders was high ($\alpha=0.90$).

Comparing CM-MTIs and FTF-MTIs

The computer-mediated motivational type interviews (CM-MTIs) and face-to-face motivational-type interviews (FTF-MTIs) were compared on several dimensions: time to complete interview, the number of words expressed by both interviewer and participant, and the number of language statements (units) in each type of interview. On average, FTF-MTIs took significantly less time ($M= 12$ minutes and 38 seconds, $SD=0:05:48$) than CM-MTIs ($M= 37$ minutes and 31 seconds, $SD=0:9:30$), $t (143)= -19.25, p<0.001$. The word count was significantly higher in FTF-MTIs ($M= 2010.99$, $SD=786.55$) than CM-MTIs ($M= 1015.72$, $SD=282.54$), $t(143)= 9.88, p<0.001$, $d=1.64$. The average number of language units was also significantly higher in FTF-MTIs ($M= 98.27$, $SD=46.90$, $Range= 22-243,$) than CM-MTIs ($M= 50.00$, $SD=17.57$, $Range=22-103$), $t(143)= 27.98, p<0.001$, $d=1.33$.

Comparing CM-MTIs and FTF-MTIs on the Number of Language Statements in Each Category
Independent sample t-tests were used to compare the number of language units assigned to each of the six “commitment language” categories (i.e., Desire, Ability, Reasons, Need, Readiness, and Commitment for sustain talk and change talk) for the CM-MTIs and FTF-MTIs (see Table 2). Compared to CM-MTIs, FTF-MTIs elicited significantly more reasons to use marijuana (sustain talk). In addition, FTF-MTIs also elicited significantly more statements expressing a participant’s commitment to use marijuana (sustain talk). Ironically, compared to CM-MTIs, FTF-MTIs also elicited significantly more reasons to reducing future marijuana use (change talk). In addition, FTF-MTIs also elicited significantly more statements expressing a participant’s commitment to reducing future marijuana use. These seemingly paradoxical results will be elaborated in the “Discussion” section.

Comparing CM-MTIs and FTF-MTIs on the Proportion of Language Statements in Each Category

The above findings suggest that face-to-face MIs elicited significantly more change talk compared to computer-mediated MTIs; in addition, face-to-face MTIs also elicited significantly more sustain talk than computer-mediated MTIs. The latter findings may reflect a potential confound: face-to-face MTIs may simply encourage participants to talk more that computer-mediated MTIs and thereby produce significantly more change talk and sustain talk. To investigate this possibility, a second set of analyses was conducted that sought to control for verbosity. Specifically, we computed the proportion of language units (statements) in each transcript that were assigned to the six commitment language categories (e.g., Reasons). Specifically, we tallied the number of language statements (units) in each language category and then divided by the total number of language statements in the entire transcript.
Independent sample t-tests were used to compare the proportion of sustain talk and change talk in CM-MTIs and FTF-MTIs (see Table 3). Compared to computer-mediated MTIs, face-to-face MTIs appeared to elicit a significantly greater proportion of *reasons* for reducing marijuana use ($M=.22$ & $M=.19$, respectively; $t(143) = 2.34, p=0.021$). However, the latter difference was non-significant after employing a Bonferroni adjustment for multiple comparisons. Similarly, compared to computer-mediated MTIs, face-to-face MTIs appeared to elicit a significantly greater proportion of *readiness statements* ($M=.0024$ & $M=.0002$, respectively; $t(143) = 2.52, p=0.009$). Again, the latter difference was non-significant after employing a Bonferroni adjustment for multiple comparisons. Compared to computer-mediated MTIs, face-to-face MTIs did not elicit a significantly greater proportion of statements assigned to any of the six commitment language categories (e.g., desire, ability, reasons, need, commitment, and readiness).

**Comparing Valence Ratings in Each Language Category: CM-MTIs vs. FTF-MTIs**

Recall that each independent statement in a transcript was coded for its strength (valence) by assigning a numeric rating between “−5” to “+5”, where negative ratings reflected a language statement that encouraged marijuana use, and positive ratings reflected a language statement that discouraged marijuana use. Compared to face-to-face MTIs, computer-mediated MTIs appeared to elicit significantly stronger reasons for encouraging marijuana use (*mean valence ratings* = -.48 & *mean valence ratings* = -0.08, respectively; $t(143) = 2.63, p = .01, d=.44$). However, the latter difference was non-significant after employing a Bonferroni adjustment for multiple comparisons (see Table 4).

**Predicting Frequency of Marijuana Use at Two Month Follow-Up From the Mean Strength of Commitment Language at Baseline**
Seventy-four percent \((n=111)\) of the original participants returned for the two-month follow-up assessments. Each participant’s self-generated ID number was used to match their baseline and 2-month assessments.

A paired sample t-test was used to test if there was a difference in the frequency of marijuana use reported at baseline and 2-month-follow-up for all participants, regardless of experimental condition (CM-MTI vs. FTF-MTI). There was not a significant difference between marijuana use at baseline \((M=11.23 \text{ and } SD=16.91)\) and 2-month-follow-up \((M=10.93 \text{ and } SD=17.29)\), \(t(110)=.37, p=.716, d=.04\). Baseline marijuana use and the 2-month-follow-up marijuana use were significantly correlated, \(r=.88, p<.001\).

A subgroup analysis was subsequently conducted. Specifically, an independent sample t-test was used to compare the frequency of marijuana use at the two-month follow-up among participants in the CM-MTI condition and the FTF-MTI condition. There was not a significant difference between FTF-MTIs \((M=12.44 \text{ and } SD=18.01)\) and CM-MTIs \((M=9.98 \text{ and } SD=17.22)\), \(t(110)=.74, p=.463, d=.14\). Mean strength of ‘commitment’ language and frequency of marijuana use at the two-month follow-up was negatively correlated, \(r=-.41, p<.001\). The higher the mean strength of commitment for reducing marijuana use, the lower the two-month frequency of marijuana use.

A moderation analysis was used to test if the relationship between frequency of marijuana use at the two-month follow-up and mean strength commitment scores depends on the type of motivational interviews (i.e., FTF-MTIs and CM-MTIs). Frequency of marijuana use at baseline and gender were entered as covariates. After controlling for other predictors in the model, gender and baseline marijuana use predicted frequency of marijuana use at the two-month follow-up. Females used more marijuana use than males in this sample, \(β =4.37, p=.009\). The
higher the marijuana use at baseline, the higher marijuana use at follow-up, $\beta = .92, p = .001$.

Mean strength of commitment language did not predict post-test marijuana use, $\beta = -.44, p = .5898$. The type of motivational interviewing did not predict post-test marijuana use, $\beta = .17, p = .924$. The relationship between the strength of commitment language on frequency marijuana use did not depend on the type of interview conducted (i.e., CM-MTI or FTF-MTI), $\beta = .998, p = .315$ (See Table 5).
Discussion

There are several benefits of incorporating computers into clinical practice, including anonymity preferences, convenience, cost-effectiveness, and the ability to reach inaccessible populations in need of treatment (Shingleton & Palfai, 2016; Tate & Zabinski, 2003). Despite the increased use of computer-mediated interventions, computer-delivered motivational interviewing, in which a therapist provides MI via computer, has not been compared to face-to-face motivational interviewing, leaving several important questions unanswered. Do computer-mediated MIs elicit the same level of affect, target content (e.g., drug-related comments), and commitment language as face-to-face MIs? Do computer-mediated MIs elicit the same level of behavioral change as face-to-face MIs? The current study is the first to address these questions by comparing the language content of computer-mediated motivational-type interviews with face-to-face motivational-type interviews.

The findings suggest that face-to-face MTIs elicit greater verbosity among participants than do computer-mediated MTIs. Face-to-face MTIs contained significantly more words than computer-mediated MTIs and, similarly, contained significantly more language statements (units). The frequency of statements depicting reasons for using (and not using) marijuana was higher in FTF-MTIs than CM-MTIs. Similarly, the frequency of statements depicting a participant’s ‘commitment’ to use (or not use) marijuana was also higher in FTF-MTIs than CM-MTIs. Ironically, FTF-MTIs took less time to administer than CM-MTIs but the CM-MTIs yielded approximately half the amount of information.

The latter findings may reflect a potential confound: verbosity. Participants in face-to-face MTIs may simply talk or express themselves more in face-to-face MTIs. After controlling for the latter possibility, FTF-MTIs and CM-MTIs were similar in the type of language elicited
from individuals. Similar to other studies, commitment language was significantly associated with marijuana use at the two-month follow-up (Amrhein et al. 2003; Aharonovich et al., 2008; Carpenter et al., 2016). After controlling for baseline marijuana use, the strength of commitment language did not predict marijuana use at the two-month follow-up, regardless of the motivational-type interview conducted (i.e., CM-MTIs or FTF-MTIs).

**Strengths, Limitations, and Future Directions**

The current study design had several strengths. First, participants were randomly assigned to face-to-face and computer-mediated MTIs. Second, an identical MTI script was used to guide face-to-face MTIs and computer-mediated MTIs. Third, audio recordings of face-to-face MTIs were transcribed and then proofread and corrected when needed. Fourth, efforts were made to conceal information in typed transcripts that would reveal a participant’s experimental condition (e.g., face-to-face MTI vs. computer-mediated MTI). Fifth, all coders had to achieve a predetermined level of criterion validity (i.e., ICC = .7 or greater) before being permitted to score the research protocols. Sixth, every protocol was rated by two independent raters.

Despite these strengths, several design limitations were present. First, it was impossible to completely mask the experimental condition of the participant, which could have inadvertently influenced commitment language ratings. Second, audio recordings were transcribed by trained undergraduate assistants rather than professional transcribers. Third, MI consistent (e.g., asking more questions, reflections, non-confrontational) and inconsistent behaviors were not coded. Interviewers received training in MI philosophy and were provided feedback, but a measure of MI treatment fidelity was not used. Prior studies suggest that MI-consistent behavior increases change talk that is predictive of improved behavioral outcomes (Magill et al., 2014; Apodaca et al., 2015). Fourth, the current study did not use motivational interviewing as an intervention per-
Motivational interviewing is direction-oriented, in which the therapist guides the patient towards making a behavioral change (Rollnick & Miller, 2002). The role of the therapist in MI is to guide individuals toward reduced drug use, usually through reinforcing change talk more than sustain talk. The current study did not seek to guide participants towards making a behavior change per-se. This modification to the motivational interview process may have influenced the type of statements made by participants during the interview as well as influenced their future marijuana use. Some evidence supports the latter speculation: MTIs elicited more sustain talk than change talk in the current study; in addition, MTIs elicited more non-codeable statements than might typically be expected in standard motivational interviews. Fifth, the use of a college sample could limit the generalizability of findings. Sixth, the measurement of ambivalence was potentially weak and thereby may have erroneously identified participants as eligible for the study.

Although this is the first study to compare FTF-MTIs and CM-MTIs, future studies are needed to address questions not answered in the current study. First, the number of statements in the desire, ability, need, and readiness categories were low in both FTF-MTIs and CM-MTIs. The limited number of statements in the latter categories make it difficult to determine if FTF-MTIs and CM-MTIs elicit the same type of language statements. Second, the current study only assessed marijuana use at baseline and a two-month follow-up. A two-month follow-up is too short of a time-frame to test behavior change. A longitudinal design with more time-points would be beneficial to test pretest and posttest change. Lastly, other language content might be of interest to researchers and clinicians. For example, the language used in interviews could be classified as reflecting either positive, neutral, or negative affect (Tausczik & Pennebaker, 2010). Text analysis software, like the Pennebaker's Linguistic Inquiry and Word Count (LIWC)
program, allows researchers to count the number of words in each transcript that can be assigned to broad categories of words, such as ‘affect’ related words, nouns, pronouns, and adjectives. Similarly, LIWC could also be used to quantify the amount of drug-related content in MTIs by counting the number of drug related words elicited in FTF-MIs and CM-MTIs. More research is needed to answer these questions directly.
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Table 1a.

*Participant Characteristics in Face-to-Face MTIs and Computer-Mediated MTIs: Categorical Variables*

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<th>Categorical Variable</th>
<th>FTF-MTI</th>
<th>CM-MTI</th>
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<th>p-value</th>
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<td>No</td>
<td>17.4% (26)</td>
<td>24.8% (37)</td>
<td>5.37</td>
<td>0.020*</td>
</tr>
<tr>
<td>Yes</td>
<td>34.9% (52)</td>
<td>22.8% (34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lifetime alcohol use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3.4% (5)</td>
<td>6.0% (9)</td>
<td>1.71</td>
<td>0.190</td>
</tr>
<tr>
<td>Yes</td>
<td>49.0% (73)</td>
<td>41.6% (62)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lifetime marijuana use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>14.1% (21)</td>
<td>16.8% (25)</td>
<td>1.20</td>
<td>0.274</td>
</tr>
<tr>
<td>Yes</td>
<td>38.3% (57)</td>
<td>30.9% (46)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Statistically significant results are bold-faced using a Bonferroni correction
* p< .05.
Table 1b.

**Participant Characteristics in Face-to-Face MTIs and Computer-Mediated MTIs: Continuous Variables**

<table>
<thead>
<tr>
<th>Continuous Variables</th>
<th>Range</th>
<th>FTF-MTI M (SD)</th>
<th>CM-MTI M(SD)</th>
<th>t (147)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>18-29</td>
<td>21.79 (2.72)</td>
<td>20.83 (2.69)</td>
<td>2.17</td>
<td>0.032*</td>
</tr>
<tr>
<td>During the past year, how many times (if any) have you smoked or consumed marijuana?</td>
<td>0-50</td>
<td>20.17 (22.39)</td>
<td>13.37 (18.91)</td>
<td>1.99</td>
<td>0.048*</td>
</tr>
<tr>
<td>During the past two months, how many times (if any) have you smoked or consumed marijuana?</td>
<td>0-50</td>
<td>10.49 (15.60)</td>
<td>8.73 (16.61)</td>
<td>0.67</td>
<td>0.507</td>
</tr>
<tr>
<td>During the past two months, how many times (if any) have you used marijuana-related substances (for example, Spice)?</td>
<td>0-50</td>
<td>1.41 (5.66)</td>
<td>1.52 (8.08)</td>
<td>-0.10</td>
<td>0.922</td>
</tr>
<tr>
<td>How much have you thought about changing your marijuana use during the past year?</td>
<td>0-10</td>
<td>5.61 (3.02)</td>
<td>4.99 (2.48)</td>
<td>1.36</td>
<td>0.178</td>
</tr>
<tr>
<td>How much have you thought about increasing your marijuana use during the past year?</td>
<td>0-10</td>
<td>3.80 (3.15)</td>
<td>4.04 (2.74)</td>
<td>-0.48</td>
<td>0.631</td>
</tr>
<tr>
<td>How much have you thought about reducing your marijuana use during the past year?</td>
<td>0-10</td>
<td>4.10 (3.52)</td>
<td>3.57 (3.37)</td>
<td>0.78</td>
<td>0.440</td>
</tr>
<tr>
<td>Question</td>
<td>Score Range</td>
<td>Mean 1 (SD)</td>
<td>Mean 2 (SD)</td>
<td>T-Value</td>
<td>p-Value</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>How much have you thought about using stronger or more potent marijuana during the past year?</td>
<td>0-10</td>
<td>4.11 (3.40)</td>
<td>3.50 (2.83)</td>
<td>0.98</td>
<td>0.329</td>
</tr>
<tr>
<td>How much have you thought about using weaker or less potent marijuana during the past year?</td>
<td>0-10</td>
<td>1.71 (2.83)</td>
<td>1.33 (2.27)</td>
<td>0.75</td>
<td>0.457</td>
</tr>
<tr>
<td>How much have you thought about taking a trip to a state where the purchase of recreational marijuana is legal (such as Colorado)?</td>
<td>0-10</td>
<td>6.75 (3.30)</td>
<td>5.06 (3.67)</td>
<td>2.96</td>
<td>0.004*</td>
</tr>
<tr>
<td>How certain are you about maintaining your current level of marijuana use or non-use?</td>
<td>0-10</td>
<td>5.87 (2.92)</td>
<td>5.12 (2.79)</td>
<td>1.59</td>
<td>0.114</td>
</tr>
<tr>
<td>During the past year, I have thought a lot about changing my marijuana use:</td>
<td>0-10</td>
<td>5.36 (3.12)</td>
<td>5.53 (2.61)</td>
<td>0.344</td>
<td>0.732</td>
</tr>
<tr>
<td>During the past year, I’ve had mixed emotions about my level of marijuana use:</td>
<td>0-10</td>
<td>4.43 (3.22)</td>
<td>5.09 (3.24)</td>
<td>1.25</td>
<td>0.213</td>
</tr>
</tbody>
</table>

Note. Statistically significant results are bold-faced using a Bonferroni correction
* p<.05.
Table 2.

*Frequency of Using Each Language Category: Face-to-Face MTIs versus Computer-Mediated MTIs*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>FTF-MTI</th>
<th></th>
<th>CM-MTI</th>
<th></th>
<th>t (143)</th>
<th>p-value</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range</strong></td>
<td><strong>M (SD)</strong></td>
<td><strong>Range</strong></td>
<td><strong>M(SD)</strong></td>
<td><strong>t (143)</strong></td>
<td><strong>p-value</strong></td>
<td><strong>d</strong></td>
<td></td>
</tr>
<tr>
<td>Not coded</td>
<td>3-77</td>
<td>15.70 (13.10)</td>
<td>1-20</td>
<td>6.03 (4.21)</td>
<td>5.83</td>
<td>&lt;0.001*</td>
<td>0.96</td>
</tr>
<tr>
<td>Neutral</td>
<td>0-17</td>
<td>4.18 (3.33)</td>
<td>0-12</td>
<td>2.46 (2.10)</td>
<td>3.77</td>
<td>&lt;0.001*</td>
<td>0.61</td>
</tr>
<tr>
<td>Desire (ST)</td>
<td>0-15</td>
<td>2.05 (2.63)</td>
<td>0-6</td>
<td>1.26 (1.53)</td>
<td>2.17</td>
<td>.032*</td>
<td>0.36</td>
</tr>
<tr>
<td>Ability (ST)</td>
<td>0-13</td>
<td>2.10 (2.80)</td>
<td>0-14</td>
<td>1.12 (2.03)</td>
<td>2.40</td>
<td>.018*</td>
<td>0.39</td>
</tr>
<tr>
<td>Reasons (ST)</td>
<td>4-103</td>
<td>27.49 (17.66)</td>
<td>3-38</td>
<td>14.88 (7.44)</td>
<td>5.47</td>
<td>&lt;0.001*</td>
<td>0.91</td>
</tr>
<tr>
<td>Need (ST)</td>
<td>0-4</td>
<td>0.23 (0.69)</td>
<td>0-1</td>
<td>0.04 (0.21)</td>
<td>2.19</td>
<td>.030*</td>
<td>0.36</td>
</tr>
<tr>
<td>Commitment (ST)</td>
<td>0-37</td>
<td>12.84 (7.89)</td>
<td>0-19</td>
<td>7.19 (4.08)</td>
<td>5.31</td>
<td>&lt;0.001*</td>
<td>0.88</td>
</tr>
<tr>
<td>Readiness (ST)</td>
<td>0-3</td>
<td>0.16 (0.51)</td>
<td>0-2</td>
<td>0.10 (0.35)</td>
<td>.71</td>
<td>.477</td>
<td>0.13</td>
</tr>
<tr>
<td>Desire (CT)</td>
<td>0-22</td>
<td>3.03 (3.97)</td>
<td>0-12</td>
<td>1.56 (2.29)</td>
<td>2.68</td>
<td>.008*</td>
<td>0.44</td>
</tr>
<tr>
<td>Ability (CT)</td>
<td>0-9</td>
<td>1.51 (2.004)</td>
<td>0-5</td>
<td>1.15 (1.47)</td>
<td>1.22</td>
<td>.225</td>
<td>0.20</td>
</tr>
<tr>
<td>Reasons (CT)</td>
<td>4-65</td>
<td>21.35 (12.40)</td>
<td>2-32</td>
<td>9.66 (6.05)</td>
<td>7.07</td>
<td>&lt;0.001*</td>
<td>1.17</td>
</tr>
<tr>
<td>Need (CT)</td>
<td>0-7</td>
<td>0.51 (1.13)</td>
<td>0-4</td>
<td>0.26 (0.66)</td>
<td>1.55</td>
<td>.125</td>
<td>0.26</td>
</tr>
<tr>
<td>Commitment (CT)</td>
<td>0-18</td>
<td>6.92 (4.10)</td>
<td>0-18</td>
<td>4.26 (3.30)</td>
<td>4.27</td>
<td>&lt;0.001*</td>
<td>0.71</td>
</tr>
<tr>
<td>Readiness (CT)</td>
<td>0-3</td>
<td>0.19 (0.56)</td>
<td>0-1</td>
<td>0.01 (0.12)</td>
<td>2.59</td>
<td>.011*</td>
<td>0.43</td>
</tr>
</tbody>
</table>

*Note. ST indicates sustain talk; CT indicates change talk. Statistically significant results are bold-faced using a Bonferroni correction (0.05/14 tests =0.004); * denotes p<.05.*
Table 3.

Proportion of Language Statements in Each Language Category: Face-to-Face MTIs versus Computer-Mediated MTIs

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th><strong>FTF-MTI</strong></th>
<th><strong>CM-MTI</strong></th>
<th><strong>t (143)</strong></th>
<th><strong>p-value</strong></th>
<th><strong>d</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not coded</strong></td>
<td>0.16 (0.08)</td>
<td>0.12 (0.07)</td>
<td>3.18</td>
<td>0.002*</td>
<td>0.53</td>
</tr>
<tr>
<td>Neutral</td>
<td>0.04 (0.03)</td>
<td>0.05 (0.04)</td>
<td>-1.02</td>
<td>0.317</td>
<td>-0.28</td>
</tr>
<tr>
<td>Desire (ST)</td>
<td>0.02 (0.03)</td>
<td>0.02 (0.03)</td>
<td>-0.56</td>
<td>0.577</td>
<td>0.00</td>
</tr>
<tr>
<td>Ability (ST)</td>
<td>0.02 (0.03)</td>
<td>0.02 (0.03)</td>
<td>-0.07</td>
<td>0.947</td>
<td>0.00</td>
</tr>
<tr>
<td>Reasons (ST)</td>
<td>0.27 (0.09)</td>
<td>0.297 (0.11)</td>
<td>-1.46</td>
<td>0.147</td>
<td>-0.27</td>
</tr>
<tr>
<td>Need (ST)</td>
<td>0.002 (0.01)</td>
<td>0.001 (0.01)</td>
<td>1.41</td>
<td>0.161</td>
<td>0.10</td>
</tr>
<tr>
<td>Commitment (ST)</td>
<td>0.13 (0.06)</td>
<td>0.15 (0.08)</td>
<td>-1.30</td>
<td>0.195</td>
<td>-0.28</td>
</tr>
<tr>
<td>Readiness (ST)</td>
<td>0.002 (0.01)</td>
<td>0.003 (0.01)</td>
<td>-0.75</td>
<td>0.453</td>
<td>-0.10</td>
</tr>
<tr>
<td>Desire (CT)</td>
<td>0.0329 (0.03)</td>
<td>0.034 (0.05)</td>
<td>-0.786</td>
<td>0.433</td>
<td>-0.03</td>
</tr>
<tr>
<td>Ability (CT)</td>
<td>0.015 (0.02)</td>
<td>0.023 (0.03)</td>
<td>-1.79</td>
<td>0.075</td>
<td>-0.32</td>
</tr>
<tr>
<td>Reasons (CT)</td>
<td>0.22 (0.08)</td>
<td>0.19 (0.08)</td>
<td>2.34</td>
<td>0.021*</td>
<td>0.37</td>
</tr>
<tr>
<td>Need (CT)</td>
<td>0.006 (0.01)</td>
<td>0.005 (0.01)</td>
<td>0.46</td>
<td>0.645</td>
<td>0.10</td>
</tr>
<tr>
<td>Commitment (CT)</td>
<td>0.08 (0.05)</td>
<td>0.09 (0.07)</td>
<td>-1.60</td>
<td>0.111</td>
<td>-0.17</td>
</tr>
<tr>
<td>Readiness (CT)</td>
<td>0.002 (0.007)</td>
<td>0.0002 (0.002)</td>
<td>2.52</td>
<td>0.009*</td>
<td>0.34</td>
</tr>
</tbody>
</table>

*Note.* ST indicates sustain talk; CT indicates change talk. Statistically significant results are bold-faced using a Bonferroni correction (0.05/14 tests = 0.004); * denotes p < .05.
Table 4.

Valence Ratings: Face-to-Face MTIs versus Computer-Mediated MTIs

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>FTF-MTI M (SD)</th>
<th>CM-MTI M(SD)</th>
<th>t</th>
<th>df</th>
<th>p-value</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire</td>
<td>0.73 (2.10)</td>
<td>0.09 (2.49)</td>
<td>1.49</td>
<td>114</td>
<td>0.139</td>
<td>0.28</td>
</tr>
<tr>
<td>Ability</td>
<td>-0.41 (1.84)</td>
<td>-0.01(2.29)</td>
<td>-0.94</td>
<td>97</td>
<td>0.348</td>
<td>-0.19</td>
</tr>
<tr>
<td>Reasons</td>
<td>-0.08 (0.95)</td>
<td>-0.48(0.85)</td>
<td>2.63</td>
<td>143</td>
<td>0.010*</td>
<td>0.44</td>
</tr>
<tr>
<td>Need</td>
<td>1.36 (2.49)</td>
<td>2.64 (2.21)</td>
<td>-1.62</td>
<td>39</td>
<td>0.112</td>
<td>-0.52</td>
</tr>
<tr>
<td>Commitment</td>
<td>-0.47 (1.50)</td>
<td>-0.35 (2.02)</td>
<td>-0.41</td>
<td>143</td>
<td>0.680</td>
<td>-0.07</td>
</tr>
<tr>
<td>Readiness</td>
<td>0.12 (2.58)</td>
<td>-1.86 (2.27)</td>
<td>1.76</td>
<td>22</td>
<td>0.092</td>
<td>0.77</td>
</tr>
</tbody>
</table>

Note. The sample size for therapist prompted (TH) statements was too small to run t-tests comparisons. Statistically significant results are bold-faced using a Bonferroni correction (0.05/6 tests =0.008); * denotes p<.05.
Table 5.

*Moderation Analysis Predicting Frequency of Marijuana Use at Two-Month Follow-Up*

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized $b$</th>
<th>Standardized $\beta$</th>
<th>SE</th>
<th>$t$</th>
<th>$p$</th>
<th>95% LLCI</th>
<th>95% ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.83</td>
<td>---</td>
<td>1.527</td>
<td>-1.20</td>
<td>0.235</td>
<td>-4.86</td>
<td>1.21</td>
</tr>
<tr>
<td>Gender (0=Male and 1=Female)</td>
<td>4.37</td>
<td>.125</td>
<td>1.641</td>
<td>2.65</td>
<td>0.009*</td>
<td>1.09</td>
<td>7.65</td>
</tr>
<tr>
<td>Past Two-Months Frequency of Marijuana Use at Baseline</td>
<td>0.92</td>
<td>.900</td>
<td>0.054</td>
<td>16.93</td>
<td>0.001*</td>
<td>0.81</td>
<td>1.03</td>
</tr>
<tr>
<td>Condition (0=FTF-MTI vs 1=CM-MTI)</td>
<td>0.17</td>
<td>.005</td>
<td>1.722</td>
<td>0.10</td>
<td>0.924</td>
<td>-3.25</td>
<td>3.58</td>
</tr>
<tr>
<td>Mean Strength for Commitment Language</td>
<td>-0.44</td>
<td>-.043</td>
<td>0.815</td>
<td>-0.54</td>
<td>0.590</td>
<td>-2.06</td>
<td>1.18</td>
</tr>
<tr>
<td>Interaction</td>
<td>1.00</td>
<td>.078</td>
<td>0.988</td>
<td>1.01</td>
<td>0.315</td>
<td>-0.97</td>
<td>2.96</td>
</tr>
</tbody>
</table>

*Note. $R^2=0.79$. Number of bootstrap samples for 95 % bias corrected bootstrap confidence intervals was 5,000. Statistically significant results are bold-faced; * denotes $p<.05.$*
### Table 6.

**Correlations Between Valence Ratings, Frequency of Language Statements Per Category, and Marijuana Use**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Valence Ratings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. D</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>2. A</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Rs</td>
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<td></td>
</tr>
<tr>
<td>4. N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Rd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Frequency of Language Statements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. D (ST)</td>
<td>-.42**</td>
<td>-.13</td>
<td>-.08</td>
<td>-.06</td>
<td>-.13</td>
<td>.04</td>
</tr>
<tr>
<td>8. A (ST)</td>
<td>-.08</td>
<td>-.39**</td>
<td>-.17*</td>
<td>-.16</td>
<td>-.17*</td>
<td>-.45*</td>
</tr>
<tr>
<td>9. Rs (ST)</td>
<td>-.13</td>
<td>-.09</td>
<td>-.32**</td>
<td>-.34*</td>
<td>-.30**</td>
<td>-.11</td>
</tr>
<tr>
<td>10. N (ST)</td>
<td>.07</td>
<td>-.05</td>
<td>-.06</td>
<td>-.77**</td>
<td>-.12</td>
<td>-.01</td>
</tr>
<tr>
<td>11. C (ST)</td>
<td>-.14</td>
<td>-.21*</td>
<td>-.12</td>
<td>-.22</td>
<td>-.46**</td>
<td>-.26</td>
</tr>
<tr>
<td>12. Rd (ST)</td>
<td>-.17</td>
<td>-.002</td>
<td>-.05</td>
<td>.06</td>
<td>-.16</td>
<td>-.75**</td>
</tr>
<tr>
<td>13. D (CT)</td>
<td>.41**</td>
<td>.03</td>
<td>.17*</td>
<td>.09</td>
<td>.22**</td>
<td>.24</td>
</tr>
<tr>
<td>14. A (CT)</td>
<td>-.01</td>
<td>.55**</td>
<td>-.01</td>
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### Past-Two Months Marijuana Use

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Past-Two Months Marijuana Use

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Appendix A: Informed Consent

University of Texas at El Paso (UTEP) Institutional Review Board
Informed Consent Form for Research Involving Human Subjects

Protocol Title: Current Opinions Project
Principal Investigator: Jon Amastae, Lawrence Cohn
UTEP: Languages and Linguistics, Psychology

1. Introduction

You are being asked to take part voluntarily in the research project described below. Please take your time making a decision. Before agreeing to take part in this research study, it is important that you read the consent form that describes the study. Please ask the study researcher or the study staff to explain any words or information that you do not clearly understand.

2. Why is this study being done?

You have been asked to take part in a research study that seeks to learn about students’ opinions regarding the legalization of marijuana. The study also seeks to investigate the factors that influence a young adult’s decision to initiate, increase, or decrease the recreational use of marijuana. Your participation should help us develop methods for providing better assistance to students who are ambivalent about their level of marijuana use or non-use. The research is being conducted under the direction of Dr. Jon Amastae and Dr. Lawrence Cohn at the University of Texas at El Paso.

Approximately 150 participants will be enrolling in this study at UTEP.

You are being asked to participate in this study because you are a university student between the ages of 18-28 who may have contemplated using marijuana or may have used it recreationally at some time.

If you are eligible to participate and you decide to enroll in this study, then we will ask you to complete an initial 25 minute survey followed by a 15–20 minute interview. The survey and interview will focus on your opinions regarding the legalization of marijuana, you past use or non-use of marijuana, and your future intentions to initiate, increase, or decrease marijuana use.
We will then ask you to return to our office two months later to complete a final 10-15 minute survey regarding marijuana use.

3. What is involved in the study?
If you agree to take part in this study then we will ask you to meet with our project assistants on two separate occasions. During the first 50 minute meeting we will ask you to complete a brief demographic survey, opinion survey, and marijuana use survey.

During the first meeting you will also be asked to participate in a brief, confidential, interview regarding your experience with marijuana (non-use, occasional use, frequent use, etc). We will ask you to discuss your perception of the benefits and risks of using marijuana, and we’ll ask you to reflect on your own intentions to use or not use marijuana in the future. You will not be asked to provide your name, student ID number, or any other identifying information. Some participants will complete this interview in a face-to-face setting with one of our interviewers; other participants will complete the interview via a computer, with the participant sitting in front of a computer terminal in one of our project offices and the interviewer sitting in front of a different computer terminal in a different project office. Random assignment will be used to determine which participants will complete the interviews via computer. That is, we will essentially flip-a-coin to determine who completes the interview via computer. That is, we will essentially flip-a-coin to determine who completes the interview via computer. Face-to-face interviews will be audio recorded and then transcribed; the audio recording itself will then be erased or destroyed in order to ensure that there is no record of your voice completing the interview. Any identifying information that you accidently provide during the course of the interview (e.g., the name of your high school) will also be deleted from the transcript. Our goal is to make you as comfortable as possible when discussing your views and behavior involving marijuana. The transcript of the interview will only be identified by the self-generated ID number that you provide us. Interviews that are completed via computer will automatically produce a transcript of the interview. Here, too, the transcript of the interview will only be identified by the self-generated ID number that you provide us. The computer interviews will be conducted only on project computers that cannot be linked to any participant.

Approximately two months after the first meeting we will ask you to return to our office to complete a final 10-15 minute survey again assessing your opinions regarding the legalization of marijuana, as well as assessing your own use or non-use of marijuana.

4. What are the risks and discomforts of the study?
There is a possibility that you will find the interview and survey questions uncomfortable because they address your own marijuana use or non-use. Remember that you can stop your involvement in this project at any time. If you begin to feel uncomfortable and want to end your participation, then you may do so at any time. Participants who complete session I (about 50 minutes) will be paid $20; participants who complete Session II (about 10 minutes) will be paid $30. At the end of Session II we will provide you with an information sheet listing local and national resources for individuals who want more scientific information about marijuana as well as information regarding counseling services, hotlines, and referral services.
All survey responses will be anonymous. You will **not** be asked to put your name, student ID number or other identifying information on the survey forms. Instead, we will ask you to generate your own ID number by responding to a series of questions. Your unique set of responses will serve as your ID number. Your interviews will also be identified using your self-generated ID number. Responses will remain confidential and identified by code number only. Data will only be reported in group form; individual data will not be available to other individuals or the participants. Under rare circumstances it is possible that a legal entity could request copies of our collection of surveys and transcripts. However, because you have not provided your name, student ID number, or other identifying information, it will be virtually impossible to associate a survey or transcribed interview with any specific participant.

5. **What will happen if I am injured in this study?**

The University of Texas at El Paso and its affiliates do not offer to pay for or cover the cost of medical treatment for research related illness or injury. No funds have been set aside to pay or reimburse you in the event of such injury or illness. You will not give up any of your legal rights by signing this consent form. You should report any such injury to Dr. Jon Amastae at 915-747-6803 or Lawrence Cohn at 915-747-6567 and to the UTEP Institutional Review Board (IRB) at (915-747-8841) or irb.orsp@utep.edu.

6. **Are there benefits to taking part in this study?**

Besides monetary payment, there will be no direct benefits to you for taking part in this study. You may benefit from your own self-reflections regarding your marijuana use or non-use.

7. **What other options are there?**

You have the option not to take part in this study. There will be no penalties involved if you choose not to take part in this study.

8. **Who is paying for this study?**

UTEP and Principal Investigators Amastae and Cohn are receiving funding from the National Institutes of Health to conduct this study.

9. **What are my costs?**

There are no direct costs. You will be responsible for travel to and from the research site and any other incidental expenses.

10. **Will I be paid to participate in this study?**

You will be paid $50 for participation in this study. You will receive $20 for completing the first session, and you will be paid $30 for returning in 2 months to complete the 10-15 minute questionnaire that will be administered during the second session.
11. What if I want to withdraw, or am asked to withdraw from this study?

Taking part in this study is voluntary. You have the right to choose not to take part in this study. If you do not take part in the study, there will be no penalty.

If you choose to take part, you have the right to stop at any time. However, we encourage you to talk to a member of the research group so that they know why you are leaving the study. If there are any new findings during the study that may affect whether you want to continue to take part, you will be told about them.

The researcher may decide to stop your participation without your permission, if he or she thinks that being in the study may cause you harm or discomfort.

12. Who do I call if I have questions or problems?

You may ask any questions you have now. If you have questions later, you may contact Professor Amastae (915-747-6803, jamastae@utep.edu) or Professor Cohn (915-747-6567, Lcohn@utep.edu) or you may contact Ms. Lorraine Torres, Ed.D.,MS, MT(ASCP), CLS(NCA), Chair of the Institutional Review Board, University of Texas at El Paso (lorit@utep.edu; 915-747-7282).

If you have questions or concerns about your participation as a research subject, please contact the UTEP Institutional Review Board (IRB) at (915-747-8841) or irb.orsp@utep.edu.

13. What about confidentiality?

Your part in this study is confidential. None of the information will identify you by name. You will not be asked to put your name on the interview or surveys. Instead, we will ask you to generate a unique identification number based on several pieces of information, such as the name of your favorite actor or actress. We ask you to generate this type of identification number to increase the anonymity of your responses and increase your comfort level while completing the surveys.

All of the interviews will be transcribed. Some of the interviews will be audio recorded and subsequently transcribed, while other interviews will be conducted via a computer and thus transcribed automatically. However, we will not ask you to say your name during the interview; nor will your name be placed on the audio tape or transcription of the tape or computer exchange. The tape recording will be erased or destroyed after the transcription has been completed. The transcription will only be identified by the unique identification number that you generate (described above).

All surveys, audio recordings, and transcriptions will be kept in locked file cabinets in the Psychology Department or the Department of Languages and Linguistics. All participants in this project, including all personnel contracted for recruitment will sign a confidentiality and privacy statement stating that they will not share survey or interview information obtained from any specific participant with non-research personnel.
All electronic files on office computers confidential information will be kept in password-
protected folders and backed up on the main UTEP server following UTEP back up schedules.
No files containing confidential information will be allowed in any portable personal computer,
CD-ROMs, flash drives, or any other portable media. Drs. Amastae & Cohn, with the assistance
of project staff, will be responsible for the physical integrity of the data and the backup media
for the entire project

All data files containing confidential information will have a unique password assigned by Drs.
Amastae or Cohn. Project staff or professional transcribers who transcribe the audio recordings
will also sign a confidentiality statement.

Every effort will be made to keep your information anonymous or confidential. Your anonymous
survey and confidential interview may be released if required by law. Organizations that may
inspect and/or copy your research records for quality assurance and data analysis include, but are
not necessarily limited to:

- The sponsor or an agent for the sponsor
- Department of Health and Human Services
- UTEP Institutional Review Board

Because of the need to release information to these parties, absolute confidentiality cannot be
guaranteed. The results of this research study may be presented at meetings or in publications;
however, your identity will not be disclosed in those presentations.

14. Mandatory reporting
If information is revealed about child abuse or neglect, or potentially dangerous future behavior
to others, the law requires that this information be reported to the proper authorities.

15. Authorization Statement
I have read each page of this paper about the study (or it was read to me). I know that being in
this study is voluntary and I choose to be in this study. I know I can stop being in this study
without penalty. I will get a copy of this consent form now and can get information on results of
the study later if I wish.

Participant Name: ___________________________ Date: ____________

Participant Signature: ___________________________ Time: ____________
Appendix B: Self-Generated ID Number

Generate Your Own Identification Number:

We hope that you will respond to the remaining survey questions as accurately and as honestly as possible. Your responses will be COMPLETELY ANONYMOUS. Thus DO NOT write your name on this survey. Instead, we will ask you, again, to generate your own ID number by answering the seven (7) questions on the next page.

These seven items are the same questions that you recently answered when you completed our Eligibility Survey. Please provide the same answers that you provided last time!
**Generate Your Own ID:**

1. Which of the following is your favorite color?  
   1. **Blue**  5. **Red**  
   2. **Green**  6. **Yellow**  
   3. **Black**  7. **White**  
   4. **Pink**  8. **Purple**

2. What was your favorite subject in High School?  
   1. **Math/Science**  5. **History**  
   2. **Art/Music**  6. **English**  
   3. **Economics**  7. **Speech**  
   4. **Foreign Language**  8. **Electives**

3. What is your favorite type of T.V. show?  
   1. **Comedy**  5. **Horror**  
   2. **Science Fiction**  6. **Sports**  
   3. **Romance**  7. **Crime**  
   4. **Reality T.V.**  8. **News**

4. What is your favorite type of car/truck?  
   1. **Mercedes**  5. **Volkswagen**  
   2. **Volvo**  6. **Ford**  
   3. **Buick**  7. **Nissan**  
   4. **BMW**  8. **Toyota**

5. What is your favorite type of food?  
   1. **Burgers/hotdogs**  5. **Italian**  
   2. **Chinese**  6. **Mexican**  
   3. **German**  7. **Vegetarian**  
   4. **Indian**  8. **Seafood**

6. What is your favorite type of music?  
   1. **Country**  5. **Metal**  
   2. **Classical**  6. **Pop**  
   3. **Electronic**  7. **Rap**  
   4. **Gospel**  8. **Rock**

7. What month were you born?  
   1. **January**  7. **July**  
   2. **February**  8. **August**  
   3. **March**  9. **September**  
   4. **April**  10. **October**  
   5. **May**  11. **November**  
   6. **June**  12. **December**
Appendix C: Eligibility Questionnaire

Date: ____

Eligibility Survey

Thank you for your interest in our “Current Opinions” project. During the past couple of years a national conversation has taken place regarding the use of marijuana, tobacco, and alcohol. Some communities are discussing restricting tobacco or alcohol use while other communities are discussing legalizing marijuana use. Such conversations have led many people think more carefully about their own use of these substances. Some people have thought about reducing their current use of one or more of these substances, while other people have thought about initiating or increasing their use of these substances.

We would like to learn more about your own opinions and behavior regarding marijuana use. To determine if you are eligible to participate in our project please complete the attached survey. Please respond to the questions as accurately and as honestly as possible. Your responses will be COMPLETELY ANONYMOUS. Thus DO NOT write your name on this survey or any other identifying information. Instead, we will ask you to generate your own ID number by answering the seven (7) questions below. Then complete the rest of the survey.

You can call our office tomorrow at 915-747-6430 to determine if your ID number is on the list of eligible participants; or you can come by our office and review the list yourself to determine if your self-generated ID is on the list. Please take a copy of your self-generated ID number with you before leaving our office today.
Generate Your Own Identification Number:

We hope that you will respond to the remaining survey questions as accurately and as honestly as possible. Your responses will be COMPLETELY ANONYMOUS. Thus **DO NOT write your name** on this survey. Instead, we will ask you, again, to generate your own ID number by answering the seven (7) questions on the next page.

These seven items are the same questions that you recently answered when you completed our Eligibility Survey. Please provide the same answers that you provided last time!
Generate Your Own ID:

1. Which of the following is your favorite color?
   1. ___Blue
   2. ___Green
   3. ___Black
   4. ___Pink
   5. ___Red
   6. ___Yellow
   7. ___White
   8. ___Purple

2. What was your favorite subject in High School?
   1. ___Math/Science
   2. ___Art/Music
   3. ___Economics
   4. ___Foreign Language
   5. ___History
   6. ___English
   7. ___Speech
   8. ___Electives

3. What is your favorite type of T.V. show?
   1. ___Comedy
   2. ___Science Fiction
   3. ___Romance
   4. ___Reality T.V
   5. ___Horror
   6. ___Sports
   7. ___Crime
   8. ___News

4. What is your favorite type of car/truck?
   1. ___Mercedes
   2. ___Volvo
   3. ___Buick
   4. ___BMW
   5. ___Volkswagen
   6. ___Ford
   7. ___Nissan
   8. ___Toyota

5. What is your favorite type of food?
   1. ___Burgers/hotdogs
   2. ___Chinese
   3. ___German
   4. ___Indian
   5. ___Italian
   6. ___Mexican
   7. ___Vegetarian
   8. ___Seafood

6. What is your favorite type of music?
   1. ___Country
   2. ___Classical
   3. ___Electronic
   4. ___Gospel
   5. ___Metal
   6. ___Pop
   7. ___Rap
   8. ___Rock

7. What month were you born?
   1. ___January
   2. ___February
   3. ___March
   4. ___April
   5. ___May
   6. ___June
   7. ___July
   8. ___August
   9. ___September
   10. ___October
   11. ___November
   12. ___December
Background Survey

Please answer the following questions.

1a. Age: _____  
1b. Gender: _____ Male _____ Female

2. During your **lifetime** have you ever **smoked cigarettes** (more than a few puffs)?  
   _____ Yes _____ No

3. During your **lifetime** have you ever **drunk alcohol** (more than a few sips)?  
   _____ Yes _____ No

4. During your **lifetime** have you ever **smoked or consumed marijuana**?  
   _____ Yes _____ No

5. During the **past year**, how often have you **smoked or consumed marijuana**?  
   _____ never _____ once or twice _____ occasionally _____ frequently

6. During the **past year**, approximately how many times (if any) have you **smoked or consumed marijuana**?  
   _____ 0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10 _____ 11 _____ 12 _____ 13 _____ 14  
   _____ 35-36 _____ 37-38 _____ 39-40 _____ 41-42 _____ 43-44 _____ 45-46 _____ 47-48 _____ 49-50 _____ more than 50 times

7. During the **past two months** how many times (if any) have you **smoked or consumed marijuana**?  
   _____ 0 _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10 _____ 11 _____ 12 _____ 13 _____ 14  
   _____ 35-36 _____ 37-38 _____ 39-40 _____ 41-42 _____ 43-44 _____ 45-46 _____ 47-48 _____ 49-50 _____ more than 50 times
Using the following scale, please indicate……

8. How much have you thought about **changing** your marijuana use or non-use during the past year?

   0……1……2……3……4……5……6……7……8……9……10
Not at all Medium amount A lot

9. How much have you thought about **increasing** your marijuana use or non-use during the past year?

   0……1……2……3……4……5……6……7……8……9……10
Not at all Medium amount A lot

10. How much have you thought about **reducing** your marijuana use during the past year? *If you don’t use, skip to question 13.*
   
   0……1……2……3……4……5……6……7……8……9……10
Not at all Medium amount A lot

11. How much have you thought about **using stronger** or more potent marijuana during the past year?

   0……1……2……3……4……5……6……7……8……9……10
Not at all Medium amount A lot

12. How much have you thought about **using weaker** or less potent marijuana during the past year?

   0……1……2……3……4……5……6……7……8……9……10
Not at all Medium amount A lot

13. How much have you thought about **taking a trip to a state where the purchase of recreational marijuana is legal (such as Colorado)?**

   0……1……2……3……4……5……6……7……8……9……10
Not at all Medium amount A lot

14. How **certain** are you about **maintaining** your current level of marijuana use or non-
HOW MUCH DO YOU AGREE WITH THE FOLLOWING TWO STATEMENTS?

15. During the **past year** I have thought a lot about **changing** my level of marijuana use or non-use.

   0……1……2……3……4……5……6……7……8……9……10
   Not Medium A
   at all amount lot

16. During the **past year** I’ve had **mixed emotions** about my level of marijuana use or non-use.

   0……1……2……3……4……5……6……7……8……9……10
   Not Medium A
   at all amount lot

17. During the **past two months** how many times (if any) have you used **marijuana-related substances** (for example, Spice)?

   __0__ __1__ __2__ __3__ __4__ __5__ __6__ __7__ __8__ __9__ __10__ __11__ __12__ __13__ __14__
   __35-36__ __37-38__ __39-40__ __41-42__ __43-44__ __45-46__ __47-48__ __49-50__ __more than 50 times__

18. During the **past year** how many times (if any) have you used **marijuana-related substances** (for example, Spice)?

   __0__ __1__ __2__ __3__ __4__ __5__ __6__ __7__ __8__ __9__ __10__ __11__ __12__ __13__ __14__
   __35-36__ __37-38__ __39-40__ __41-42__ __43-44__ __45-46__ __47-48__ __49-50__ __more than 50 times__
Appendix D: Demographics Questionnaire

Please complete this one page Background Survey. Then remove this page from your packet to ensure the anonymity of your remaining responses!

**Part I: Background Survey I**

1. Age: _____

2. Gender: _____ Female (1) _____ Male (2)

3. How do you describe yourself?
   - (1) African-American
   - (2) Asian/Asian-American/Pacific Islander
   - (3) Caucasian/White (not of Hispanic origin)
   - (4) Mexican American, Hispanic, Latino
   - (5) Native American
   - (6) Other (write in) ____________________

4. What is your approximate college level?
   - (1) Freshman (0-29 credits)
   - (2) Sophomore (30-59 credits)
   - (3) Junior (60-89 credits)
   - (4) Senior (90-120 credits)
   - (5) Not sure

5. What was the first language that you learned?
   - (1) English
   - (2) Spanish
   - (3) Other

6. What language do you consider your stronger language overall?
   - (1) English
   - (2) Spanish
   - (3) Both English and Spanish
   - (4) Other
Appendix E: Drug Use Questionnaire

Part II: Behavior Survey

1. During your lifetime have you ever smoked cigarettes (more than a few puffs)?
   _____Yes    _____No

2. During your lifetime have you ever drunk alcohol (more than a few sips)?
   _____Yes    _____No

3. During your lifetime have you ever smoked or consumed marijuana?
   _____Yes    _____No

4. During the past year, how often have you smoked or consumed marijuana?
   _____never    _____once or twice    _____occasionally    _____frequently

5. What is the potency (strength) of marijuana that you typically consume?

   0........1........2........3........4........5........6
   Not at all                                Very potent
   Moderately                                
   potent                                    

6. In general, how many hits (puffs) of marijuana do you consume per smoking occasion(session)?
   0     1     2     3     4     5     6     7     8     9     10    11    12    13
   14    15    16    17    18    19    20    more than 20 puffs

7. During the past year, approximately how many times (if any) have you smoked or consumed marijuana?

   0     1     2     3     4     5     6     7     8     9     10    11    12    13    14
   35-36  37-38  39-40  41-42  43-44  45-46  47-48  49-50    more than 50 times
8. During the past two months, how many times (if any) have you smoked or consumed marijuana?

   ___0    ___1    ___2    ___3    ___4    ___5    ___6    ___7    ___8    ___9    ___10    ___11    ___12    ___13     ___14
   ___35-36    ___37-38    ___39-40    ___41-42    ___43-44    ___45-46    ___47-48    ___49-50    ___more than 50 times

9. During the past two months, how many joints of marijuana have you smoked or consumed?

   ___none    ___¼ of a joint or less    ___1/2 a joint    ___3/4 joint    ___1 joint    ___1 & ½ joints    ___1 & ¾ joints
   ___2 joints    ___2 & ¼ joints    ___2 & ½ joints    ___2 & ¾ joints    ___3 joints    ___3 & ½ joints
   ___4    ___5    ___6    ___7    ___8    ___9    ___10    ___11    ___12    ___13     ___14     ___15-16    ___17-18
   ___37-38    ___39-40    ___41-42    ___43-44    ___45-46    ___47-48    ___49-50    ___more than 50 joints

10. During the past two months, approximately how many hits (puffs) of marijuana have you smoked or consumed?

    ___0    ___1    ___2    ___3    ___4    ___5    ___6    ___7    ___8    ___9    ___10    ___11    ___12    ___13     ___14
    ___35-36    ___37-38    ___39-40    ___41-42    ___43-44    ___45-46    ___47-48    ___49-50    ___more than 50 puffs

Future Intentions

11. During the next two months I anticipate (put a check-mark next to only one response):

    ___increasing my marijuana use a lot
    ___increasing my marijuana use a medium amount
    ___increasing my marijuana use a little
    ___maintaining my marijuana use at my current level
    ___reducing my marijuana use a little
    ___reducing my marijuana use a medium amount
    ___reducing my marijuana use a lot

12. During the next two months I anticipate smoking or using marijuana:

    ___0    ___1    ___2    ___3    ___4    ___5    ___6    ___7    ___8    ___9    ___10    ___11    ___12    ___13     ___14
    ___35-36    ___37-38    ___39-40    ___41-42    ___43-44    ___45-46    ___47-48    ___49-50    ___more than 50 times
Legalization Opinions

13. In your opinion, should the medical use of marijuana be made legal for adults?
   _____ Yes     _____ No     _____ Not sure     _____ No Opinion

14. In your opinion, should the recreational use of marijuana be made legal for adults?
   _____ Yes     _____ No     _____ Not sure     _____ No Opinion

15. In your opinion, should the medical and recreational use of marijuana by adults be legal and regulated in the same way that alcohol and tobacco are regulated?
   _____ Yes     _____ No     _____ Not sure     _____ No Opinion

Part II: Background Survey

16. During the past two months how many times (if any) have you used marijuana-related substances (for example, Spice)?
   ___ 0    ___ 1    ___ 2    ___ 3    ___ 4    ___ 5    ___ 6    ___ 7    ___ 8    ___ 9    ___ 10    ___ 11    ___ 12    ___ 13    ___ 14
   ___ 35-36    ___ 37-38    ___ 39-40    ___ 41-42    ___ 43-44    ___ 45-46    ___ 47-48    ___ 49-50    ___ more than 50 times

17. During the past year how many times (if any) have you used marijuana-related substances (for example, Spice)?
   ___ 0    ___ 1    ___ 2    ___ 3    ___ 4    ___ 5    ___ 6    ___ 7    ___ 8    ___ 9    ___ 10    ___ 11    ___ 12    ___ 13    ___ 14
   ___ 35-36    ___ 37-38    ___ 39-40    ___ 41-42    ___ 43-44    ___ 45-46    ___ 47-48    ___ 49-50    ___ more than 50 times

18. During the past year how many times (if any) have you drunk alcohol AND smoked marijuana within two hours of each other?
   ___ 0    ___ 1    ___ 2    ___ 3    ___ 4    ___ 5    ___ 6    ___ 7    ___ 8    ___ 9    ___ 10    ___ 11    ___ 12    ___ 13    ___ 14
   ___ 35-36    ___ 37-38    ___ 39-40    ___ 41-42    ___ 43-44    ___ 45-46    ___ 47-48    ___ 49-50    ___ more than 50 times

19. During the past two months how many times (if any) have you drunk alcohol AND
smoked marijuana within two hours of each other?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>35-36</td>
<td>37-38</td>
<td>39-40</td>
<td>41-42</td>
<td>43-44</td>
<td>45-46</td>
<td>47-48</td>
<td>49-50</td>
<td>more than 50 times</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

35. In general, how many grams of marijuana do you typically smoke or consume per occasion (session)?

<table>
<thead>
<tr>
<th>none</th>
<th>¼ gram</th>
<th>½ gram</th>
<th>¾ gram</th>
<th>1 gram</th>
<th>1 &amp; ¼ grams</th>
<th>1 &amp; ½ grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; ¾ grams</td>
<td>2 grams</td>
<td>2 &amp; ¼ grams</td>
<td>2 &amp; ½ grams</td>
<td>2 &amp; ¾ grams</td>
<td>3 grams</td>
<td>3 &amp; ¼ grams</td>
</tr>
<tr>
<td>3 &amp; ½ grams</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>37-38</td>
<td>39-40</td>
<td>41-42</td>
<td>43-44</td>
<td>45-46</td>
<td>47-48</td>
<td>49-50</td>
</tr>
</tbody>
</table>

36. During the past two months, how many grams of marijuana have you smoked or consumed?

<table>
<thead>
<tr>
<th>none</th>
<th>¼ gram</th>
<th>½ gram</th>
<th>¾ gram</th>
<th>1 gram</th>
<th>1 &amp; ¼ grams</th>
<th>1 &amp; ½ grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; ¾ grams</td>
<td>2 grams</td>
<td>2 &amp; ¼ grams</td>
<td>2 &amp; ½ grams</td>
<td>2 &amp; ¾ grams</td>
<td>3 grams</td>
<td>3 &amp; ¼ grams</td>
</tr>
<tr>
<td>3 &amp; ½ grams</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
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<td>37-38</td>
<td>39-40</td>
<td>41-42</td>
<td>43-44</td>
<td>45-46</td>
<td>47-48</td>
<td>49-50</td>
</tr>
</tbody>
</table>
Appendix F: Perceived risk of DUI-SAM

Driving Intentions

20. In your opinion, how risky or dangerous would it be to drive a motor vehicle **once or twice** within two hours of using a **small amount of marijuana AND drinking a small amount of alcohol** (for example, one or two beers or glasses of wine)?

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not at all</td>
</tr>
<tr>
<td>1</td>
<td>Medium</td>
</tr>
<tr>
<td>2</td>
<td>A lot</td>
</tr>
</tbody>
</table>

21. In your opinion, how risky or dangerous would it be to drive a motor vehicle **occasionally** within two hours of consuming a **small amount of marijuana AND drinking a small amount of alcohol** (for example, one or two beers or glasses of wine)?

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not at all</td>
</tr>
<tr>
<td>1</td>
<td>Medium</td>
</tr>
<tr>
<td>2</td>
<td>A lot</td>
</tr>
</tbody>
</table>

22. In your opinion, how risky or dangerous would it be to drive a motor vehicle **frequently** within two hours of using a **small amount of marijuana AND drinking a small amount of alcohol** (for example, one or two beers or glasses of wine)?

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not at all</td>
</tr>
<tr>
<td>1</td>
<td>Medium</td>
</tr>
<tr>
<td>2</td>
<td>A lot</td>
</tr>
</tbody>
</table>

26. In your opinion, **how many alcoholic drinks** could you consume within a 2 hour period before your driving skills would be seriously affected?

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>½ drink</td>
<td>___</td>
</tr>
<tr>
<td>1 drink</td>
<td>___</td>
</tr>
<tr>
<td>1 &amp; ½ drinks</td>
<td>___</td>
</tr>
<tr>
<td>2 drinks</td>
<td>___</td>
</tr>
<tr>
<td>2 and ½ drinks</td>
<td>___</td>
</tr>
<tr>
<td>3 drinks</td>
<td>___</td>
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<tr>
<td>4 drinks</td>
<td>___</td>
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<td>5 drinks</td>
<td>___</td>
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<td>6 drinks</td>
<td>___</td>
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<tr>
<td>7 drinks</td>
<td>___</td>
</tr>
<tr>
<td>8 drinks</td>
<td>___</td>
</tr>
<tr>
<td>9 drinks</td>
<td>___</td>
</tr>
<tr>
<td>10 or more drinks</td>
<td>___</td>
</tr>
</tbody>
</table>

27. In your opinion, **how much marijuana** could you consume within a 2 hour period before your driving skills would be seriously affected?

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>___</td>
</tr>
<tr>
<td>1</td>
<td>___</td>
</tr>
<tr>
<td>2</td>
<td>___</td>
</tr>
<tr>
<td>3</td>
<td>___</td>
</tr>
<tr>
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72
28. In your opinion, how many alcoholic drinks AND how much marijuana could you consume during the same 2 hour period before your driving skills would be seriously affected? Be sure to write numbers on both blank spaces.

Number of alcoholic drinks: ______
AND Number of marijuana hits (puffs): __
Appendix G: Willingness to DUI-SAM

23. How willing would you be to drive a friend to a mini-mart or fast food restaurant within two hours of smoking a small amount of marijuana AND drinking a small amount of alcohol (such as a couple of beers)?

0……1……2……3……4……5……6……7……8……9……10
Not at all Medium A
amount

24. How willing would you be to drive a friend to a doctor or clinic within two hours of smoking a small amount of marijuana AND drinking a small amount of alcohol (such as a couple of beers)?

0……1……2……3……4……5……6……7……8……9……10
Not at all Medium A
amount

25. How willing would you be to drive a friend home within two hours of smoking a small amount of marijuana AND drinking a small amount of alcohol (such as a couple of beers)?

0……1……2……3……4……5……6……7……8……9……10
Not at all Medium A
amount

29. During the past 12 months, how often have you driven a motor vehicle (car, truck, or motorcycle)?

   ____never   ____1-3 times   ____4-6 times   ____7-12 times   ____13 or more times

30. During the past 12 months, how often did you drive a motor vehicle when you felt high or lightheaded after drinking alcohol?

   ____never   ____1-3 times   ____4-6 times   ____7-12 times   ____13 or more times

31. During the past 12 months, how often did you drive a motor vehicle after drinking alcohol to the point where you would be in trouble if the police had stopped you?

   ____never   ____1-3 times   ____4-6 times   ____7-12 times   ____13 or more times

32. During the past 12 months, how often did you drive a motor vehicle when you felt high or lightheaded after using marijuana?

   ____never   ____1-3 times   ____4-6 times   ____7-12 times   ____13 or more times

33. During the past 12 months, how often did you drive a motor vehicle after consuming marijuana to the point where you would be in trouble if the police had stopped you?

   ____never   ____1-3 times   ____4-6 times   ____7-12 times   ____13 or more times

34. During the past 12 months, how often did you drive a motor vehicle when you felt high or lightheaded after using both alcohol and marijuana during the same two hour period?

   ____never   ____1-3 times   ____4-6 times   ____7-12 times   ____more than 13 times
Appendix I: Motivational Interviews

AUDIO TEMPLATE NON-USER

[Researcher enters room]:
Hi. As my colleague mentioned, there is a national conversation in regards to the legalization of marijuana use. We would like to talk about some of the decisions you may be thinking about making around marijuana use.

1) What are the decision you are thinking about making around marijuana use? (neutral)

   If participant begins to focus solely on ‘legalization debate’ then steer discussion away from the debate itself and give a selective reflection of possible temptations to increase their own marijuana use or remain as a non-user.

   - reflection
   - reflection

2) Why would you like to try marijuana? (1. exploring the positive)

   - reflection
   - reflection

3 What caused you to considering using marijuana now? (2. exploring the positive)

   - reflection
   - reflection

4) Do any of your friends use? (neutral)

   - reflection
   - reflection

5) What are some of the reasons they like to use marijuana? SKIP TO 7 IF Q5 IS NO (3. exploring the positive)

   - reflection
   - reflection

6) You mentioned your friends like XYZ about marijuana, do any of those reasons appeal to you? (3. exploring the positive)
7) What other reasons appeal to you? (4. exploring the positive)

8) From a 0-10 scale, how likely is it that you will try marijuana in the next two months? 0 being not at all likely 10 being very likely.

9) What would cause you to move to a lower number? (If they answer a low number say: Why did you select that number?) (1. exploring the negative)

10) It’s perfectly normal to feel two ways about changing your behavior. What makes you think twice about using marijuana? (2. exploring the negative)

11) What else concerns you about marijuana? (3. exploring the negative)

12) Has anything unusual or dangerous ever happened to your friends while smoking marijuana? If applicable (4. exploring the negative)

13) If they say yes to previous question: Do you see any of those possible outcomes applying to you? (4. exploring the negative)

14) What additional negative consequences might you experience if you began smoking marijuana? (5. Exploring the negative)
15) Same scale, how certain are you that you will try marijuana in the next two months? 0 being not at all certain and 10 being very certain.

16) What would cause you to move to a higher number? (If they answer a high number say: Why did you select that number?) (Exploring the positive)

17) What would you tell someone if they offered you marijuana? (Neutral)

18) What do you plan to do in the next couple of months? (Neutral)

19) What are your additional thoughts about using marijuana or not using marijuana in the next couple of months? (Neutral)

CLOSING

Alright, let me see if I understood where you are at right now in regards to your marijuana use. (Use to give summary of their change talk) On the one hand you’d like to try marijuana to see how it makes you feel, on the other, there are some concerns (e.g.).

Did I leave anything out? (SUMMARY to end session, hear their change talk coming from you)

You’ve provided us with a lot of useful information. We look forward to seeing you in two months and rewarding you for your valuable time on your next visit. Do you have any questions?
[End of interview ]

I’ll walk you out to the next room to pay you and get your contact information.

1) Where did you hear about this study?
2) Here is a copy of your self-generated ID and $20. We will ask you to bring this sheet 2 months from now. We need your initials that you were paid.
3) You’ll complete a 10 minute survey and be paid $30 the next time. Can we get your best contact information: email/phone? See you in two months. Thank you once again.

Goodbye.
Hi. As my colleague mentioned, there is a national conversation in regards to the legalization of marijuana use. We would like to talk about some of the decisions you may be thinking about making around marijuana use.

1) What are the decisions you are thinking about making around marijuana use? (neutral)

   If participant begins to focus solely on ‘legalization debate’ then steer discussion away from the debate itself and give a selective reflection of possible temptations to increase their own marijuana use or possible reasons for reducing their own marijuana use.
   -reflection
   -reflection

2) What do you like about marijuana? (1.exploring the positive)
   -reflection
   -reflection

3) Why are you considering changing your marijuana use now? (2.exploring the positive)

4) Tell me more of what you like about marijuana…… (3.exploring the positive)
   -reflection
   -reflection

5) Do any of your friends use? (neutral)
   -reflection
   -reflection

6) What are some of the reasons they like to use marijuana? SKIP TO 7 IF Q5 IS NO (4. exploring the positive)
   -reflection
   -reflection

7) You mention your friends like XYZ about marijuana, do any of those reasons appeal to you?
   -reflection
   -reflection
7) What other reasons appeal to you? (4. exploring the positive)
   -reflection
   -reflection

8) From a 0-10 scale, how likely is it that you will use marijuana in the next two months? 0 being not at all likely 10 being very likely.
   -reflection
   -reflection

9) What would cause you to move to a lower number? (If they answer a low number say: Why did you select that number?) (1. exploring the negative)
   -reflection
   -reflection

10) It’s perfectly normal to feel two ways about changing your behavior. What makes you think twice about using? (2. exploring the negative)
   -reflection
   -reflection

12) What else concerns you about using marijuana? (3. exploring the negative)
   -reflection
   -reflection

13) Has anything unusual or dangerous ever happened to you or your friends while smoking marijuana? (4. exploring the negative)
   -reflection
   -reflection

14) What additional negative consequences might you experience if you continue smoking marijuana? (5. exploring the negative)
   -reflection
   -reflection

15) Same scale, how certain are you that you will use marijuana in the next two months? 0 being not at all certain and 10 being very certain
16) What would cause you to move to a higher number? (If they answer a high number say: Why did you select that number?) (exploring the positive)

17) What would you tell someone if they offered you marijuana (neutral)?

- reflection
- reflection

18) What do you plan to do in the next couple of months? (neutral)

- reflection
- reflection

19) What are your additional thoughts about using marijuana or not using marijuana in the next couple of months? (neutral)

COMPUTER TEMPLATE NON-USER

Hi … thanks again for participating in our project. If it is okay with you, a different researcher in the other room would like to talk to you about some of the decisions you may be thinking about making around marijuana use. What you decide to do with marijuana is completely up to you. Before the interview begins, I just want to tell you that what you say to us is confidential. So, please do not state your name or provide other identifying information.

In fact, to make sure that you are completely comfortable discussing these issues the researcher will conduct the interview via computer. The researcher is in the next room and you will communicate with them via this computer. You type your responses as if you are responding in an instant messenger or chat room. As we noted in the consent form, we would like your permission to keep a record of this computer-conversation. The conversation cannot be traced to you as it will be conducted using only our own project computers, and you will not provide any identifying information. We are taking these steps to make sure that you are comfortable talking to the other researcher about your opinions and activities. OK?

[Researcher begins interview]:

Hi. As my colleague mentioned, there is a national conversation in regards to the legalization of marijuana use. We would like to talk about some of the decisions you may be thinking about making around marijuana use.

*1) What are the decision you are thinking about making around marijuana use? (neutral)
If participant begins to focus solely on ‘legalization debate’ then steer discussion away from the debate itself and give a selective reflection of possible temptations to increase their own marijuana use or remain as a non-user.

*2) Why would you like to try marijuana? (1. exploring the positive)

*3) What caused you to considering using marijuana now? (2. exploring the positive)

4) Do any of your friends use? (neutral)

5) What are some of the reasons they like to use marijuana? SKIP TO 7 IF Q5 IS NO (3. exploring the positive)

6) You mentioned your friends like XYZ about marijuana, do any of those reasons appeal to you? (3. exploring the positive)

7) What other reasons appeal to you? (4. exploring the positive)

*8) From a 0-10 scale, how likely is it that you will try marijuana in the next two months? 0 being not at all likely 10 being very likely.
*9) What would cause you to move to a lower number? (If they answer a low number say: Why did you select that number?) (1.exploring the negative)
- reflection
- reflection

10) It’s perfectly normal to feel two ways about changing your behavior. What makes you think twice about using marijuana? (2.exploring the negative)
- reflection
- reflection

*11) What else concerns you about marijuana? (3. exploring the negative)
- reflection
- reflection

*12) Has anything unusual or dangerous ever happened to your friends while smoking marijuana? If applicable (4. exploring the negative)
- reflection
- reflection

13) If they say yes to previous question: Do you see any of those possible outcomes applying to you? (4. exploring the negative)
- reflection
- reflection

14) What additional negative consequences might you experience if you began smoking marijuana? (5. Exploring the negative)
- reflection
- reflection

*15) Same scale, how certain are you that you will try marijuana in the next two months? 0 being not at all certain and 10 being very certain

*16) What would cause you to move to a higher number? (If they answer a high number say: Why did you select that number?) (5. exploring the positive)
- reflection
*17) What would you tell someone if they offered you marijuana? (neutral)

- reflection

*18) What do you plan to do in the next couple of months? (neutral)

- reflection

19) What are your additional thoughts about using marijuana or not using marijuana in the next couple of months? (neutral)

CLOSING

Alright, let me see if I understood where you are at right now in regards to your marijuana use. (use to give summary of their change talk) On the one hand you’d like to try marijuana to see how it makes you feel, on the other, there are some concerns (e.g.)……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………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Hi …thanks again for participating in our project. If it is okay with you, a different researcher in the other room would like to talk to you about some of the decisions you may be thinking about making around marijuana use. What you decide to do with marijuana is completely up to you. Before the interview begins, I just want to tell you that what you say to us is confidential. So, please do not state your name or provide other identifying information.

In fact, to make sure that you are completely comfortable discussing these issues the researcher will conduct the interview via computer. The researcher is in the next room and you will communicate with them via this computer. You type your responses as if you are responding in an instant messenger or chat room. As we noted in the consent form, we would like your permission to keep a record of this computer-conversation. The conversation cannot be traced to you as it will be conducted using only our own project computers, and you will not provide any identifying information. We are taking these steps to make sure that you are comfortable talking to the other researcher about your opinions and activities. OK?

[Researcher begins interview]:

Hi. As my colleague mentioned, there is a national conversation in regards to the legalization of marijuana use. We would like to talk about some of the decisions you may be thinking about making around marijuana use.

*1) What are the decisions you are thinking about making around marijuana use? (neutral)

---reflection

---reflection

*2) What do you like about marijuana? (1.exploring the positive)

---reflection

---reflection

*3) Why are you considering changing your marijuana use now? (2.exploring the positive)

4) Tell me more of what you like about marijuana…..(3.exploring the positive)

---reflection

---reflection
5) Do any of your friends use? (neutral)

- reflection
- reflection

6) What are some of the reasons they like to use marijuana? SKIP TO 7 IF Q5 IS NO (4. exploring the positive)

- reflection
- reflection

7) You mentioned your friends like XYZ about marijuana, do any of those reasons appeal to you?

- reflection
- reflection

7) What other reasons appeal to you? (4. exploring the positive)

- reflection
- reflection

*8) From a 0-10 scale, how likely is it that you will use marijuana in the next two months? 0 being not at all likely 10 being very likely.

*9) What would cause you to move to a lower number? (If they answer a low number say: Why did you select that number?) (1. exploring the negative)

- reflection
- reflection

10) It’s perfectly normal to feel two ways about changing your behavior. What makes you think twice about using? (2. exploring the negative)

- reflection
- reflection

*12) What else concerns you about using marijuana? (3. exploring the negative)

- reflection
- reflection
*13) Has anything unusual or dangerous ever happened to you or your friends while smoking marijuana? (4. exploring the negative)

-reflection

-reflection

14) What additional negative consequences might you experience if you continue smoking marijuana? (5. exploring the negative)

-reflection

-reflection

*15) Same scale, how certain are you that you will use marijuana in the next two months? 0 being not at all certain and 10 being very certain

*16) What would cause you to move to a higher number? (If they answer a high number say: Why did you select that number?) (5.exploring the positive)

*17) What would you tell someone if they offered you marijuana (neutral)?

-reflection

-reflection

*18) What do you plan to do in the next couple of months? ( neutral) regarding marijuana use.

19) What are your additional thoughts about using marijuana or not using marijuana in the next couple of months?(neutral)

CLOSING

(use to give summary of their change talk)

Alright, let me see if I understood where you are at right now in regards to your marijuana use. On the one hand you like the way marijuana makes you feel, on the other, there are some concerns

Did I leave anything out? (SUMMARY to end session) hear their change talk coming from you)
You’ve provided us with a lot of useful information. We look forward to seeing you in two months and rewarding you for your valuable time on your next visit. Do you have any questions?

[End of interview: SAVE INTERVIEW AS #)ID _ _ _ _ _ _ _- _ _ ]

Interviewer: Thank you once again. Please close the window of our conversation and turn off the screen. Please ring the bell to let the first researcher know you have finished the interview. The first researcher will pay you and will ask you for the best way to contact you for the next session.
Appendix J: Basil Task

Instructions:

In front of you, you’ll see a bag of basil leaves. We are asking you to assume that the basil leaves are *moderately potent* marijuana leaves. Measure how much marijuana you typically smoke or consume *per occasion* (session). Note: Focus on the amount you consume not method of use. You can use the following sheets of filter paper to roll some joints and place them inside the ziplock bag. You can also pour the basil leaves directly into the ziplock bag. Just remember to pour either the joints or the basil leaves in the ziplock bag. If you don’t use marijuana, leave the bag empty. Try to avoid spilling any content. Put the ziplock bag with the amount of marijuana you consume in the green box.
Appendix K: Two-Month Follow-Up Questionnaire

Session 2

Thank you for coming back to complete the study. Your final task will consist of completing a brief survey regarding marijuana use. Remember, your responses will be anonymous; that is, we will not ask you to write your name or any other identifying information on the survey.

Please note that a few of the questions on the initial survey are identical to the questions that you answered when you first visited our office. We apologize for the duplication!

Thanks… please let us know when you have completed the survey.
Generate Your Own Identification Number:

We hope that you will respond to the remaining survey questions as accurately and as honestly as possible. Your responses will be COMPLETELY ANONYMOUS. Thus **DO NOT write your name** on this survey. Instead, we will ask you, again, to generate your own ID number by answering the seven (7) questions on the next page.

These seven items are the same questions that you recently answered when you completed our Eligibility Survey. Please provide the same answers that you provided last time!
Generate Your Own ID:

1. Which of the following is your favorite color?  
   1. ___ Blue  
   2. ___ Green  
   3. ___ Black  
   4. ___ Pink  
   5. ___ Red  
   6. ___ Yellow  
   7. ___ White  
   8. ___ Purple

2. What was your favorite subject in High School?  
   1. ___ Math/Science  
   2. ___ Art/Music  
   3. ___ Economics  
   4. ___ Foreign Language  
   5. ___ History  
   6. ___ English  
   7. ___ Speech  
   8. ___ Electives

3. What is your favorite type of T.V. show?  
   1. ___ Comedy  
   2. ___ Science Fiction  
   3. ___ Romance  
   4. ___ Reality T.V  
   5. ___ Horror  
   6. ___ Sports  
   7. ___ Crime  
   8. ___ News

4. What is your favorite type of car/truck?  
   1. ___ Mercedes  
   2. ___ Volvo  
   3. ___ Buick  
   4. ___ BMW  
   5. ___ Volkswagen  
   6. ___ Ford  
   7. ___ Nissan  
   8. ___ Toyota

5. What is your favorite type of food?  
   1. ___ Burgers/hotdogs  
   2. ___ Chinese  
   3. ___ German  
   4. ___ Indian  
   5. ___ Italian  
   6. ___ Mexican  
   7. ___ Vegetarian  
   8. ___ Seafood

6. What is your favorite type of music?  
   1. ___ Country  
   2. ___ Classical  
   3. ___ Electronic  
   4. ___ Gospel  
   5. ___ Metal  
   6. ___ Pop  
   7. ___ Rap  
   8. ___ Rock

7. What month were you born?  
   1. ___ January  
   2. ___ February  
   3. ___ March  
   4. ___ April  
   5. ___ May  
   6. ___ June  
   7. ___ July  
   8. ___ August  
   9. ___ September  
   10. ___ October  
   11. ___ November  
   12. ___ December
Part II: Behavior Survey

1. During your lifetime have you ever smoked or consumed marijuana?
   _____Yes        _____No

2. What is the potency (strength) of marijuana that you typically consume?

   0……1……2……3……4……5……6
   Not at all                    Moderately                  Very potent
   at all                      potent                           potent

3. In general, how many hits (puffs) of marijuana do you consume per smoking occasion(session)?

   __0     __1     __2     __3     __4     __5     __6     __7     __8     __9     __10     __11     __12     __13
   __14     __15     __16     __17     __18     __19     __20     more than 20 puffs

4. During the past two months, how many times (if any) have you smoked or consumed marijuana?

   __0     __1     __2     __3     __4     __5     __6     __7     __8     __9     __10     __11     __12     __13     __14
   __35-36     __37-38     __39-40     __41-42     __43-44     __45-46     __47-48     __49-50     more than 50 times

5. During the past two months, how many joints of marijuana have you smoked or consumed?

   __none     __¼ of a joint or less     __½ a joint     __¾ joint     __1 joint     __1 & ½ joints     __1 & ½ joints
   __1 & ½ joints     __2 joints     __2 & ½ joints     __2 & ½ joints     __3 joints     __3 & ½ joints
   __4     __5     __6     __7     __8     __9     __10     __11     __12     __13     __14     __15-16     __17-18
   __37-38     __39-40     __41-42     __43-44     __45-46     __47-48     __49-50     more than 50 joints
6. During the **past two months**, approximately how many hits (puffs) of marijuana have you **smoked** or **consumed**?

   ___0___1___2___3___4___5___6___7___8___9___10___11___12___13___14  
   ___35-36___37-38___39-40___41-42___43-44___45-46___47-48___49-50___more than 50 puffs

7. During the **past two months** I have (put a check-mark next to only one response):

   ___increased my marijuana use a **lot**  
   ___increased my marijuana use a **medium amount**  
   ___increased my marijuana use a **little**  
   ___maintained my marijuana use at **my current level**  
   ___reduced my marijuana use a little  
   ___reduced my marijuana use a **medium amount**  
   ___reduced my marijuana use a **lot**

8. During the **past two months**, I have smoked or used marijuana:

   ___0___1___2___3___4___5___6___7___8___9___10___11___12___13___14  
   ___35-36___37-38___39-40___41-42___43-44___45-46___47-48___49-50___more than 50 times

9. During the past **two months** how many times (if any) have you used **marijuana-related substances** (for example, Spice)?

   ___0___1___2___3___4___5___6___7___8___9___10___11___12___13___14  
   ___35-36___37-38___39-40___41-42___43-44___45-46___47-48___49-50___more than 50 times

10. During the **past two months** how many times (if any) have you drunk **alcohol AND** smoked **marijuana within two hours** of each other?

    ___0___1___2___3___4___5___6___7___8___9___10___11___12___13___14  
    ___35-36___37-38___39-40___41-42___43-44___45-46___47-48___49-50___more than 50 times
11. In general, how many grams of **marijuana** do you typically **smoke** or **consume** per occasion (session)?

|------|--------|--------|----------|--------|-------------|-------------|-------------|---------|------------|-------------|-------------|---------|-------------|-------------|-------------|---------|--------|--------|--------|--------|--------|---------|-----------|-----------|-----------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|

12. During the **past two months**, how many grams of marijuana have you **smoked** or **consumed**?

Resources

University Counseling Center
202 Union West
El Paso, Texas 79968
915-747-5302
M-F 8am-5pm
Website: http://sa.utep.edu/counsel/

Substance Abuse and Mental Health Services Administration
Website: http://samhsa.gov

Alcoholics Anonymous
3318 Douglas Ave
(915) 562-4081 (24 hour answering service)
aaelpaso.org

Alcohólicos Anónimos
3020 Piedras
471 Resler
Central Office: (915) 351-1141 or (915) 838-6264
aadistrict7.com

NAMI (National Alliance on Mental Illness) El Paso
4615 Alameda Rm. 1157 (inside EPPC)
(915) 534-5478 or (915) 534-5476
1-800-950-NAMI
Website: nami.org/sites/NAMIElPaso
Services: Support groups for client and clients family members of those who are mentally ill.
Groups provided in English and Spanish A lending library provides educational videos and
books to the family members. Person needs to call to inquire about the days and times of the
groups.
Family education services - free all year round.

Narcotics Anonymous
Website: riograndena.org

VA Behavioral Healthcare Center
5001 N. Piedras (attached to William Beaumont Army Medical)
(915) 564-6100
M-F 8:00am – 4:45pm
Website: elpaso.va.gov
Services: Individual, and group counseling for veterans and their families. Drug/alcohol
counseling, military sexual trauma, PTSD, some support groups for Iraq and Afghanistan
returning veterans CWT (Counseling and work therapy) is provided as needed.Disabled
American Veterans Commission provides transportation, only during the morning vocational rehabilitation for those with disabilities. Bilingual therapists.

**Aliviane Women and Children Treatment Program**  
7722 North Loop  
(915) 782-4014  
M-F 8:00am – 5:00pm (for assessment)  
aliviane.org  
Residential Program – Open 24 hours a day  
Inpatient average stay: 30 to 90 days. Accept children with their mother, however the limit is 3 children, ages 12 and under. Children’s therapist available. Must have custody of child and be TX resident.  
PPW (Pregnant Postpartum Women): This program provides case management, GED, computer classes and job preparation. The program follows the patient for 6 months within the community.
Vita

Karla Deyanira Llanes was born in El Paso, Texas. Karla earned a Bachelor of Arts degree in Psychology at the University of Texas at El Paso, while working in Dr. Lawrence D. Cohn’s lab. She pursued additional training by obtaining a Master of Arts degree in Experimental Psychology. She is currently pursuing a Ph.D. in Health Psychology at the University of Texas at El Paso. Her long-term goal is to teach at a university setting and conduct research in areas of judgment and decision-making, health communication, drug and disease prevention, and risk perception.

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