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THE EFFECTS OF A SCHOOL-BASED MOTIVATIONAL INTERVENTION ON ADOLESCENT SUBSTANCE ABUSE

A Dissertation Presented

by

ELIZABETH GATES BRADLEY

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2009

School of Education
Program in School Psychology

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THE EFFECTS OF A SCHOOL-BASED MOTIVATIONAL INTERVENTION ON ADOLESCENT SUBSTANCE ABUSE

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ELIZABETH GATES BRADLEY

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DEDICATION

I give thanks to my Lord and Savior Jesus Christ, with whom all things are possible.

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I would like to thank my longtime mentor, John R. Knight, as well as other staff at the Center for Adolescent Substance Abuse Research at Children's Hospital Boston, including Lon Sherrit, Shari Van Hook, and Sharon Levy for their many years of guidance and support.

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To my family, and in particular my parents and sister Maggie, who have encouraged me to persist and always "sprint to the finish," thank you for your love and support. Last but certainly not least, to my husband Curtis, for helping me to gain the space, sustenance, and sanity required to achieve this goal.

ABSTRACT

THE EFFECTS OF A SCHOOL-BASED MOTIVATIONAL INTERVENTION ON ADOLESCENT SUBSTANCE ABUSE

MAY 2009

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Substance abuse is the foremost health problem in the United States, with an estimated annual cost of over $400 billion and is linked to over 400,000 preventable deaths each year. Adolescents are among those abusing drugs and alcohol. Approximately one-half of high school students use alcohol and one-fourth smoke marijuana, and by their senior year of high school, over half will have used an illicit drug. Effective substance use interventions for young adults are important in preventing the progression toward other drug use disorders and harmful consequences of frequent drug use. Schools have been identified as a viable setting in which to conduct brief interventions to reduce adolescent substance use. However, a standard therapy for implementing motivational interventions in the school setting has not yet been established. The purpose of this study was to investigate the efficacy of a motivational intervention on substance use in a school-based adolescent population and to test the hypotheses that motivational interviewing, compared to assessment only, would result in a reduction of substance use and an increase in each participant's readiness to change. The proposed study utilized a randomized controlled design in which participants

received one of two conditions, two 30-minute sessions of a motivational intervention or assessment only. Assessments were administered before and one month following the intervention. Results demonstrated that the intervention was effective in reducing daily cigarette use and symptoms of cigarette dependence for participants in the experimental group. These results are consistent with past research investigating the effectiveness of motivational interventions on reducing adolescent substance use, yet the current findings are unique because this is the first school-based motivational intervention delivered by school personnel to effectively reduce adolescent substance use. Results indicate that the current intervention could be implemented as a standard therapy for using motivational interventions to decrease adolescent substance use in the school setting.

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

Substance abuse is the foremost health problem in the United States, with an estimated annual cost of over $400 billion (Horgan, Skwara, & Stricker, 2001). Substance abuse is linked to over 400,000 preventable deaths each year, and the treatment of medical problems associated with drug and alcohol use places a heavy burden on the nation's healthcare system (Horgan et al., 2001). Adolescents, as well as adults, are among those abusing drugs and alcohol. The three leading causes of death among adolescents – accidents, homicides, and suicides – are all associated with substance use (Grunbaum et al., 2002). In addition, substance use during adolescence may interfere with normal cognitive, emotional, and social development (Bruner & Fishman, 1998), and early alcohol and drug use, particularly during adolescence, is associated with an increased risk of adulthood substance abuse or dependence (Weinberg, Radhert, Colliver, & Glantz, 1998).

Approximately one half of high school students use alcohol and one-fourth smoke marijuana (Grunbaum et al., 2002). By their senior year of high school, over half of students will have used an illicit drug at least once, and more than one-fourth will have used an illicit drug other than marijuana (Bruner & Fishman, 1998). Tobacco is known as a "gateway drug" that may lead to the initiation of alcohol and illicit drug use (Kandel, Yamaguchi, & Chen, 1992). Students who smoke cigarettes are more likely to report recent alcohol use (82.9% vs. 36.1%), recent marijuana use (64.7% vs. 13.2%), and lifetime cocaine use (17.3 vs. 1.6%). Frequent cigarette smoking is positively correlated

with frequent alcohol and marijuana use. Students who smoke on ten or more days per month are five times more likely to report having used alcohol on ten or more days in the last month (25.5%vs. 4.9%) and eight times more likely to report having used marijuana on ten or more days in the last month (44.1% vs. 5.3%) than students who smoke cigarettes less than ten days per month (Massachusetts Department of Education, 1995).

As with drug and alcohol use, adolescent smoking is a problem with serious health ramifications. Tobacco use is the leading cause of preventable death in the United States (Center for Disease Control, 1993). Ninety percent of adult smokers began smoking and 70% smoked daily before age 18 (U.S. Department of Health and Human Services, 1994). Each day, more than 3,000 youth living in the United States begin to smoke (Center for Disease Control, 1993). In addition, more than 33% of high school seniors report cigarette use in the past month and more than 21% smoke each day (National Institute on Drug Abuse, 1996).

Adolescence is an especially vulnerable period for developing substance use disorders and, when compared to alcohol and other drugs, cannabis use onset during ages 12-18 leads to the highest risk for developing substance abuse and dependence soon after onset of use (Winters & Lee, 2008). Cannabis is the psychoactive substance most frequently used by adolescents in the United States (Office of Applied Studies, 2000). The medical, social, and psychological consequences of marijuana use have led to an increased focus on the development of effective interventions for adolescent marijuana users (American Academy of Pediatrics, 1999). Effective marijuana interventions for young adults are important in preventing the progression toward other drug use disorders and harmful consequences of frequent marijuana use (Chen & Kandel, 1995). A wide

variety of treatment approaches have been implemented, including cognitive behavior therapy, both alone and in combination with motivational interviewing, family education and therapy, group psychoeducational interventions, individual behavior therapy, engagement approaches to intervention, and 12-step based therapy (Dennis et al., 2004).

Current Research

Of published intervention studies that specifically target adolescent marijuana users, brief motivational interventions have produced promising results. The Cannabis Youth Treatment Study (CYT), conducted by Dennis and colleagues, demonstrated significant pre/post treatment improvements in participants receiving a brief Motivational Enhancement Therapy/Cognitive Behavioral Therapy (MET/CBT) combined intervention (Dennis et al., 2004). The CYT Study evaluated two randomized trials conducted in four treatment settings with a total of 600 cannabis using participants. Participants included mainly white males aged 15-16, and treatment settings included one hospital and three health centers. In trial one, adolescents were randomly assigned to one of three treatment conditions: five sessions of the combined MET/CBT intervention, twelve sessions of the combined MET/CBT intervention, or the Family Support Network (FSN). The MET/CBT intervention combined motivational strategies to help participants resolve their ambivalence about whether their substance use is a problem and to increase their motivation to stop using. Participants received cognitive-behavioral skill instruction teaching them how to refuse offers of cannabis, establish a social network supportive of recovery, develop a plan for enjoyable replacement activities, problem solve or cope with unanticipated high-risk situations, and recover from potential relapse. FSN included twelve sessions of the MET/CBT combined intervention for adolescents, and added

parent and family services in order to follow a more comprehensive treatment model. In the FSN condition, parents received six parent education group meetings, four therapeutic home visits, referral to self-help support groups, and case management to promote adolescent/parent communication around treatment issues (Dennis et al., 2004).

In trial two of CYT, adolescents were randomly assigned to three treatment conditions: five sessions of the combined MET/CBT intervention, Adolescent Community Reinforcement Approach (ACRA), or Multidimensional Family Therapy (MDFT). The ACRA treatment incorporated elements of operant conditioning, skills training, and a social systems approach and this treatment condition included ten individual sessions with the adolescent, four family sessions, and limited case management. The MDFT treatment condition was comprised of twelve to fifteen sessions split between individual adolescent, parent, and combined family meetings plus case management provided over a three-month period. MDFT integrated substance use into family therapy and moved from engagement and goal identification to treatment through working through common adolescent and parent issues around family relationships, to sealing the changes through preparing for termination, reviewing treatment work, and preparing for future challenges. All five interventions demonstrated significant pre-post treatment improvements during the year following the interventions in two main outcomes: days of abstinence and percent of adolescents in recovery. The overall treatment outcomes were similar across site and condition; however, after controlling for initial severity, the most cost-effective interventions were both the five and twelve session MET/CBT combined interventions in trial one and the ACRA and five session MET/CBT combined interventions in trial two (Dennis et al., 2004).

A similar intervention combining MET and CBT also demonstrated a significant long-term reduction in marijuana use by young adults (Carroll et al., 2006). Adolescents who met diagnostic criteria for marijuana dependence were referred by the criminal justice system for study participation. Participants were randomized into one of four treatment conditions: an intervention combining MET and CBT, MET/CBT plus contingency management, individual drug counseling, and individual drug counseling plus contingency management. The MET/CBT intervention followed a manualized approach developed for the Marijuana Treatment Project. It emphasized helping participants develop the motivation to change and implement skills to help reduce marijuana use. The contingency management intervention consisted of participants receiving incentives if they attended study sessions and submitted marijuana-free urine specimens. The drug counseling intervention closely followed traditional 12-step approaches with clinicians using an authoritative and directive style throughout treatment. Interventions were delivered as individual weekly sessions over an eight-week period. Contingency management (CM) resulted in a significant main effect on treatment retention and marijuana-free urine specimens. In addition, MET/CBT plus CM was significantly more effective on treatment attendance and clean urine specimens than all other treatment conditions, and participants who received the MET/CBT combined intervention continued to reduce the frequency of their marijuana use through follow-up six months following the intervention (Carroll et al., 2006).

In addition, Martin and colleagues conducted the Adolescent Cannabis Check-Up, a brief motivational intervention efficacy study (Martin, Copeland, & Swift, 2005). Adolescent cannabis users received an intervention including an individualized

assessment and, one week later, personalized feedback delivered using the principles of motivational interviewing. Participants were also offered an optional third session, comprised of education of skills and strategies for making behavior change. Participants reported significant reduction in and good maintenance over time of quantity and frequency of cannabis use, with 78% of participants voluntarily reducing their cannabis use and 17% remaining abstinent during the 90 days following the intervention. However, the authors note that these findings must be interpreted with caution, as the study utilized an uncontrolled pre-test/post-test design (Martin et al., 2005).

As a follow-up to the original Adolescent Cannabis Check-Up study, Martin and Copeland (2008) conducted a randomized trial of a brief motivational intervention for young cannabis users. Fourty non-treatment seeking adolescent cannabis users were randomly assigned to either a two-session brief intervention or a three-month delayed treatment control condition. Participants were also offered an additional session including a discussion of skills to help reduce or stop cannabis use. The primary outcome measures for this study were reduction in days of cannabis use, mean amount of weekly cannabis use, and number of DSM-IV dependence symptoms endorsed. Although between-group effects were moderate, participants in the Adolescent Cannabis Check-Up group reported significantly more reductions on the primary outcome measures at three-month follow-up. In addition, participants reported high satisfaction with the intervention, despite very few being self-referred for study participation (Martin & Copeland, 2008).

Similarly, Walker and colleagues developed the in-school teen marijuana check-up (TMCU), a type of motivational enhancement therapy aimed at motivating individuals

who are contemplating the effects of their risky behavior but have not yet sought treatment (Walker, Roffman, Picciano, & Stephens, 2007). TMCU was focused on exploring the costs and benefits of teens' use, the impact of their use on their life and goals, and comparing their own use with those of other teens while having the counselor offer support for goal setting and brainstorming strategies for change. The intervention was delivered in high schools during the regular school day by research staff, and a waiver of parental consent was obtained to help increase study participation. During the initial meeting, computerized self-administered assessments were conducted and personalized feedback reports were generated. During the second meeting, the participant and counselor reviewed the personalized feedback report and, for students indicating interest in reducing their marijuana use, a psychoeducational booklet offering tips for making change was reviewed by the counselor. Walker and colleagues found that significant reductions in marijuana use were reported at follow-up, and most participants reported that the intervention was helpful. Overall, the in-school teen marijuana check-up was successful at recruiting adolescents to voluntarily participate in treatment and aided in substantially decreasing their marijuana use (Walker et al., 2007). However, the intervention was delivered by research staff who were not employed in the public schools; thus, intervention feasibility among school personnel remains unknown.

In order to effectively prevent the onset of cannabis, alcohol, and other drug use, tobacco prevention and intervention programs must be implemented to reduce the use of this gateway drug. The National Educational Goals Panel and the Center for Disease Control and Prevention stress the importance of tobacco use cessation programs (Centers for Disease Control and Prevention, 1994; National Educational Goals Panel, 1996).

However, few interventions have been developed to reduce adolescent smoking. Of published interventions, very few show promising results. Of several studies conducted in both school and non-school settings, only one appeared to show significant differences between treatment and control groups (Meyers, 1999). This intervention was a preliminary study aimed at testing the feasability and efficacy of a brief motivational intervention delivered with adolescents in a hospital setting (Colby, Monti, Barnett, Rohsenow, Weissman, Spirito, 1998).

Forty adolescents were randomized to receive either a brief motivational interview or brief advice. The interventionists delivered the motivational intervention utilizing the principles outlined by Miller and Rollnick (1991) and participants were given individualized feedback about the effects of smoking. Participants also watched videotaped vignettes developed by the Massachusetts Department of Public Health to stimulate discussion about the health effects, social consequences, addiction, and financial costs of cigarettes. The brief advice comparison condition was comprised of assessment, encouragement to stop smoking, and delivery of a brief informational handout that participants in the motivational intervention condition also received. Intervention feasability was supported by high rates of recruitment, retention, quit attempts, and long periods of continued abstinence. Although significant between-group differences were not found, an effect size of .28 indicated that the treatment group had higher abstinence rates than the control group at three-month follow-up. In addition, participants showed significant decreases in smoking dependence and number of days smoked. Baseline stage of change, smoking rate, and depression were all found to be significant predictors of smoking outcomes at three-month follow-up, indicating that a

higher stage of change, fewer cigarettes per day, and higher levels of depressive symptomology at baseline all predicted longer abstinence from smoking at three-month follow-up (Colby et al., 1998).

In addition to marjiuana and cigarette use, brief motivational interventions have been used to control a variety of behaviors and conditions, including substance abuse, smoking, diet, physical activity, diabetes, pain, sexual activity, and medication adherence (Resnicow et al., 2002). In a systematic review of studies examining the efficacy of motivational interviewing, brief motivational interventions outperformed traditional brief advice by improving client behavior in approximately 80% of studies reviewed (Rubak, Sandboek, Lauritzen, Christensen, 2005).

In the area of drug and alcohol addiction, brief motivational interventions have yielded large effects and good maintenance over time (Ball et al., 2007; Miller, 2000; Miller et al., 1995). Several brief interventions with young adult drinkers produced long-term reductions in average alcohol use, number of binge drinking episodes, emergency department visits, motor vehicle crashes and events, and arrests for controlled substance use or liquor violation (Baer, Kivlahan, Blume, McKnight, Marlatt, 2001; Grossberg, Brown, Fleming, 2004). Motivational interviews that are as brief as ten minutes in duration have been used in medical offices and emergency rooms with the goal of increasing intrinsic motivation to change (Emmons & Rollnick, 2001). In addition, motivational interviewing applications are effective as both preludes to services and stand-alone treatments, and many of the outcomes of motivational interviewing applications have been both clinically and statistically significant (Burke, Arkowitz, &

Dunn, 2002; Burke, Arkowitz, & Menchola, 2003; Dunn, DeRoo, & Rivara, 2001; Noonan & Moyers, 1997).

Motivational Interviewing Defined

Motivational interviewing is a technique that uses directive, client-centered counseling to elicit behavior change (Rollnick & Miller, 1995). The spirit of motivational interviewing is one of collaboration, evocation, and autonomy (Miller & Rollnick, 2002). Counseling is seen as a partnership and the counselor promotes an atmosphere that is conducive to change (Miller & Rollnick, 2002). Brief interventions typically include a comprehensive assessment followed by personalized feedback (Miller & Rollnick, 1991). The counselor's focus in motivational interviewing is to elicit the client's intrinsic motivation to change through exploring and resolving ambivalence about behavior change (Miller & Rollnick, 2002).

The four main principles of motivational interviewing, as defined by Miller and Rollnick (2002), are 1) express empathy, 2) develop discrepancy, 3) roll with resistance, and 4) support self-efficacy. Several theories have contributed to the development of motivational interviewing and support the efficacy of these four principles. These theories are Carl Rogers' client-centered counseling, discrepancy and self-regulation theory, and the theory of self-fulfilling prophecy (Miller & Rollnick, 2002).

Carl Rogers developed and articulated a theory regarding crucial counselor characteristics for facilitating behavior change. Key to this theory is a client-centered relationship, through which the counselor offers accurate empathy, nonpossessive warmth, and genuineness in order to facilitate the process of natural change (Rogers, 1961). Rogers describes the counselor's function as laying aside an external frame of

reference in order to perceive the world and the client as they are seen by the client; in other words, adopting the internal frame of reference of the client without judgment, criticism, or blame. In this way, the therapy becomes client-centered (Rogers, 1948). The counselor's respectful listening and nonjudgmental attitude help build a therapeutic alliance, which aids the client in feeling accepted and builds self-esteem, further promoting positive change (Miller & Rollnick, 2002). However, motivational interviewing differs from Rogers' counseling style in that it is directive in nature, as the counselor intentionally aims to resolve client ambivalence and facilitate healthy change (Miller & Rollnick, 2002).

Several research studies have confirmed the importance of counselor empathy in client response to substance abuse treatment. High empathy has been associated with more positive treatment outcomes, whereas confrontational counseling has been associated with higher levels of client resistance, high dropout rates, and relatively poor treatment outcomes (Miller, Benefield, Tonigan, 1993; Miller, Taylor, & West, 1980; Valle, 1981). In studies comparing a client-centered motivational interviewing approach versus counseling in a directive confrontational manner, client resistance increased greatly in response to a confrontational counseling style, with clients frequently displaying behaviors including arguing, changing the subject, interrupting the counselor, and denying a problem (Miller et al., 1993; Patterson & Forgach, 1983). Thus, motivational interviewing employs these research findings and advocates avoidance of a confrontational counseling style. One of the main principles of motivational interviewing is "roll with resistance," or avoid arguing for change when the client argues against it,

and instead accepting ambivalence and reframing resistance into new momentum toward change (Miller & Rollnick, 2002).

Another underlying theory that played an important role in the development of motivational interviewing is self-regulation theory, which helps explain the process of behavior change. Similar to Leon Festinger's concept of cognitive dissonance (Festinger, 1957), self-regulation theory describes change as occurring through a self-monitoring process similar to that of a thermostat. Essentially, self-regulation theory postulates that a discrepancy between present reality and important personal goals must exist in order for change to occur. When this discrepancy exists, the perceived importance of change will be amplified enough to motivate action (Brown, 1998; Kanfer, 1986; Miller & Brown, 1991). Thus, one of the fundamentals of motivational interviewing is developing a discrepancy between the client's present status and desired goal; this "change talk" is accomplished through having the client discuss the disadvantages of their current situation and the advantages of change. However, in addition to a willingness to change, perceived ability and readiness are necessary factors that also must be present in order for change to occur (Miller & Rollnick, 2002).

The final principle of motivational interviewing is supporting client self-efficacy. Self-efficacy is defined as the level of confidence that people have in their ability to change (Bandura, 1977). Past research has discovered that a client's level of self-efficacy is a good predictor of maintenance of change over time (DiClemente, 1981). The principle of supporting client self-efficacy is also based on the theory of self-fulfilling prophecy which, when applied to addiction treatment, stresses the importance of the counselor's belief about the client's ability to change. Counselors' expectations about the

clients' likelihood of change can powerfully affect treatment outcomes through boosting clients' confidence in their ability to cope with obstacles and succeed with behavior change (Jones, 1977). Thus, motivational interviewing emphasizes the importance of both the client's and counselor's beliefs about the possibility of change, and counselors are sure to communicate their confidence in the client's ability to change, and their willingness and ability to help them achieve their goals (Miller & Rollnick, 2002).

An important component of motivational interviewing is its conceptualization of behavior change. DiClemente and Prochaska (1998) created a transtheoretical model that identifies the stages and processes of change. This model represents change as a cyclical pattern of movement through the stages of change, and integration between the stages and specific processes of change. This spiral model suggests that clients do not typically linearly progress through the stages of change; rather, relapse and recycling through the stages are common. DiClemente and Prochaska (1998) have identified five stages that segment the process of behavior change into meaningful steps. These stages include precontemplation, contemplation, preparation, action, and maintenance (DiClemente & Prochaska, 1998). Clients move from unawareness of a problem and unwillingness to consider change, to determination and preparation to make change, to making the change, and finally maintaining change over time (DiClemente, 1991). Motivational interviewing utilizes several behavior change strategies to assist the participant in moving through these stages of change.

The processes of change are an additional aspect of the transtheoretical model, and they lend understanding to the ways in which change occurs. DiClemente and Prochaska (1998) identified ten processes of change, which are activities and experiences

in which clients engage as they attempt to modify problem behaviors. These ten processes of change include consciousness raising, self-reevaluation, self-liberation, counterconditioning, stimulus control, reinforcement management, helping relationships, dramatic relief, environmental reevaluation, and social liberation. As clients in different stages of change respond most favorably to specific processes of change, DiClemente and Prochaska emphasize the importance of assessing a client's stage of change and tailoring their intervention accordingly (1998).

School-Based Motivational Interviewing

Motivational interviewing strategies appear to be well suited for adolescents and young adults (Baer & Peterson, 2002). The technique does not increase resistance and utilizes ambivalence to develop motivation to change (Baer & Peterson, 2002). In addition, the brief duration of motivational interventions and the emphasis on the client's self-direction and independence may be particularly attractive to adolescents (Tober, 1991). Adolescents are generally referred to treatment by their family, the juvenile justice system, or the schools; however, when they do enter treatment, few adolescents (20%) believe their use is problematic (Dennis et al., 2004). In addition, adolescents often lack the resources (insurance, finances, transportation) to seek treatment on their own, and may be deterred from seeking treatment if parental involvement is required (Walker, Roffman, Stephens, Berghuis, Wakana, 2006). Schools provide a unique opportunity for intervention in that many adolescents in need of treatment are unlikely to visit a medical or counseling office, but may choose to receive treatment if conveniently located at school and conducted by their school counselor or psychologist, with whom they may already have an existing relationship.

Substance abuse prevention efforts have been implemented in the school setting. However, Ellickson and colleagues discovered that implementation of Project ALERT, one empirically supported intervention that is widely used in public schools, successfully curbs adolescent cigarette and marijuana use only as long as the intervention is being implemented (Ellickson, Bell, McGuidan, 1993). Thirty schools were randomly assigned to treatment and control conditions; in half of the treatment schools, Project ALERT was taught by adult health educators and, in the other half of treatment schools, older teens assisted the adult teachers with half of the seventh grade lessons. Schools in the control condition did not receive the Project ALERT curriculum, but four of the ten schools continued to deliver already existing prevention programs using traditional educational approaches. Seventh grade students received eight lessons and eighth grade students received three booster sessions. Early results indicated that Project ALERT's social influence approach to prevention can prevent and reduce cigarette and marijuana use. However, long-term results indicated that the program's impact on drug use stopped once the program ended (Walker et al., 2007). Thus, effective school-based substance use interventions continue to be needed throughout middle and high school. Although very few school-based motivational interventions to reduce adolescent substance use have been implemented, the in-school teen marijuana check-up and school-based motivational enhancement therapy for adolescent marijuana users yielded promising results (Walker et al., 2007; Walker et al., 2006).

Schools have been identified as a viable setting in which to conduct brief interventions to reduce adolescent substance use (Walker et al., 2006; Winters, Leitten, Wagner, Tevyaw, 2007). However, a standard therapy for implementing motivational

interventions in the school setting has not yet been established. Past intervention efforts have utilized external researchers to implement interventions, whereas school adjustment counselors and a school psychologist delivered the current intervention. Thus, one study aim of this experimental intervention was to determine the feasibility of using school resources to implement school-based motivational interventions as routine care for in-school student support services. An effective brief intervention for substance abuse could be widely implemented in public schools, and would be of enormous public health significance across the United States.

Preliminary Research

A small pilot study was implemented as a precursor to the current research study (Gates, 2004). The objective of this study was to investigate the effects of motivational interviewing on smoking in a small school-based adolescent population. The goals of this pilot motivational intervention were twofold: to advance the participant's readiness to change and to decrease the average number of cigarettes smoked per day (CPD) by each participant.

Three 14 to 18-year-old students from a regional high school in Western Massachusetts received a brief motivational intervention that included a structured interview that is based on the recommendations made by Miller and Rollnick (2002). Participants received three counseling sessions over the course of three months and completed assessment batteries at baseline and three-month follow-up. The measurement battery included the Timeline Followback, the Readiness to Change Questionnaire, questions regarding cigarette use based on the DSM-IV substance use dependence criteria, and a series of questions that included demographic information and average

cigarettes smoked per day (American Psychological Association, 1994; Heather & Rollnick, 1993; Sobell & Sobell, 1995).

Two-thirds of participants decreased their use substantially with at least a 30% reduction in cigarettes smoked per day. In addition, all participants advanced their readiness to change at least one stage over the course of the intervention. Although the results of this pilot study are promising, the use of motivational interviewing in the school setting to reduce adolescent tobacco smoking needs further study, using larger sample sizes and controlled experimental designs to determine its efficacy.

Research Hypotheses

The purpose of this research was to investigate the efficacy of motivational interviewing vs. assessment only on substance use in a school-based adolescent population and to evaluate the feasibility of utilizing motivational interventions to reduce adolescent tobacco and marijuana use in the school setting. The first research hypothesis was that motivational interviewing, compared to assessment only, would result in a decrease in tobacco and marijuana use. The second research hypothesis was that motivational interviewing, compared to assessment only, would result in an increase in each participant's readiness to change. Although readiness to change may have been considered an intermediate variable to predict later reduction in substance use, it was considered a study outcome because of the brief duration of this intervention.

CHAPTER II

METHODS

Experimental Design

This study was a randomized trial to determine the efficacy of a brief motivational intervention for adolescent substance abuse. Eligible participants received one of two conditions: two 30-minute sessions of a motivational intervention or a comparison condition including assessment only. Assessments were administered at baseline and one month later.

Figure 2.1. Experimental design

<table>
<tr><td>Screening</td><td colspan="3">Baseline</td><td>2 weeks</td><td>1 month</td></tr>
<tr><td rowspan="5">Determine Eligibility and Obtain Consent</td><td rowspan="5">Baseline assessment</td><td rowspan="5">R A N D O M I Z E</td><td>Intervention Group</td><td>Intervention Group</td><td rowspan="5">Follow-up Assessments</td></tr>
<tr><td>Session one</td><td>Session two</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td>Comparison Group</td><td>Comparison Group</td></tr>
<tr><td>Assessment only</td><td>Assessment only</td></tr>
</table>

Participants and Setting

The study was conducted at Pittsfield High School and the Juvenile Resource Center in the Pittsfield Public School district in Pittsfield, Massachusetts. Drug use is prevalent in Pittsfield, in part because the city is considered the gateway for drug trafficking between Springfield, MA, Hartford, CT, and Albany, NY due to close proximity to these large urban areas. The Massachusetts Department of Public Health reports that cannabis use among adolescents aged 13-17 in Pittsfield is highest in the state; thus, an intervention targeting cannabis abuse is of great need in Pittsfield. Due to the unique needs of this community, the Pittsfield Public School District and community

partners were awarded funds through the Safe Schools Healthy Students federal initiative. These funds have in part been used for drug education, although the need for effective school-based drug interventions remains.

Pittsfield High School has an enrollment of 982 students and is a comprehensive high school that is fully accredited by the New England Association of Schools and Colleges. The Juvenile Resource Center (JRC) is an educational facility run by the Berkshire County Sheriff's Office in partnership with the Pittsfield Public Schools. The JRC provides intervention services to at-risk students through the following programs: short-term suspension for students suspended from the four secondary schools, long-term suspension for students who have demonstrated serious aggressive or disruptive behavior, truancy prevention and attendance intervention, dropout prevention classes, after-school classes in anger management, social skills training, and substance abuse for students referred from Berkshire Juvenile Court officials, and summer intervention and credit recovery for grade 9 students. The JRC dropout prevention program served roughly 75 students and the short-term suspension program served more than 350 students during the 2007-2008 school year.

Students ages 14-20 who have smoked cigarettes or marijuana at least once over the past 30 days were referred to a school psychologist to discuss study participation. The smoking screen and referral originated from school adjustment counselors and school psychologists, although school psychologists, guidance counselors, school nurses, teachers, and other school administrators also at times brought students to the attention of the school psychologist. In addition, because students in the dropout prevention program at the JRC demonstrate significant risky behavior, nearly all students in that program

were screened by the school psychologist for study eligibility. The school psychologist further explained the study and invited eligible students to participate. Although this study targeted cigarette smokers during the first stage of recruitment, assessment and intervention also focused on marijuana use. Recruitment based on cigarette use alone reduced the risk for participants in regard to confidentiality. However, as a large percentage of cigarette smokers also use marijuana (Kandel et al., 1992; Massachusetts Department of Education, 1995), this recruitment strategy targeted adolescents who use marijuana as well.

The participant population followed the criteria listed below:

Inclusion Criteria

- 14 to 20-years-old
- Smoked marijuana or cigarettes at least once over the past 30 days
- Provided informed consent (18 years or older) or assent (<18 years)
- Provided parental consent (<18 years)

Exclusion Criteria

- Current receipt of substance abuse treatment
- Alcohol or drug dependence
- Inability to complete one-month follow-up

Participant use over the past 30 days was determined using a calendar method that measures use over the past 90 days (Sobell & Sobell, 1995). Alcohol and drug dependence were measured using a questionnaire based on the DSM-IV substance dependence criteria (American Psychological Association, 1994).

Alcohol and drug dependence resulted in immediate referral and intervention with the student's school adjustment counselor or school psychologist. However, very few students screened reported dependence to a substance other than tobacco; these results are consistent with prior research, which reflects that very few youth report alcohol and drug dependence (Hasin, Hatzenbueler, Smith, & Grant, 2005). In addition, some students did not meet DSM-IV dependence criteria; however, their pattern of use still posed a substantial risk to their health. This was the case for students who minimized the impact of their use, or who were using highly dangerous drugs (such as cocaine or heroin) but were not yet dependent. These students' study eligibility was assessed on a case-by-case basis and study personnel erred on the side of caution by excluding these students from study participation and immediately referring them to their school adjustment counselor or school psychologist for further assessment and treatment.

Students who were eligible and interested in study participation returned for their first study visit, at which time they provided signed assent/consent and parental consent if under 18, completed baseline assessments, and then were randomized into one of two groups. Randomization occurred using a blocked design with a block size of four students to ensure roughly equal group sizes (Kang, Ragan, & Park, 2008).

Informed Consent

The primary investigator, a school psychologist, informed students about the study once initial eligibility was determined. All potential participants and their parents were told: "We are studying ways that school professionals can best help teenagers reduce their use of tobacco and marijuana. If you consent to be a part of this study, you will be scheduled for at least two meetings with a School Adjustment Counselor or

School Psychologist, but randomly assigned into one of two study groups. Everyone who participates will be interviewed about their tobacco and marijuana use at the beginning of the study and again one month later. However, participants assigned to Group 1 will also meet with a school adjustment counselor or school psychologist for 30 minutes at each of two counseling sessions while those assigned to Group 2 will not. Study information will be kept confidential. However, if we discover that you or someone else is in danger, we will notify the School Adjustment Counselor in your school (if different from the School Adjustment Counselor delivering the intervention) so that he or she can determine what further action may be required to ensure your safety. This could mean involving your parent(s) or others. You may quit the study at any time, although we hope you will find participation both interesting and helpful. Whether or not you complete the study will in no way affect your services at school."

Adolescents who agreed to participate were given a return appointment for the pretest measurement battery and possible first counseling session. When they arrived for that visit, they were asked to sign informed assent/consent. If written parental consent was unable to be obtained in person or was not brought into school by the student, it was obtained via telephone with a witness present before the first counseling session.

Measures

The intervention group received two 30-minute motivational interventions over a two-week period while the comparison group completed the Readiness to Change Questionnaire (Heather & Rollnick, 1993). Both groups completed an assessment battery at baseline and one-month follow-up. In addition, all participants completed the

Readiness to Change Questionnaire at each study visit. School personnel who were not involved in delivering study interventions were blinded to group assignment.

All assessment data collected were self-report. Although there are problems with using self-report measures of substance use, this method of data collection has been shown to be reliable in a number of studies (Dolcini, Adler, & Lee, 2003; Kenkel, Lillard, & Mathios, 2003; Levy et al., 2004). Methodologies such as lab test validation or collateral report from parents have limitations that precluded use in this study. The window for laboratory test validation of drug use can be as narrow as 24 hours (Dolan, Rouen, & Kimber, 2004), which was not sufficient for this study design, and the practice of laboratory drug testing in schools has not been substantiated and is not recommended by many physicians (Levy, Harris, Sherritt, Angulo, & Knight, 2006; Yamaguchu, Johnson, & Omalley, 2003). The alternative would have been to have students travel to off-campus sites for laboratory drug testing, which would have been logistically difficult for these students who do not have reliable transportation, and would likely have lead to low rates of study enrollment and compliance.

Parental collateral reports may be an unreliable source of information, as studies have found that parents tend to underestimate their adolescents' substance use (Chung, Colby, O'Leary, Barnett, Monti, 2003; Winters, Anderson, Bengston, Stinchfield, & Latimer, 2000; Youngstrom, Loeber, & Stouthamer-Loeber, 2000). In addition, participant participation and retention rates would likely have been lower and may have resulted in a lower-risk student self selection bias (Rojas, Sherrit, Harris, & Knight, 2008); in addition, collecting collateral reports from parents is a potential breach of privacy that carries additional human participants concerns.

An alternative method of increasing the validity of self-report measures of substance use is to utilize computer survey technology. Several studies have found that adolescents are as much as three times more likely to disclose drug use when assessed by a computer-based interview than when assessed by a face-to-face interview or written questionnaire (Bungey, Pois, Mortimer, Frank, & Skinner, 1989; Gerbert, Bronstone, Pantilat, McPhee, Allerton, & Moe, 1999; Turner, Ku, Rogers, Lindberg, Pleck, & Sonenstein, 1998). Thus, a computerized version of the Timeline Followback was obtained from its author, Linda Sobell, and computerized versions of all assessment tools were administered to further encourage full disclosure of substance use.

All participants completed an assessment at baseline and one-month follow-up that included the following measures.

Table 2.1 Assessment tools

Name	Description	Number of items	Time to administer	Scoring Information	Source
CRAFFT	Brief substance abuse screening test specifically designed for adolescents	6	1 minute	Score of 0-6 is based on number of symptoms endorsed, score of 2 or more indicates need for further assessment	Knight, Shrier, Bravender, Farrell, VanderBilt, & Shaffer, 1999
Alcohol and Drug Timeline Followback	Provides a retrospective report of adolescent's substance use over the past 3 months	N/A, calendar	5-10 minutes	Estimated daily use for each substance is recorded, and daily average is computed	Sobell & Sobell, 1995
Readiness to Change Questionnaire	Measures readiness to change substance use	12	3 minutes	Score is computed for each of 3 stages and highest score indicates current stage of readiness	Heather & Rollnick, 1993
Drug Dependence Questionnaire	Measures symptoms of substance dependence	9	3 minutes	Score of 0-7 indicates number of dependence symptoms endorsed	Questions taken from DSM-IV criteria, APA, 1994
Student Satisfaction Survey	Measures treatment integrity and utility	10	2 minutes	Items scored on a scale of 1 to 5, and the overall average score indicates the level of treatment integrity and utility	Questions based on intervention outline and goals

Procedure

Participants randomized to the experimental condition attended two 30-minute counseling sessions, each roughly 2 weeks apart. The intervention included a structured interview that was based on the recommendations made by Miller and Rollnick (2002). Each of the intervention visits followed the principles of motivational interviewing, which emphasize: 1) develop a discrepancy (between goals & current behavior), 2) avoid arguments, 3) roll with resistance, 4) empathy as a counseling style, and 5) promote self-efficacy (Miller & Rollnick, 2002). The interview record sheets included detailed descriptions of each step of the intervention and had space for notes and checkboxes that were checked once each step is completed. The intervention also included a structured approach to identifying alcohol and drug-related risks and problems and establishing goals for behavior change. The interviews were audio taped, with parental consent and participant assent/consent.

A trained school adjustment counselor or school psychologist delivered both motivational intervention sessions. Clinicians received a one-day training during which they were introduced to motivational interviewing principles and methodology through formal presentation, discussion, review of the Motivational Interviewing: Professional Training Series videos produced by Miller and colleagues, role playing, and use of the VASE-R (Video Assessment of Simulated Encounters) to check for proficiency in motivational interviewing skills (Miller, Rollnick, & Moyers, 1998; Rosengren, Hartzler, Baer, Wells, & Dunn, 2008). The VASE-R is a video-based method for assessing respondent skill in motivational interviewing. The VASE-R consists of three video vignettes of substance abusers, and respondents are prompted to generate written

responses reflecting understanding of motivational interviewing principles. The VASE-R manual provides a detailed administration and scoring guide, and the primary investigator scored all clinician responses. The VASE-R authors have delineated a 75% correct cutoff to establish basic proficiency in motivational interviewing skills, and all clinicians who delivered motivational interventions in the present study met this criterion.

Several studies have confirmed the effectiveness of using these training methods to teach clinicians motivational interviewing (Lane, Hood, & Rollnick, 2008; Martino, Haeseler, Belitsky, Pantalon, & Fortin, 2007; Miller, Yahne, Moyers, Martinez, & Pirritano, 2004). As systematic feedback and reinforced practice have been shown to enhance performance, clinicians submitted their first two audiotapes as work samples (Miller et al., 2004). These tapes were reviewed by the primary investigator using the Motivational Interviewing Treatment Integrity code (MITI) and study clinicians received specific feedback about their performance (Moyers, Martin, Manuel, Hendrickson, & Miller, 2005; Pierson et al., 2007).

The interviews followed a structured format to assist with treatment integrity, as systems of standards are needed to ensure that empirically supported interventions are implemented with integrity by well-trained clinicians (Carroll & Rounsaville, 2007). In addition, all interviews were audiotaped and randomly selected and coded using the Motivational Interviewing Treatment Integrity code (MITI). The MITI is a brief scale and coding system that has been shown to be a good measure of treatment integrity for motivational interviewing (Moyers et al., 2005; Pierson et al., 2007). Although the third version of the MITI code is in development, its authors have made the instrument available for researchers in this area. The primary investigator evaluated each clinician's

first two audiotaped interviews based on the MITI coding system to ensure that each clinician was performing the intervention with integrity. In addition, the primary investigator reviewed ten percent of all audiotapes in order to further assess treatment integrity.

An intervention manual for conducting motivational interviewing in the school setting was developed through an iterative process. The intervention followed the specific format that Knight et al. (2005) developed in their research using motivational interviewing with adolescents in the medical office setting. Knight and colleagues have developed a manual for training and implementation of their specific intervention, and its authors provided the manual for use with this research study. The manual was adapted for the school setting based on experiences and outcomes of this research study, and will be disseminated for use among school personnel.

Below is a detailed outline of each counseling session.

Specific Outline for the First 30-Minute Session (Initiation):

1) Establish an understanding of the purpose of treatment
    - Clearly state the purpose of the intervention.
    - Discuss confidentiality.
    - Discuss ground rules of the relationship.
2) Assessment
    - Repeat the CRAFFT questions, paraphrased in own words.
    - Follow-up each positive answer, allowing 2-3 minutes of discussion of each positive item before moving on. This will invite the adolescent into a mode of evaluating his/her own substance use.

- Discuss the adolescent's CRAFFT score, days of use, and amount of use compared to age and gender norms.

3) Identification of risks and problems
   - Discuss the pros and cons of change.
4) Complete change plan worksheet
   - Help participant identify goals.
   - Brainstorm with adolescent on strategies to meet his/her goals. Write down adolescent's own words on worksheet. Goals should be mutually agreed upon, realistic, and personalized to the adolescent.
5) Summary and follow-up plan
   - Summarize discussion and plan, and arrange follow-up.
   - Contract for non-use, moderation, and/or risk reduction.
   - With students who are not ready to change, convey message that you care about them, are worried about them, and will be there for them.
6) Give a copy of the completed Change Plan Worksheet.

<u>Specific Outline for the Second 30-Minute Session (Reinforcement):</u>

1) Review Session 1
   - Review together the Change Plan Worksheet written at last visit.
   - How did you do in achieving your goals?
   - Which strategies did you try? How did they work?
2) Identify successes and barriers to success
   - Give positive reinforcement for adolescent's successes and/or efforts, no matter how small.

- Discuss barriers to success or additional anticipated risk situations.
- Begin to fill out new or revised Change Plan worksheet.

3) Develop new strategies for change
   - Ask student to think of ways to avoid barriers, or to minimize them.
   - Ask student how to reduce frequency and quantity of drug and alcohol use.
   - Write down new goals on worksheet. Ask adolescent if he/she would like to keep a copy as a reminder.
4) Summary and follow-up plan
   - Contract for non-use, moderation, and/or risk reduction.
   - Summarize discussion and plan, and arrange follow-up if needed.

CHAPTER III

RESULTS

Demographic Information

As a stage one behavioral therapy development research project (Caroll & Onken, 2005) the focus of this study was to adapt motivational interviewing to the school setting, refine and modify the therapy as needed, pilot test the intervention, and finally create a therapy manual in which school-based motivational interviewing to reduce adolescent substance use is operationally defined and the principles underlying the intervention are analyzed and developed in detail. The expected pace of recruitment was 1-2 students per week and, based on prior studies, estimated study attrition was no more than 20% (Kenkel et al., 2003; Knight et al., 2005). Over approximately 13 weeks time, 26 students were screened for study participation, of which 18 were eligible for study participation. Five students were excluded from study participation because of a lack of substance use, one was excluded due to current receipt of substance abuse treatment, two were excluded due to heavy drug use or dependence, and two were excluded due to an inability to obtain parental consent. Of students eligible for study participation, six refused participation due to a lack of interest in cutting down on their use, or a desire to reduce their use independent of any assistance. Ten students were eligible for and interested in study participation and the rate of study attrition was 10%, resulting in 9 completers, which is an appropriate sample size for a study at this stage.

Table 3.1 Participant Demographic Data

Group	Variable	n	%
Assessment only	Gender		
	Male	1	25
	Female	3	75
	Ethnicity		
	Caucasian	1	25
	Hispanic	1	25
	African American	2	50
	Age		
	15	0	0
	16	0	0
	17	2	50
	18	2	50
Experimental	Gender		
	Male	4	80
	Female	1	20
	Ethnicity		
	Caucasian	3	60
	Hispanic	2	40
	African American	0	0
	Age		
	15	1	20
	16	2	40
	17	1	20
	18	1	20

To determine possible bias and confounding, the two study groups were compared on all baseline variables to determine if randomization produced two equivalent groups. Table 3.1 shows the descriptive statistics for each baseline variable sorted by group.

Participants in the experimental group had a slightly lower mean age than those in the assessment only group. In addition, participants in the assessment only group had a higher CRAFFT score and higher levels of baseline alcohol and marijuana use, whereas participants in the experimental group had higher baseline levels of cigarette use.

Table 3.2 Baseline Descriptive Statistics by Group

Group	Variable	n	Minimum	Maximum	Mean	SD
Assessment only	CRAFFT	4	1.00	6.00	4.25	2.22
	Dependence symptoms	4	3.00	6.00	4.50	1.29
	Readiness to change*	4	2.00	3.00	2.25	.50
	Cigarette TLFB	4	5.00	10.00	7.13	2.14
	Marijuana TLFB	4	.50	4.02	2.09	1.62
	Alcohol TLFB	4	.33	7.71	2.35	3.59
Experimental	CRAFFT	5	1.00	6.00	3.00	2.12
	Dependence symptoms	5	1.00	7.00	4.60	2.51
	Readiness to change*	5	2.00	3.00	2.60	.55
	Cigarette TLFB	5	3.75	16.22	10.22	5.19
	Marijuana TLFB	5	.00	2.19	.81	1.12
	Alcohol TLFB	5	.00	2.39	.87	.99

* For the Readiness to Change Questionnaire, the numerical values for each stage are as follows: 1= precontemplation, 2 = contemplation, and 3 = action

Primary Outcome Analyses

The primary endpoint was a decrease in tobacco and marijuana use as measured by the 90-day Timeline Followback Calendar (Sobell & Sobell, 1995). Due to the nature of the motivational intervention, adolescents were able to choose reduction in alcohol and other drug use as goals for behavior change. For this reason, reduction in alcohol and other drug use was also tracked. Although addressing multiple behavioral risk factors is a pressing public health concern (Pronk, Peek, & Goldstein, 2004), there are many difficulties associated with intervening on multiple behaviors simultaneously, and very few multiple behavior change studies have produced significant outcomes (Ebrahim & Smith, 1997; Kreuter, Lezin, & Yung, 2000; Prochaska et al., 2004;). This study intervention primarily focused on reduction in tobacco use because all participants identified reduction in cigarette use as their primary goal, although some participants expressed the intention to reduce their marijuana use at a later date.

The secondary endpoint was the positive change in stage of readiness to change, as measured by the Readiness to Change Questionnaire (Sobell & Sobell, 1995). Potential additional measures of treatment effect include change over time in participant CRAFFT scores, average daily marijuana or alcohol use as measured by the Timeline Followback, and the number of DSM-IV cigarette dependence symptoms endorsed. All data were downloaded directly from computer software as all assessments were computer administered. Because all study hypotheses were directional, for all statistical tests, a 1-tailed $p<.10$ was considered statistically significant.

Table 3.3 Difference Scores by Group

Group	Variable	n	Minimum	Maximum	Mean	SD
Assessment only	CRAFFT	4	0.00	4.00	2.00	1.63
	Dependence symptoms	4	-1.00	3.00	.50	1.73
	Readiness to change*	4	-1.00	1.00	0.00	.82
	Cigarette TLFB	4	-6.08	4.68	.57	4.77
	Marijuana TLFB	4	.50	2.08	1.31**	.73
	Alcohol TLFB	4	-.09	5.86	1.61	2.84
Experimental	CRAFFT	5	-1.00	3.00	1.00	1.58
	Dependence symptoms	5	-1.00	4.00	1.80**	1.79
	Readiness to change*	5	-1.00	1.00	-.20	.84
	Cigarette TLFB	5	.92	11.07	3.80**	4.12
	Marijuana TLFB	5	-.81	0.00	-.28	.33
	Alcohol TLFB	5	-.29	2.39	.53	1.08

* For the Readiness to Change Questionnaire, the numerical values for each stage are as follows: 1= precontemplation, 2 = contemplation, and 3 = action
** Statistically significant decrease at $p<.10$

Two dependent samples nonparametric analyses were used to test each hypothesis, with average daily use for each substance and readiness to change as the dependent variables and time as the independent variable. Distribution-free nonparametric statistics were utilized due to the small sample size and inability to meet the assumptions required of parametric analyses. A Wilcoxon matched pairs signed-

ranks test was used to compare baseline and follow-up scores on all measures. Results of the analysis indicated that there was a significant decrease in cigarette use as measured by the Timeline Followback for participants in the experimental group ($z = -2.02$, $p = .04$). A significant decrease in DSM-IV cigarette dependence symptoms was also demonstrated for participants in the experimental group ($z = -1.79$, $p = .07$). Results also indicated a significant decrease in marijuana use as measured by the Timeline Followback for participants in the assessment only group ($z = -1.83$, $p = .07$). These results demonstrate that the intervention was effective in reducing daily cigarette use and symptoms of cigarette dependence for participants in the experimental group. Although participants in the assessment only condition did not show similar effects, they did significantly reduce their daily marijuana use over time. No significant results were found for other variables, including readiness to change, for either group.

Intervention Feasibility and Treatment Utility

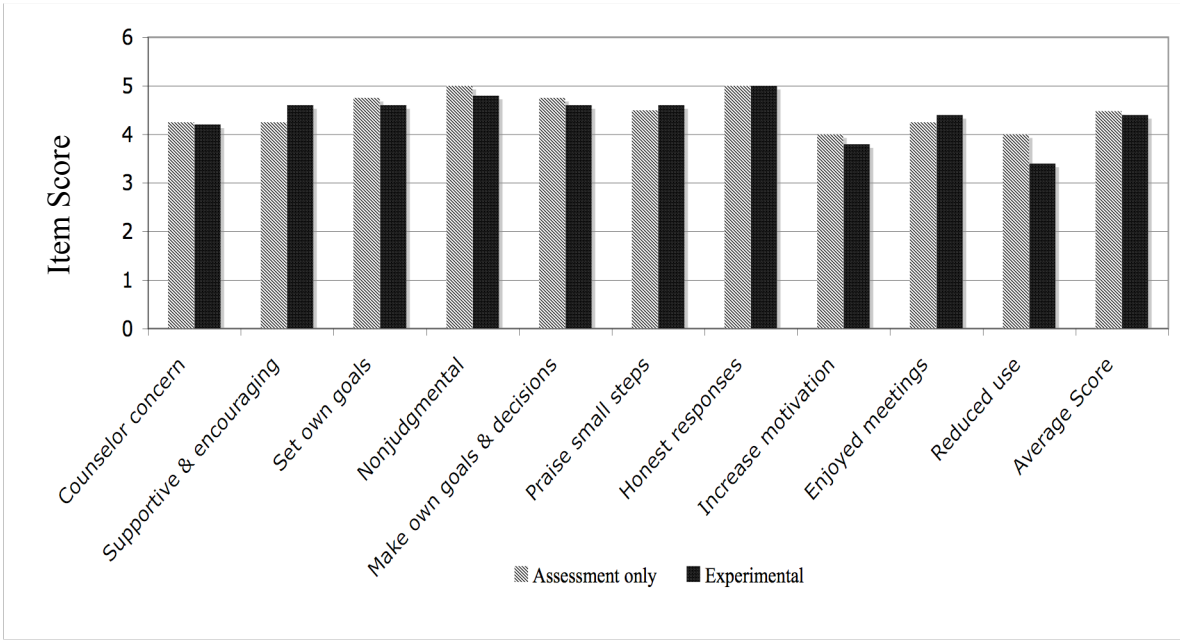
A second specific aim for this study was to evaluate the feasibility of utilizing motivational interviewing to reduce adolescent substance use in the school setting. Intervention feasibility was assessed using guidelines from process evaluation literature (Linan & Steckler, 2002; Oakley, Strange, Bonell, Allen, & Stephenson, 2006). Specifically, the implementation, receipt, and setting of the intervention was evaluated to determine the feasibility of the intervention including cost-effectiveness, social validity, and treatment integrity. In addition to the data previously reported on participant eligibility, refusal, retention/attrition rates, and parental consent, the time commitment for study personnel was recorded to evaluate intervention cost and feasibility. The two intervention counselors reported that each counseling session lasted 30-45 minutes, and

that the entire intervention, including time for planning and follow-up, took 1.5-2 hours per participant. Both counselors reported that this amount of time was feasible given their school schedule and regular workload. In addition, participants completed a brief questionnaire to evaluate the treatment integrity and social validity of the intervention.

Table 3.4 Student Satisfaction Scale Descriptive Data

Group	Item	n	Min	Max	Mean	SD
Assessment only	Counselor concern	4	3.00	5.00	4.25	.96
	Supportive, encouraging	4	3.00	5.00	4.25	.96
	Set own goals	4	4.00	5.00	4.75	.50
	Nonjudgmental	4	5.00	5.00	5.00	.00
	Make own goals & decisions	4	4.00	5.00	4.75	.50
	Praise small steps	4	3.00	5.00	4.50	1.00
	Honest responses	4	5.00	5.00	5.00	.00
	Increase motivation	4	3.00	5.00	4.00	1.15
	Enjoyed meetings	4	3.00	5.00	4.25	.96
	Reduced use	4	2.00	5.00	4.00	1.41
	Average score	4	3.75	5.00	4.48	.64
Experimental	Counselor concern	5	3.00	5.00	4.20	.84
	Supportive, encouraging	5	4.00	5.00	4.60	.55
	Set own goals	5	4.00	5.00	4.60	.55
	Nonjudgmental	5	4.00	5.00	4.80	.45
	Make own goals & decisions	5	4.00	5.00	4.60	.55
	Praise small steps	5	4.00	5.00	4.60	.55
	Honest responses	5	5.00	5.00	5.00	.00
	Increase motivation	5	3.00	4.00	3.80	.45
	Enjoyed meetings	5	4.00	5.00	4.40	.55
	Reduced use	5	3.00	4.00	3.40	.55
	Average score	5	4.00	4.80	4.40	.35

Figure 3.1 Student Satisfaction Scale Results



Participants in both the assessment only and experimental conditions completed the Student Satisfaction Scale at one-month follow-up. Although some of the questions did not pertain to participants in the assessment only group, other questions were relevant, such as whether they gave honest responses or reduced their substance use. Participant responses by group appear in Figure 3.1, and descriptive scale statistics appear in Table 3.4. All students reported being honest "all the time" about their substance use when completing questionnaires and talking with their counselor, which lends additional support to research indicating that self-report measures of substance use have a high level of validity (Dolcini et al., 2003; Kenkel et al., 2003; Levy et al., 2004). Participants in the experimental group reported high levels of counselor characteristics and behavior that are central to motivational interviewing, confirming substantive treatment integrity. Participant report of increased motivation and reduced use as a result of the intervention averaged between "sometimes" and "frequently;" thus, their perceived

treatment utility was not to the highest degree, though they still indicated a positive effect. Similarly, participants reported “frequently” enjoyed the intervention sessions.

CHAPTER IV

DISCUSSION

Substance abuse is the foremost health problem in the United States, and adolescents are among those abusing drugs and alcohol. Effective substance use interventions for young adults are important in preventing the progression toward other drug use disorders and harmful consequences of frequent drug use. Schools have been identified as a viable setting in which to conduct brief interventions to reduce adolescent substance use. However, a standard therapy for implementing motivational interventions in the school setting has not yet been established. The purpose of this study was to investigate the efficacy of a motivational intervention on substance use in a school-based adolescent population.

Importance of Study Results

The first research hypothesis was that motivational interviewing, compared to assessment only, would result in a decrease in tobacco and marijuana use. The second research hypothesis was that motivational interviewing, compared to assessment only, would result in an increase in each participant's readiness to change. Results demonstrated that the intervention was effective in reducing daily cigarette use and symptoms of cigarette dependence for participants in the experimental group. Participants in the assessment only condition did not show similar effects; however, they did significantly reduce their daily marijuana use over time. No significant results were found for other variables, including readiness to change, for either group.

All participants identified reduction in cigarette use as their primary goal, although some participants expressed the intention to reduce their marijuana use at a later

date. Thus, the significant reduction in average daily cigarette for participants in the experimental group indicates that the primary goal of the intervention was accomplished. These results demonstrate that this school-based motivational intervention is effective in reducing adolescent tobacco use. These results are consistent with past research investigating the effectiveness of motivational interventions on reducing adolescent substance use. Several researchers have found significant reductions in marijuana and cigarette use for participants who have received brief motivational interventions or a combined Motivational Enhancement/Cognitive Behavioral Therapy at three-month follow-up (Carroll et al., 2006; Colby et al., 1998; Martin & Copeland, 2008; Walker et al., 2007).

Only one of the aforementioned research studies was conducted in the school setting, and it utilized external researchers to implement interventions (Walker et al., 2007). In contrast, a school adjustment counselor and school psychologist already employed in the Pittsfield Public Schools delivered the current intervention as part of their existing role as a student support professional. Thus, the current study results are important because this is the first school-based motivational intervention delivered by school personnel to effectively reduce adolescent substance use. Although this research may warrant replication with larger sample sizes, preliminary results indicate that the current intervention could be implemented as a standard therapy for using motivational interventions to decrease adolescent tobacco use in the school setting.

Participants did not significantly increase their readiness to change over the course of this intervention. However, many participants began the intervention with baseline levels of the highest stage of readiness to change; thus, movement along the

continuum was not possible. Although DiClemente and Prochaska's (1998) transtheoretical model of change includes five stages that segment the process of behavior change into meaningful steps, Heather and Rollnick's (1993) current Readiness to Change Questionnaire only includes three of these stages in their assessment. Thus, the Readiness to Change Questionnaire may be less sensitive to change over time than if it included an assessment of all five stages of change. Budd and Rollnick's (1996) results support this proposition. They evaluated the structure of the Readiness to Change Questionnaire in comparison to DiClemente and Prochaska's (1998) model and found that the Readiness to Change Questionnaire lacks discriminant validity and that a more continuous measure of readiness to change is better correlated with participants' intentions to reduce substance use (Budd & Rollnick, 1996). Therefore, although study participants may have advanced their motivation to change over the course of the intervention, it may not have been accurately estimated by their responses on the Readiness to Change Questionnaire.

The finding that participants in the assessment only condition significantly reduced their daily marijuana use over time was unexpected. It may be explained by the phenomenon of regression to the mean. The baseline average daily marijuana use for participants in the assessment only group was more than double that of participants in the experimental group ($M = 2.09$, $M = .81$) whereas their average daily marijuana use at one-month follow-up was roughly equivalent ($M = .78$, $M = 1.09$). Because both groups of participants were drawn from the same student population, one might assume that in general the daily marijuana use for both groups might be equivalent. Several researchers have indicated that regression to the mean is a widespread and often unrecognized

phenomenon that can bias treatment findings in substance use intervention studies (Finney, 2007; Gmel, Wicki, Rehm, & Heeb, 2007).

Study Limitations

These results should be interpreted in the context of the study's limitations. First, all data collected were self-report. Although lab test validation or parental collateral report could have been used to confirm the participants' reports of substance use, these procedures have several limitations. Parents often provide an underestimate of their adolescents' substance use, and study participation rates would likely have been lower as collecting parental collateral reports is a potential breach of privacy (Chung et al., 2003; Rojas et al., 2008; Winters et al., 2000; Youngstrom et al., 2000). In addition, school-based laboratory drug testing is unsubstantiated and is not recommended by many physicians (Levy et al., 2006; Yamaguchu et al., 2003). Although off-campus drug screening was a possibility, this would have required logistically difficult travel for students and potentially lowered rates of study enrollment and compliance. In addition to the aforementioned problems with obtaining laboratory test validation and parent collateral reports, these methods would have been detrimental to the spirit of the intervention, which stresses collaboration and autonomy.

Because motivational interviewing techniques stress participant self-direction and independence, and interviewers are non-judgmental in nature, the threat of self-report falsification is somewhat minimized, and this method of data collection has been shown to be reliable in a number of studies (Dolcini et al., 2003; Kenkel et al., 2003; Levy et al., 2004). Computer survey technology was used as an alternative method of increasing the validity of self-report measures of substance use, as studies have found that adolescents

are as much as three times more likely to disclose drug use when assessed by a computer-based interview than when assessed by a face-to-face interview or written questionnaire (Bungey et al., 1989; Gerbert et al., 1999; Turner et al., 1998).

An additional study limitation is that the primary investigator both collected pre- and post-intervention data as well as performed the motivational interventions with the majority of participants. This dual role represents a potential threat to construct validity of putative causes and effects, as experimenter expectancies may have been communicated to participants in subtle ways and participants may have responded to these expectations with false reports. This threat would have been minimized if a research assistant were employed to administer pre- and post-intervention assessments, or if the primary investigator had not delivered motivational interventions. A research assistant was not available due to budgetary limitations, though it would have been possible for a school employee to deliver these assessments. However, the threat to participant confidentiality was too great to employ non-clinician school personnel in this capacity, as they may have lacked the training and clinical skills to fully separate information obtained through the research study and that obtained through regular school contact.

The small sample size is both a threat to statistical conclusion validity and external validity, limiting the power to detect a true relationship between the independent and dependent variables if indeed a true relationship exists, and limiting the generality of study conclusions across participants and settings. The necessity of obtaining parental consent for minor participant participation likely decreased study participation rates (Rojas et al., 2008). In this research study in particularly, students frequently forgot or

lost the parental consent forms and many parents were difficult to reach to obtain telephone consent during the school day. In the future, a waiver of parental consent may be obtained for study participation, as under Massachusetts state law, Minors as young as 12 years of age are able to consent for substance abuse disorders on their own (MGL Ch. 112, Sec. 12E). According to the federal regulation waiver requirements in §46.116 of Subpart A, "An IRB may approve a consent procedure, which does not include, or which alters, some or all of the elements of informed consent set forth in this section, or waive the requirements to obtain informed consent, provided the IRB finds and documents that" (1) The research involves no more than minimal risk to the participants, (2) The waiver or alteration will not adversely affect the rights and welfare of the participants, (3) The research could not practicably be carried out without the waiver or alteration, and (4) Whenever appropriate, the participants will be provided with additional pertinent information after participation. Although this research may have met these conditions, the Institutional Review Board at the Pittsfield Public Schools previously communicated that they would not have approved a research plan that included a waiver of parental consent for the proposed intervention. School requirements for parental consent frequently inhibit student participation in adolescent research studies (McCormick, Crawford, Anderson, Gittelsohn, Kingsley, & Upson, 1999). Many school administrators may worry about possible negative ramifications of student study participation without parental knowledge; one school administrator in the current study required that all students, even those aged 18 and older, obtain parental consent prior to study participation. In addition, roughly half of Institutional Review Boards surveyed report that they will not grant a waiver of parental consent, as they consider smoking and

substance abuse research among minors to pose more than minimal risk (Wagner, Sporer, Simmerling, Flome, An, & Curry, 2004).

An additional factor limiting the study sample size was the difficulty in obtaining Institutional Review Board approval due to the sensitive nature of the study. Of the fifteen available months for study recruitment at the Pittsfield Public Schools, human subjects approval of the study methodology and intervention materials took seven months at the University of Massachusetts Amherst and an additional three months at the Pittsfield Public Schools, thus limiting available recruitment time to six consecutive months. As schools are multi-layer organizations and it is necessary to receive approval and support from each specific setting, permission to conduct this research was sought and granted from the Pittsfield Public School superintendent's office, the Director of the Juvenile Resource Center, as well as the Berkshire county sheriff who employs most staff at the Juvenile Resource Center, and the principal of Pittsfield High School. The difficulties and lengthiness of waiting time encountered while seeking Institutional Review Board approval in this research study are not unusual. Research involving adolescents and reports of risky or illegal behavior typically experience recruitment delays, extra administrative work, and additional problems due to human subjects concerns (Divak, Curry, Emery, & Mermelstein, 2004; McCormick et al., 1999).

Assessments were administered at baseline and one month later, though it would have been ideal to conduct follow-up assessments at a later date. I had initially proposed to conduct follow-up assessments three months after baseline; however, the Institutional Review Board at the Pittsfield Public Schools previously communicated that they would not have approved a research plan that included participants in the assessment only

condition waiting to receive the intervention for this length of time. Future research could avoid this problem by trading a waitlist control group in favor of intervention comparison groups; regardless, long-term follow-up assessment data will be necessary to more fully determine long-term intervention effects.

Implications for Practice

The primary study aim was to evaluate the efficacy of a motivational intervention on substance use in a school-based adolescent population. Study participants identified cigarette use as their target substance for reduction, and participants who received the motivational intervention significantly reduced their tobacco use over time. These results demonstrate that the primary goal of the intervention was accomplished; thus, the current school-based motivational intervention is effective in reducing adolescent tobacco use. These results are significant because this is the first school-based motivational intervention delivered by school personnel to effectively reduce adolescent substance use. Therefore, the current intervention could be implemented as a standard therapy for using motivational interventions to decrease adolescent tobacco use in the school setting.

Although schools have been identified as a viable setting in which to conduct brief interventions to reduce adolescent substance use, caution must be exercised with regard to student confidentiality and safety. School personnel collecting information about student substance use must take great care to keep this information strictly confidential from school administrators, teachers, and parents unless warranted due to a threat to student safety. Student reports of illegal behavior, if communicated to other school personnel, can severely affect teacher perceptions, treatment by school administrators, and future career opportunities for students. Each district has their own

policy about receiving parental consent before meeting with students for assessment and intervention. However, under Massachusetts state law, minors as young as 12 years of age are able to consent to treatment for substance abuse disorders on their own without parental permission.

Brief motivational interventions are not adequate or intended to treat students with severe addiction or highly risky substance use. Thus, alcohol and drug dependence should result in immediate referral to more intensive treatment. Likewise, students who minimize the impact of their use, or who are using highly dangerous drugs (such as cocaine or heroin) should also receive further assessment and treatment.

With these precautions in mind, school psychologists, counselors, and nurses are ideal school-based personnel to conduct motivational interventions with students who are interested in reducing their substance use. The included training manual and intervention forms will aide in implementing brief motivational interventions, although all school personnel intending to deliver motivational interventions should receive training from a clinician with ample experience delivering motivational interventions. With the proper training and precautions, school-based student support personnel are in a unique position to aide adolescents in need of treatment who are unlikely to pursue counseling outside of the school setting.

Appendix A
STUDENT SATISFACTION SCALE

The questions below are intended to rate your experience and satisfaction with the intervention you received. Please rate your best estimate of the accuracy of each item.

	Not at all	Infrequently	Sometimes	Frequently	All the time
My counselor showed genuine concern for my well-being.	☐	☐	☐	☐	☐
My counselor was supportive and encouraging during our meetings.	☐	☐	☐	☐	☐
My counselor allowed me to set my own goals.	☐	☐	☐	☐	☐
My counselor was nonjudgmental and did not show disapproval of my substance use.	☐	☐	☐	☐	☐
My counselor emphasized the importance of me making my own goals and decisions.	☐	☐	☐	☐	☐
My counselor praised me for even small steps I took to reduce my substance use.	☐	☐	☐	☐	☐
I was honest about my substance use when completing questionnaires and talking with my counselor during these meetings.	☐	☐	☐	☐	☐
These meetings increased my motivation to reduce my substance use.	☐	☐	☐	☐	☐
I enjoyed these meetings with my counselor.	☐	☐	☐	☐	☐
I reduced my substance use as a result of this intervention.	☐	☐	☐	☐	☐

APPENDIX B:

BRIEF INTERVENTION MANUAL: SCHOOL-BASED MOTIVATIONAL INTERVIEWING WITH SUBSTANCE USING ADOLESCENTS

Adapted with permission from Levy, S., Pugatch, M., & Knight, J.R. (2003). *Brief intervention manual: Motivational interviewing with alcohol and drug involved adolescent outpatients.* Children's Hospital Boston: Boston, MA.

Manual Overview

This manual is intended for school student support services and healthcare personnel, including school adjustment counselors, school psychologists, guidance counselors, and school nurses. It is designed for clinicians who would like to incorporate brief motivational interventions into their in-school service delivery with at-risk adolescents. It includes background on the research and theories related to motivational interviewing, as well as a step-by-step description of an intervention that can help adolescents reduce their substance use.

Brief Interventions

A brief intervention is a small number of counseling sessions delivered by a trained clinician whose goal is to help a person change a particular behavior. Numerous research studies have shown that brief interventions delivered in the medical office setting have successfully reduced patient substance use. Most brief interventions involve a limited number of counseling sessions (e.g. 1-12) over a relatively brief period of time (e.g. 1-6 months). Many interventions include these common elements: 1) assessment and feedback, 2) goal setting, 3) brief cognitive-behavioral counseling, and 4) follow-up and reinforcement. Brief motivational interventions have produced positive results in many research studies with adolescent substance users. Similar school-based

interventions delivered by school counselors and other student support personnel have been effective in reducing adolescent substance use in several research studies as well.

Adolescence

Adolescence is a complex developmental period replete with physical and psychological changes. It is an especially vulnerable period for developing substance use disorders and adolescents, as well as adults, are among those abusing drugs and alcohol. The three leading causes of death among adolescents – accidents, homicides, and suicides – are all associated with substance use. Approximately one half of high school students use alcohol and one-fourth smoke marijuana. Tobacco is known as a "gateway drug" that may lead to the initiation of alcohol and illicit drug use. Substance use during adolescence may interfere with normal cognitive, emotional, and social development and early alcohol and drug use, particularly during adolescence, is associated with an increased risk of adulthood substance abuse or dependence.

Motivational interviewing strategies appear to be well suited for adolescents and young adults. The technique does not increase resistance and utilizes ambivalence to develop motivation to change. In addition, the brief duration of motivational interventions and the emphasis on the student's self-direction and independence may be particularly attractive to adolescents. Schools provide a unique opportunity for intervention in that many adolescents in need of treatment are unlikely to visit a medical or counseling office, but may choose to receive treatment if conveniently located at school and conducted by their school nurse, counselor, or psychologist, with whom they may already have an existing relationship.

Motivational Interviewing

Motivational Interviewing is a counseling style that aims to create the conditions necessary for positive change. It is typically delivered as a brief intervention, either to assist students in reducing their substance use, or as a prelude to more intensive treatment. The spirit of motivational interviewing is one of collaboration, evocation, and autonomy. Counseling is seen as a partnership and the counselor promotes an atmosphere that is conducive to change. The counselor's focus in motivational interviewing is to elicit the student's intrinsic motivation to change through exploring and resolving ambivalence about behavior change. The four main principles of motivational interviewing are 1) express empathy, 2) develop discrepancy, 3) roll with resistance, and 4) support self-efficacy.

Express Empathy

Expressing empathy and unconditional positive regard during counseling with students is an important part of any counseling relationship. When counselors express empathy, they try to understand the student's feelings and point of view without judgment, criticism, or blame. The counselor's respectful listening and nonjudgmental attitude help build a therapeutic alliance, which aids the student in feeling accepted and builds self-esteem, further promoting positive change. It is important to note that understanding and acceptance are not identical to approval; it is quite possible to express empathy without implying agreement.

Develop Discrepancy

When students see a discrepancy between their current behavior and important personal goals, this discrepancy provides further motivation for change to occur. For

example, many students value their athletic ability but have noticed a decrease in performance since they have been smoking cigarettes or marijuana. Other students are interested in getting an after school job or saving money to buy a car or for college, but are spending too much time and money drinking or smoking to achieve these goals. When students see this discrepancy between how they are acting and who they would like to be, their perceived importance of change may be amplified enough to motivate action. Thus, one of the fundamentals of motivational interviewing is developing a discrepancy between the student's present behavior and desired goal; this "change talk" can be accomplished through having the student discuss the disadvantages of their current situation and the advantages of change.

Roll with Resistance

Arguing with students generally heightens their resistance to change. Newton's third law states that every force applied to a stationary body is met by equal and opposite force, and a similar principle applies to behavior change. The more demands that others make on adolescents to change, the less likely they are to change. Instead, continue to express empathy, and ask questions that are likely to have the student discuss the negative aspects of their own behavior. For example, ask what the student dislikes about using alcohol or drugs, or how they would feel if their younger siblings knew they were using, or began using alcohol or drugs themselves. These questions are likely to increase the student's awareness of the risks and problems of substance use, and to develop a discrepancy between their hopes for themselves and their family members, and their current behavior.

When adolescents express resistance to change, perhaps by refusing to cut down or stating that their use is not a problem, it may be helpful to ask the student to think about the issue on their own. For example, a good technique is to express understanding and summarize the students' point of view, and then to ask them to work with you to come up with a list of situations that would indicate when their substance use has become a problem. This approach minimizes the likelihood of an angry confrontation that could damage the therapeutic relationship and only increase resistance to change, and it allows students to define problematic substance use for themselves. In this way you can leave open the possibility of future treatment by asking students to monitor their own behavior and return if they identify a problem.

Support Self-Efficacy

The final principle of motivational interviewing is supporting student self-efficacy. Self-efficacy is defined as the level of confidence that people have in their ability to change. Students may resist treatment because they are afraid that they will not be successful in changing their behavior. Counselors' expectations about the student's likelihood of change can powerfully affect treatment outcomes through boosting their confidence in their ability to cope with obstacles and succeed with behavior change. Thus, motivational interviewing emphasizes the importance of both students' and counselor's beliefs about the possibility of change, and we are sure to communicate our confidence in students' ability to change, and our willingness and ability to help them achieve their goals. Try to always offer encouragement and end the interview on a positive note.

Behavior Change

An important component of motivational interviewing is its conceptualization of behavior change. Researchers created a model that identifies the stages and processes of change. This model represents change as a cyclical pattern of movement through the stages of change, which suggests that people do not typically linearly progress through the stages of change; rather, relapse and recycling through the stages are common. The model segments the process of behavior change into five meaningful steps; these stages include precontemplation, contemplation, preparation, action, and maintenance. People move from unawareness of a problem and unwillingness to consider change, to determination and preparation to make change, to making the change, and finally maintaining change over time. Motivational interviewing utilizes several behavior change strategies to assist students in moving through these stages of change. It is important to assess a student's stage of change and tailor the intervention accordingly.

Brief School-Based Motivational Intervention

The following material provides specific information about conducting motivational interviewing with substance using adolescents in the school setting through two counseling sessions. Intervention forms are provided at the end of this manual for use with students smoking cigarettes and/or marijuana. They can be easily revised for use with students using alcohol and other drugs.

Session One: Initiation

The basic principles of the first session are to help encourage students to think about 1) The role that alcohol and drugs play in their lives, 2) Their personal goals around their substance use, and 3) Strategies for reaching and maintaining their goals.

The emphasis of the session will vary with individual students depending on their attitudes and feelings about treatment and change; however, you should spend some time with each student discussing the principles listed above.

Step 1: Introduction and Engagement: Establishing an understanding of treatment

The first step is to create a positive therapeutic relationship between the student and counselor. The student will need to take an active role in treatment, and this first step prepares the adolescent about what to expect and communicates the importance of honesty. Generally the counselor will do most of the talking at this point, though the student should be encouraged to ask questions and/or make comments.

1) Clearly state the purpose of the intervention. Let the student know what to expect.
    - We're here to discuss the impact that drugs and alcohol are having on your life.
    - The decision to change is up to you.
    - I am here to help and support you in accomplishing your own goals.
2) Discuss confidentiality. Even if the student has heard about confidentiality before, it is important to repeat the rules as many students may still have misconceptions.
    - Anything you tell me will be kept just between us and confidential, unless I feel that you or someone else is at risk.
    - In that case, we will figure out together how to tell other people such as your school counselor or parents.
3) Discuss the ground rules of the relationship.
    - You are in charge of decision-making.
    - I am very interested in your point of view and opinion.
    - We both must be honest with one another.

- I will not judge you but need to hear the full story in order to help.

Step 2: Participant Assessment

The purpose of assessment is to understand students' current use and the context in which they're using, as well as to assess their readiness to change.

- Administer the CRAFFT questions.
    - C: Have you ever ridden in a **CAR** driven by someone (including yourself) who was high or had been using alcohol or drugs?
    - R: Do you ever use alcohol or drugs to **RELAX**, feel better about yourself, or fit in?
    - A: Do you ever use alcohol or drugs while you are by yourself **ALONE**?
    - F: Do you ever **FORGET** things you did while using alcohol or drugs?
    - F: Do your **f**amily or **FRIENDS** ever tell you that you should cut down on your drinking or drug use?
    - T: Have you ever gotten into **TROUBLE** while you were using alcohol or drugs?
- Follow-up each positive answer, allowing 2-3 minutes of discussion of each positive item before moving on. This will invite the adolescent into a mode of evaluating his/her own substance use.
- Discuss the adolescent's CRAFFT score, days of use, and amount of use compared to age and gender norms.

Step 3: Identification of risks and problems

At this point the adolescent is asked to compare the risks and benefits of use. It will be helpful to ask the adolescent to discuss their likes and dislikes about using, as well as the pros and cons of change.

- Discuss the pros and cons of change.
- Ask about the adolescent's goals over the next few years, and how their use might affect achievement of each of these goals.

Step 4: Complete change plan worksheet

This is the time for students to identify goals for themselves about their substance use. This can be frustrating for counselors because we would generally like students' goals to be abstinence, but most students will choose simply a reduction of use. It is helpful to remember that this is a gradual process and any movement toward change is positive. It is better to have students who will honestly tell you that they intend to slightly cut down on their use rather than have students who lie and say they will be abstinent even though this is not their intention. It is possible to recommend abstinence while still accepting the student's goals for themselves. Complete the change plan worksheet using the student's own goals.

- Help students identify their substance use goals. Encourage them to be as specific as possible. Goals should be mutually agreed upon, realistic, and personalized to the adolescent.
- Brainstorm with adolescent on strategies to meet goals and to overcome risky situations. Write down their own words on the change plan worksheet.

Step 5: Summary and follow-up plan

- Summarize discussion and plan, and arrange follow-up.
- Contract for non-use, moderation, and/or risk reduction.
- With students who are not ready to change, convey the message that you care about them, are worried about them, and will be there for them.

- Give student a copy of the completed Change Plan Worksheet.

Session two: Reinforcement

Session two will be different for both the student and counselor when compared to session one. Much of the confidence of the adolescent that reducing or ceasing their use will be easy will yield to the realization that change is harder than they had previously thought. Some students will have met their goals and maintain that they do not have a problem with drugs or alcohol, whereas others may not meet their goals and may admit to not giving true effort. The counselor should listen attentively to the student, re-assess their readiness to change, reinforce any positive changes, and continue to try to help the student increase their motivation and ability to change.

Step 1: Review Session 1

The first step is to review the goals from the first session and ask how the student did in achieving these goals.

- Administer the CRAFFT questions and compare the student's responses to those from the first visit
- Review together the Change Plan Worksheet written at last visit.
- Ask how students did in achieving the goals? Which strategies did they try? How did they work?

Step 2: Identify successes and barriers to success

It is important for the counselor to identify and acknowledge even small successes when students have made real effort toward achieving their goals. However, some students will have made little or no effort toward meeting their goals; in this case, the reasons should be discussed and goals may need to be revised.

- Give praise for students' successes and efforts, no matter how small. Remind students who may be discouraged with their progress that change is gradual process that takes time. Encourage and praise them for what they did achieve.
- Discuss barriers to success or additional anticipated risk situations.
- Begin to fill out new or revised Change Plan worksheet.

Step 3: Develop new strategies for change

It will be helpful for the counselor to assist students in identifying new strategies to avoid the barriers of success. Some adolescents will identify impractical or unhealthy strategies, such as substituting one drug for another. The counselor should challenge those strategies in a nonconfrontational manner and help the student identify more healthy and realistic substitutions. Encourage students that they will be able to identify strategies that won't require them to give up all of their social activities.

- Ask the student to think of ways to avoid barriers, or to minimize them.
- Ask the student how to reduce frequency and quantity of drug and alcohol use.
- Write down new goals and strategies on a new change plan worksheet. Give the adolescent a copy as a reminder.

Step 4: Summary and follow-up plan

- Summarize agreed upon goals and change plan. Contract for non-use, moderation, and/or risk reduction.
- Arrange follow-up if needed. It is helpful to schedule a brief follow-up check-in for students who have completed both sessions, with an open invitation to come back sooner if they encounter problems.

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APPENDIX C:

BRIEF INTERVENTION FORMS

Table of Contents:

Session I Form

Change Plan Worksheet

Session II Form

Nicotine and Cannabis Dependence: DSM-IV Criteria-Based Questions

DSM-IV Substance Abuse and Dependence Criteria

Controlled Use Trial and Abstinence Challenge

SPECIFIC OUTLINE FOR THE FIRST INTERVIEW

Student: Date:

Interviewer: Location:

Establish an understanding of the purpose of treatment

☐ Clearly state the purpose of the intervention

- *We will explore together the impact that smoking may be having on your life*
- *The decision to change is up to you*
- *I want to help you accomplish change*

☐ Discuss confidentiality

- *Anything you tell me will be kept confidential unless you or someone else is at risk*
- *In that case, we'll figure out how to tell other people, such as your SAC or parents*

☐ Discuss ground rules of the relationship

- *You are in charge of decision-making*
- *I am very interested in your point of view and opinion*
- *We both must be honest with one another*
- *I will not judge you but need to hear the full story in order to help*

Assessment

☐ Repeat CRAFFT Questions to discuss current use

Visit 1 Date: _____	**Yes**	**No**
C: Have you ever ridden in a **CAR** driven by someone (including yourself) who was high or had been using alcohol or drugs?	☐	☐
R: Do you ever use alcohol or drugs to **RELAX**, feel better about yourself, or fit in?	☐	☐
A: Do you ever use alcohol or drugs while you are by yourself **ALONE**?	☐	☐
F: Do you ever **FORGET** things you did while using alcohol or drugs?	☐	☐
F: Do your **f**amily or **FRIENDS** ever tell you that you should cut down on your drinking or drug use?	☐	☐
T: Have you ever gotten into **TROUBLE** while you were using alcohol or drugs?	☐	☐

☐ Notes/Describe current use:

_____

_____

_____

_____

☐ History of use: *When did you begin your substance use and why?*

_____

_____

_____

_____

Identification of the student's motivation to smoke cigarettes and/or marijuana

☐ **Pros and Cons of use:** *What are some of the things you LIKE about smoking? What are some of the things you DISLIKE about smoking?*

PROS	**CONS**

☐ LIFE GOALS: *What are your goals for your life over the next few years?* Affirm goals if appropriate. *How might smoking make it harder to reach your goals?*

GOAL:	**How might smoking make it harder to reach this goal?**

☐ **ASSESS STAGE OF CHANGE** (*On a scale of 1 to 10, how IMPORTANT it is for you to change your smoking behavior, and how CONFIDENT are you that you can change your behavior*).

- ☐ Pre-contemplation
- ☐ Contemplation
- ☐ Preparation
- ☐ Action
- ☐ Maintenance

☐ Feedback, including pros and cons of change (mainly for students minimizing use)

_____

_____

_____

_____

Complete change plan worksheet

☐ Identify student's goals for self regarding substance use

_____

_____

_____

_____

☐ *What things can help you achieve your goals?*

_____

_____

_____

_____

☐ *What are some obstacles that may prevent you from achieving your goals?*

_____

_____

_____

_____

☐ *Who can help you achieve your goals?*

_____

_____

_____

_____

☐ Brainstorm with adolescent on strategies to meet his/her goals (talk about risky situations, ways to reduce frequency of use, stressors that may trigger use)

_____

_____

_____

_____

_____

_____

Summary and follow-up plan

☐ Summarize discussion and plan while completing change plan worksheet

☐ Schedule next session: Date_____ Time_____

☐ Give a copy of the change plan worksheet

CHANGE PLAN WORKSHEET

The changes I want to make (or continue making) are:
The reasons why I want to make these changes are:
The steps I plan to take in changing are:
The ways other people can help me are:
I will know that my plan is working if:
Some things that could interfere with my plan are:
What I will do if the plan isn't working:

Next meeting scheduled: Day _____ Time _____ Place _____

SPECIFIC OUTLINE FOR FOLLOW-UP INTERVIEWS

Student: Date:

Interviewer: Location:

Review of the purpose of treatment

☐ Reminder of confidentiality

- *Anything you tell me will be kept confidential unless you or someone else is at risk. In that case, we'll figure out how to tell other people, such as your parents.*

☐ CRAFFT questions: *Let's start by going over your past and current use.*

Visit 2 Date: _____	**Yes**	**No**
C: Have you ridden in a **CAR** driven by someone (including yourself) who was high or had been using alcohol or drugs?	☐	☐
R: Do you use alcohol or drugs to **RELAX**, feel better about yourself, or fit in?	☐	☐
A: Do you use alcohol or drugs while you are by yourself **ALONE**?	☐	☐
F: Do you **FORGET** things you did while using alcohol or drugs?	☐	☐
F: Do your **f**amily or **FRIENDS** tell you that you should cut down on your drinking or drug use?	☐	☐
T: Have you gotten into **TROUBLE** while you were using alcohol or drugs?	☐	☐

☐ Notes/Describe current use:

_____

_____

_____

_____

Review of change plan and goals from session one

☐ Review change plan worksheet from session one

☐ Assess goal achievement.

- *How did you do in achieving your goals?*

_____

_____

_____

_____

- *Which strategies did you try? How did they work?*

_____

_____

_____

_____

☐ Deliver positive reinforcement and praise for student's successes and/or efforts, no matter how small

☐ Determine effectiveness of strategies previously identified

_____

_____

_____

_____

Identify stresses and barriers to success

☐ Discuss barriers to success or additional anticipated risk situations

_____

_____

_____

_____

Begin to fill out new or revised change plan worksheet

☐ Identify student's goals for self regarding substance use

_____

_____

_____

_____

☐ *What things can help you achieve your goals?*

_____

_____

_____

_____

☐ *What are some obstacles that may prevent you from achieving your goals?*

_____

_____

_____

_____

☐ *Who can help you achieve your goals?*

_____

_____

_____

_____

☐ Brainstorm with adolescent on strategies to meet his/her goals (talk about risky situations, ways to reduce frequency of use, stressors that may trigger use)

_____

_____

_____

_____

_____

_____

Summary and follow-up plan

☐ Summarize discussion and plan while revising change plan worksheet

☐ Contract for nonuse or moderation if appropriate

☐ Give a copy of the revised change plan worksheet if desired

☐ Arrange for follow-up treatment if warranted and/or desired

Nicotine and Cannabis Dependence: DSM-IV Criteria-Based Questions

(1) Tolerance	Y	N
Do you need increased amounts to achieve the desired effects?	☐	☐
Do you have much less of an effect with continued use of the same amount?	☐	☐
(2) Withdrawal		
Do you experience withdrawal symptoms when you do not use (low mood, insomnia, irritability, frustration, anger, anxiety, difficulty concentrating, restlessness/impatience, decreased heart rate, increased appetite or weight gain)?	☐	☐
Do you use to relieve or avoid withdrawal symptoms (using first thing in morning or right after being in a situation where use is restricted – in school)?	☐	☐
(3) Have you used more or used up your supply more quickly than you intended?	☐	☐
(4) Have you unsuccessfully tried to cut down your use?	☐	☐
(5) Do you spend a great deal of time smoking?	☐	☐
(6) Do you give up social or recreational activities you value because of using?	☐	☐
(7) Do you continue to use despite knowing that these drugs cause/exacerbate physical problems?	☐	☐

DSM-IV Substance Abuse Criteria

Substance dependence is defined as a maladaptive pattern of substance use leading to clinically significant impairment or distress as manifested by one (or more) of the following, occurring within a 12-month period:

1. Recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home (i.e. substance-related absences, suspensions, or expulsions).
2. Recurrent substance use in situations in which it is physically hazardous (i.e. driving).
3. Recurrent substance-related legal problems (such as arrests for substance related disorderly conduct).
4. Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (i.e. physical fights).

Or the symptoms have never met the criteria for substance dependence for this substance.

DSM-IV Substance Dependence Criteria

Addiction (termed substance dependence by the American Psychiatric Association) is defined as a maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring any time in the same 12-month period:

1. Tolerance, as defined by either of the following:

(a) A need for markedly increased amounts of the substance to achieve intoxication or the desired effect OR (b) Markedly diminished effect with continued use of the same amount of the substance.

2. Withdrawal, as manifested by either of the following:

(a) The characteristic withdrawal syndrome for the substance OR (b) The same (or similar) substance is taken to relieve or avoid withdrawal symptoms.

3. The substance is often taken in larger amounts or over a longer period than intended.
4. There is a persistent desire or unsuccessful efforts to cut down/control substance use.
5. A great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects.
6. Important social, occupational, or recreational activities are given up or reduced because of substance use.
7. The substance use is continued despite knowledge of having a persistent physical or psychological problem that is likely to have been caused or exacerbated by the substance.

CONTROLLED USE TRIAL Date: _____

I, _____, agree to drink alcohol or use drugs only _____ for the next _____ days. I also will not provide drugs, alcohol, or prescription medications for anyone else during this time. In addition, I agree not to drive a motor vehicle while under the influence of drugs or alcohol, nor will I ride with a driver who has been drinking or using drugs.

I will come to my follow-up appointment with _____ on _____.

Signed _____

ABSTINENCE CHALLENGE Date: _____

I, _____, agree not to drink alcohol, use drugs, or take anyone else's medication for the next _____ days. I also will not provide drugs, alcohol, or prescription medications for anyone else during this time. In addition, I agree not to drive a motor vehicle while under the influence of drugs or alcohol, nor will I ride with a driver who has been drinking or using drugs.

I will come to my follow-up appointment with _____ on _____.

Signed _____

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