APPROVAL SHEET

Title of Dissertation: Comparing Intervention Effects on Motivation and Interest in Utilizing Smoking Cessation in Residential Substance Abuse Treatment

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ABSTRACT

Title of Document: COMPARING INTERVENTION EFFECTS ON MOTIVATION AND INTEREST IN UTILIZING SMOKING CESSATION AIDS IN RESIDENTIAL SUBSTANCE ABUSE TREATMENT

Angela Amelia Petersen, Doctor of Philosophy, 2016

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Individuals with substance use disorders are susceptible to health risks and mortality given their increased frequency and intensity of smoking. Intervening with the completion of early stage of change tasks could increase their desire to engage in cessation services during treatment. The present study examined group differences of participating in a single Motivational Interviewing session on motivational constructs, interest in cessation aids/support, perceived risks/benefits of quitting, and information seeking behavior. Participants recruited within two residential substance abuse treatment centers in Baltimore completed baseline self-report, posttest, and two-week follow-up questionnaires. Analysis of Covariance and Logistic Regressions were used to analyze data from 71 participants who met inclusion criteria and participated in the three measurement points.

Baseline measures suggest that there were no significant differences between participants in the intervention group (n = 40) and the waitlist control (n = 31) with regard to key constructs. Desire to quit smoking increased significantly across the

sample from baseline to the two week follow up. This modest change is clinically relevant in a population typically characterized as not motivated to quit. Confidence to quit also significantly increased in the sample suggesting self-efficacy can be enhanced early in treatment. Related, sample cigarettes smoked per day dropped significantly and was found to be significantly related to confidence.

There were significant differences by group with regard to stage of change. On average, intervention group participants were in Contemplation at the end of the study while individuals in the waitlist control remained in Precontemplation, $F(1, 67) = 5.008$, $p < .03$, partial $\eta 2 = .070$. Intention to change behavior can be impacted by participation in an intervention enhancing motivation to quit early in treatment programming.

These findings contribute to an expanding literature on affecting completion of tasks associated with progression through the early stages of change for smoking cessation within a population in residential substance abuse treatment. Although these findings are preliminary, results encourage further examination of the relations between confidence and desire to quit smoking and their impact on intention to quit and interest in cessation support while in treatment.

COMPARING INTERVENTION EFFECTS ON MOTIVATION AND INTEREST IN UTILIZING SMOKING CESSATION AIDS IN RESIDENTIAL SUBSTANCE ABUSE TREATMENT

By

Angela Amelia Petersen

Dissertation submitted to the Faculty of the Graduate School of the
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Dedication

This research is dedicated to a very special population of individuals who demonstrate incredible resilience in the face of more challenges on a daily basis than some of us face in a lifetime. They should be recognized and affirmed most for the enduring strength it takes to walk the path of addiction and recovery, not for what others may deem is the representation of the downfall of societal progress.

I have always enjoyed the insights Cheryl Strayed has shared about her journey, “Most things will be okay eventually, but not everything will be. Sometimes you’ll put up a good fight and lose. Sometimes you’ll hold on really hard and realize there is no choice but to let go. Acceptance is a small, quiet room.” I should hope we could all find some wisdom in her words.

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Chapter 1: Introduction

For the past 50 years, health research has continued to expand upon the ever pervasive detrimental health effects of cigarette smoking. Continuous efforts to increase the public's awareness of the negative health consequences of smoking have successfully reduced the prevalence of smoking among the general population from approximately 46% in 1964, to 18.1% in 2012 (CDC, 2014). Regardless of the significant headway in reducing the general prevalence of smoking, there are populations who are still at much higher comparative risk to initiate and maintain smoking. One special population in particular, individuals who struggle with other substance abuse or dependence, are much more likely to smoke compared to the general population.

Smoking in Substance Abuse Populations

Previous research indicates that the estimates of smoking among a substance abuse treatment seeking population ranges from 70-80% with some estimates found to be as high as 88% (Kalman, et al., 2010; Knudsen, Studts, Boyd, & Roman, 2010). In addition to the sheer overwhelming difference in numbers of smokers, there are also some differences within the substance abuse population in terms of their smoking prevalence. For example, individuals who are in treatment for alcohol use disorders have been found to have a 10-15% lower prevalence of smoking than individuals with another type of substance use disorder (Guydish et al., 2011). Though the focus of this proposed study is specifically examining individuals in treatment, it is notable that even among individuals with substance use disorders not attending treatment, the smoking prevalence is still at least two times higher than the general population (Grant, Hasin, Chou, Stinson, & Dawson, 2004).

Prevalence of smoking among individuals seeking substance abuse treatment services is unfortunately also high in Maryland. In a recent report by the Alcohol and Drug Abuse Administration (2010), their statewide survey (N = 43,467) results indicate approximately 70% of the substance abuse treatment population identified themselves as current smokers. The prevalence was highest among individuals ages 26-30 years old (74.1%), however, there is little variation in prevalence throughout adulthood. In fact, approximately 69% of individuals ages 51-60 in treatment are current smokers. The report also indicated that the prevalence of smoking among individuals in substance abuse treatment has been slowly increasing in Maryland. In 2007, roughly 65% of the substance abuse treatment population reported current smoking compared to the current 70%.

Though it is unclear what kinds of factors have specifically contributed to this increase, the number of current smokers in treatment is concerning. Particularly at risk are the individuals who are reporting poly substance abuse. For example, the prevalence of smoking among individuals reporting treatment for at least three or more substances is close to 81% whereas the prevalence of smoking among individuals reporting alcohol abuse and one other substance is approximately 68%. These statistics indicate that smoking is very common among individuals seeking substance abuse treatment in Maryland.

Not only are individuals seeking treatment much more likely to smoke, but this population also tends to exhibit higher risk smoking behaviors compared to the general population who smokes. According to Prochaska and colleagues (2004), individuals with substance use disorders who smoke are more likely to have started smoking earlier, to

smoke in greater quantities, to smoke at a higher intensity, and to relapse more frequently following quit attempts. As a result of these specific smoking behaviors, they are more likely to be physically and psychologically dependent upon smoking. Also considering the increased likelihood of additional psychiatric, cognitive, and/or medical comorbidities, they seem to require more intensive or specialized cessation interventions.

The differences in intensity and frequency of smoking behavior in individuals seeking treatment for substance abuse issues are significantly related to numerous health problems and mortality. Bearing in mind that tobacco use is already causally associated with lung, throat, and mouth cancers, heart disease, and chronic pulmonary obstructive disease, a population that is smoking with greater frequency and intensity would be more vulnerable to developing these diseases (Surgeon General's Report, 2004). The substance abuse population is indeed at greater risk for developing health complications due to their tobacco use. This increased risk appears to be partly due to the intensity and frequency of use, but is also the result of interactions between their other substance use and smoking.

The most frequently cited study with regards to the detrimental health effects of tobacco on individuals with substance abuse issues was conducted by Hurt and colleagues (1996). These researchers conducted a landmark longitudinal study that demonstrated the health disparities the alcohol and drug abuse treatment seeking populations face as a result of their tobacco use. After following 845 participants for 20 years, they discovered that the mortality rate was twice that of the expected mortality rate in the general population. Of the deaths that occurred within this sample, over half were attributed to smoking. The findings strongly suggest that rather than the typically

assumed reasons for mortality in this population (e.g. overdose, aspiration); the most common cause of death is smoking.

As a result of such findings, there has been a significant increase in research studies examining how smoking is being addressed among individuals who are concurrently struggling with substance use disorders. The focus of the research has varied significantly and findings thus far seem to indicate that there are many factors ranging from the smokers to the providers, to the settings of treatment and its culture, and beyond, to the larger ecological influences including efforts of tobacco companies to target substance abusing consumers. Determining the causal and etiological nature of the relationship between smoking cigarettes and using other substances is challenging. The goals of clarifying this relationship would be to understand how to adapt intervention and prevention efforts to be effective and to help behavioral health providers understand how the relations between smoking and other substance use affect intervention effectiveness and treatment outcomes.

The interaction between smoking and the use of other substances has most frequently been researched for individuals who smoke and have problems with alcohol. For example, compared to nonsmokers, individuals who smoke and abuse alcohol have smaller temporal, cortical, and total gray matter volumes. They also have larger frontal white matter volumes and poorer cerebral perfusion (Bagnardi, Blangiardo, LaVeccha, & Corrao, 2001). In their concluding remarks regarding their study, the authors noted that there could be some considerable chemical interactions between alcohol and nicotine that increase each substance's detrimental physical effects on the brain. Additionally, epidemiologic studies have provided strong evidence of a synergistic effect of alcohol

and tobacco use for the risk of oral and pharyngeal cancers in populations across the world (Dlamini & Bhoola, 2005; Pelucchi et al., 2006; Rosenquist, 2005; Zeka, Gore, & Kriebel, 2003). The underlying theory is that individuals who are using both alcohol and tobacco tend to use them both simultaneously and to excess compared to individuals who use either substance only. Similarly, Blot (1992) concluded that drinking tends to combine with smoking in a multiplicative fashion, so that cancer risks for heavy consumers of both products is 37 times the risks for abstainers from both.

Since both alcohol and nicotine affect similar mechanisms in the brain, delineating the unique and combined effects of the two substances has proven difficult. However, there are several theories describing the relationship between the increased use of nicotine and alcohol concurrently. One theory is that consuming tobacco and alcohol together can enhance the pleasure users experience from either alone. In a study conducted by Barrett and colleagues (2006), participants were given cigarettes with or without nicotine and asked to perform progressively more difficult tasks in order to earn alcoholic beverages. The subjects who smoked the cigarettes with nicotine worked harder and drank more alcohol than those smoking nicotine-free cigarettes. In a similar study examining the effects of drinking alcohol on the pleasure associated with smoking, Rose and colleagues (2004) showed that drinking alcohol enhances the pleasure reported from smoking cigarettes. This finding is also supported by animal studies which show that nicotine-treated animals consumed more alcohol than did control animals (Potthoff, Ellison, & Nelson, 1983; Larsson & Engel, 2004).

Cross-tolerance, or the tolerance to one drug conferring tolerance to another, is also highly common for individuals who smoke cigarettes and drink alcohol frequently

(Funk, Marinelli, & Le, 2007). An alternative theory about the relation between alcohol and smoking posits common brain pathways as having a significant impact on the likelihood of co-use of alcohol and cigarettes. Some neurons that release dopamine have nicotinic receptors where nicotine binds. Findings suggest that the interaction between alcohol and nicotine may take place at these receptors. For example, one study found that when nicotinic receptors are blocked, people not only tend to consume less nicotine, but they also consume less alcohol (Soderpalm, Ericson, Olausson, Blomqvist, & Engel, 2000). Taken together, these findings suggest that there is a complex relation between consumption of alcohol and cigarette smoking and encourage researchers to think about how this relation may impact initiating the change process for smoking cessation in substance abuse treatment settings.

The level of use of other psychoactive substances and smoking also appears to be closely linked. A number of studies have shown an increase in the use of illicit substances when smoking increases, particularly among individuals using heroin and/or cocaine (Frosch, Shoptaw, Nahom, & Jarvik, 2000; Epstein, Marrone, Heishman, Schmittner, & Preston, 2010; Harrell, Montoya, Preston, Juliano, & Gorelick, 2011). Frosch and colleagues (2000) found that the more regularly individuals smoked regardless of their typical frequency, the more likely they were to use their preferred illicit substance. Originally the increase in smoking was thought to trigger behavior patterns similar to that of inhalation drug use. However, this is not a consistent finding. Harrell and colleagues (2011) found that among individuals who also used crack cocaine and/or IV heroin use, those who used heroin were most likely to be smokers and to smoke at a higher rate compared to individuals who smoked and used crack cocaine. It is

possible that the two behaviors have become linked by classical conditioning so that smoking triggers the urge to use the illicit substance. Though mechanisms may be unclear, it is clear that smoking frequency and intensity among substance abusing individuals are directly related to illicit drug use.

The previously reviewed findings regarding increased prevalence of smoking among individuals with substance use disorders suggests a strong connection between smoking cigarettes and use of other substances. The more we understand about this relation between smoking and substance use, the more we can inform our approach to engaging individuals who are already in substance use treatment into considering smoking cessation interventions. Unfortunately, closer examination of the implementation of smoking cessation interventions within substance abuse treatment protocols is hampered by a number of beliefs, barriers, and substance abuse treatment culture factors. Implementation of smoking cessation treatment protocols remains a complicated challenge for staff in substance abuse treatment settings. It appears the low smoking cessation rate among individuals within substance abuse treatment is a two-pronged issue: 1) There are barriers from an organizational and provider perspective that prevent even researched interventions from being implemented in substance use settings, and 2) There is a complex relation of substance use and smoking that likely affects client interest in cessation interventions while in substance use treatment.

Common Beliefs and Barriers to the Implementation of Smoking Cessation Efforts

There seem to be several common beliefs among substance abuse providers and in the treatment culture that influence the lack of implementation of smoking cessation interventions in treatment settings. Substance abuse counselor knowledge, attitudes, and

beliefs seem to directly impact the likelihood of counselors discussing smoking cessation with clients during treatment. Substance abuse treatment providers do not feel comfortable to provide smoking cessation services to their clients, but they are interested in learning how they could (Richter, Choi, McCool, Harris, & Ahluwalia, 2004; Zeidonis, Guydish, Williams, Steinberg, & Foulds, 2006). Until recently, most substance abuse counselor training programs did not include education regarding smoking cessation. This lack of training not only contributes to individual counselors not providing smoking cessation services to their clients, but also to the next generation of counselors not having an opportunity to observe the skills in practice while being trained.

The lack of knowledge of cessation interventions also seems to be related to establishing providers' attitudes about discussing smoking with their clients. It is important for substance abuse staff to understand the extent to which clients' smoking is related to their recovery and health issues. Staff smoking also seems to be related to attitudes regarding offering smoking cessation services to clients in treatment. Unfortunately, staff smoking among substance abuse counselors is fairly high compared to other health care providers. For example, research findings suggest that approximately 30-40% of addiction treatment staff members in community-based programs are tobacco dependent, whereas approximately 3-5% of physicians, dentists, and dental hygienists struggle with tobacco dependence (Zeidonis et al., 2006). Some substance abuse providers have reported that smoking with their clients promotes a stronger therapeutic alliance. Some settings have encouraged smoke breaks between groups and classes in which staff and clients have the opportunity to smoke together. Engaging in addictive behaviors with a client seems unhelpful to promoting overall recovery for that client and

continues to support a behavior that has serious detrimental effects on client health. In response, researchers have encouraged counselors to spend non-treatment time with patients in other positive ways such as taking walks or sharing meals (Zeidonis et al., 2006). Once providers are trained in appropriate smoking cessation interventions, many staff members report changing their beliefs such that part of their provider role is to treat tobacco dependence and it is not solely the responsibility of healthcare providers to address this behavior in the substance abuse treatment population.

In addition to lack of knowledge and detrimental attitudes about smoking cessation, substance abuse treatment staff also tends to harbor counterproductive common beliefs about smoking cessation in substance using populations. Beliefs such as "it's too difficult to have clients address all the substances at the same time", "quitting smoking will definitely affect the recovery from any other substances", "tobacco is not a real drug", and "clients in treatment programs are not interested in addressing their smoking", continue to facilitate the maintenance of a substance abuse treatment culture where smoking is not addressed concurrently with other substances. Some staff members believe that addressing all substances together including smoking would be too challenging for their clients. There will be clients who feel this way, however, most research suggests that continuing to smoke can harm rather than enhance the recovery process (Williams et al., 2005).

Quitting positively impacts likelihood of maintaining long-term abstinence and recovery from other substance use. A meta-analysis by Prochaska and colleagues (2004) concluded that support for quitting smoking increased the likelihood of abstinence from other substances of abuse. Clients engaging in tobacco dependence treatment had better

overall substance abuse treatment outcomes at six months after treatment compared with those who did not engage in tobacco dependence treatment. Most research findings suggest that integrating smoking cessation services into substance abuse treatment does not negatively impact substance abuse recovery, but it is unclear the best timing for individual clients to quit multiple substances. Joseph and colleagues (2004) implemented a randomized controlled trial meant to address this specific concern of timing and found that timing does vary from client to client which only emphasizes the importance of assessing and making a plan to treat tobacco dependence during treatment and/or recovery.

One of the additional and pervasive beliefs contributing to the clinical lore hindering tobacco cessation and treatment among individuals receiving substance abuse treatment is that tobacco is not a seriously harmful substance compared to other substances. As previously discussed, research has demonstrated clearly the deadly and addictive nature of tobacco, particularly for populations who are more prone to increased frequency and intensity of use. The difficulty seems to be that the serious health consequences are not immediate enough to disrupt clients' lives as dramatically as other substances of abuse. As an individual becomes increasingly dependent upon illicit substances or alcohol, they are at increased risk to experience more immediate and troubling legal, family, and financial consequences. Although it is not uncommon for clients entering treatment to minimize the impact of their substance use on various areas of their lives, substance abuse treatment staff and counselors are competent in addressing rationalizations and denial regarding those substances of abuse. Unfortunately, most substance abuse counselors are not as likely to address any denial or rationalizations for

continuing to smoke because they continue to harbor beliefs that facilitate those rationalizations.

Lastly, there is a common misconception among providers about how clients in substance abuse treatment programs feel about their smoking. As mentioned before, substance abuse treatment staff and administrators tend to believe that clients will not be as interested or motivated to quit their smoking while trying to recover from other substance abuse. This belief directly impacts the likelihood of a counselor asking their clients about smoking or discussing the issue of tobacco dependence and quitting while in treatment. In a qualitative study by Kozlowski and other researchers (1989), results indicated that more than half of their treatment seeking population (n = 572) who smoked believed that quitting smoking would be the hardest addiction to address. They also found that individuals who were entering treatment for alcohol dependence were four times more likely than individuals who were drug dependent to say their strongest urges for cigarettes were at least as great as their strongest urges for their problem substance. Notably, across the sample, participants reported that the use of cigarettes was not as pleasurable as the use of other substances. These findings suggest that though the experience of smoking does not hold the same pleasure for individuals abusing other substances, the dependence and need to use is just as strong, if not stronger. It is important not to confuse anticipated difficulty and doubt about ability to quit with a lack of desire. In spite of these findings about client beliefs in the difficulty of quitting, a majority of clients still report a desire to quit smoking ultimately (McClure, Acquavita, Dunn, Stoller, & Stitzer, 2014). Among individuals seeking outpatient substance abuse

treatment, the authors found more than half of their sample indicated a desire to quit smoking in the next six months and approximately 29% in the next 30 days.

According to Baca and Yahne (2009), in their review of integrated cessation studies in treatment centers, they found a number of studies documenting significant willingness of smoking clients within treatment contexts to receive smoking cessation interventions. Their review found that approximately 65-70% of individuals in substance abuse treatment who smoke indicated they would like to quit smoking in the next six months. This is very similar to the intention to quit rate in the general population of individuals who smoke. In addition, Clemmey and colleagues (1997) found that most individuals who smoke and are in substance abuse treatment are generally knowledgeable about the harmful health effects of smoking on the body. This suggests that individuals who smoke while in substance abuse treatment may know as much about smoking effects and as a result, may have similar reasons for wanting to quit compared to the general population of smokers. Among a sample of veterans in substance abuse treatment, the most commonly identified reason for wanting to quit smoking (90% identified as top reason) was health concerns (Winn et al., 2011). In addition to health concerns, these veterans were also concerned about the cost of smoking in the face of financial stressors and the smell associated with smoking. These reasons for quitting are not unlike those identified by individuals who are not struggling with substance use disorders.

As the research illuminates our understanding of what barriers have hampered the substance abuse treatment field from adequately addressing tobacco use among their clients, two research imperatives are apparent. The first has been to examine and recommend Best Practices smoking cessation interventions to counselors, staff, and

administrators. The second is to consider how to increase intention to quit by addressing motivation. The latter will be addressed more formally later in this review. Current research has been examining the effectiveness and practicality of various types of smoking cessation interventions among individuals in treatment for substance use disorders.

Current Treatment Efforts for Smoking Cessation: Best Practices Recommendations

A number of different interventions have been proven efficacious in enhancing cessation rates among individuals who smoke. Like the treatment for other forms of addiction, smoking should include a multi-component treatment plan addressing the biological, social, and psychological aspects of the addictive behavior (Cohen, Cortez-Garland, Emery, McChargue, & Prensky, 2003). Smoking cigarettes has a biological component making individuals who smoke physically dependent upon the nicotine delivered by the cigarette. To treat this physical dependence, a number of Nicotine Replacement Therapies (NRT) as well as other pharmacotherapies have been developed to maintain levels of nicotine in the body without smoking, curb the intensity of cravings, and/or attenuate the pleasurable effect of nicotine when the individual smokes (Cohen et al., 2003). Numerous studies have found NRT and other pharmacotherapy to be beneficial and constructive as aids in quitting smoking (Fiore et al., 2008; Gonzales et al., 2006). The Treating Tobacco Use and Dependence clinical practice guidelines indicate that NRT, varenicline, and bupropion have demonstrated therapeutic effects that increase cessation (Fiore et al., 2008; Hughes, Stead, & Lancaster, 2007; Wu et al., 2006).

Several studies have examined the efficacy of NRT and/or pharmacotherapy among individuals trying to quit smoking who also either have had or currently have a

substance use disorder (Baca & Yahne, 2009). It is believed that because smokers with substance use disorders typically have higher levels of nicotine dependence, NRT may be particularly helpful in sustaining quit attempts while in substance abuse treatment (Hughes, 1993; Prochaska, Delucchi, & Hall, 2004). Saxon and colleagues (1997) conducted an open trial to examine the use of NRT to assist in a smoking cessation attempt among 207 individuals admitted to inpatient alcohol and drug treatment at the Seattle VA Medical Center. Upon beginning treatment, 49 individuals opted to try NRT patch as a part of their cessation attempt without other psychotherapeutic interventions. Approximately 15% (n = 8) of this smaller group remained abstinent after 21 days only using the NRT patch. Their findings suggest that individuals concurrently receiving substance abuse treatment can obtain similar abstinence rates to the general population when just using NRT. In a similar study, Hughes and colleagues (2003) found that individuals in recovery for alcohol randomized to use a 2 mg patch were more likely to be abstinent from smoking at a 6 month follow up compared to similar individuals who received a placebo. In a more recent study, Piper and colleagues (2013) found that a combination of multiple types of NRT together may be even more effective in increasing abstinence from smoking for populations with a history of substance use disorders. In this effectiveness trial, approximately 56% of the participants identified themselves as having current or past history of substance use disorders. Among these individuals in the sample, a combination of the NRT patch and lozenge resulted in the highest percent days abstinent six-month post quit date.

Several studies have examined the underlying mediating mechanisms of pharmacotherapy, though not with this population specifically (Ferguson et al., 2006;

Piper et al., 2008). While results have been inconsistent, preliminary findings suggest that the underlying mechanisms of pharmacotherapy have to do with reducing negative affect, withdrawal symptoms and cravings while also increasing positive affect, motivation to quit, and abstinence self-efficacy. These fundamental mechanisms of change will be examined more fully for their significance in the change process later in this review.

There is also support for the use of bupropion (Zyban®) and varenicline (Chantix®) as cessation aids due to their assistance in reducing the cravings and/or experienced pleasure from smoking among individuals who may experience greater difficulty quitting including smokers with substance use disorders (Johnston, Robinson, & Adams, 1999). Though more research is needed, initial studies examining the use of varenicline among individuals with substance abuse problems suggests that it may attenuate the strength of cravings and reduce the perceived pleasurable effects of the substance of use. McKee and colleagues (2009) conducted a double-blind, placebo based study examining the effect of varenicline on the use of alcohol among non-alcohol dependent heavy drinkers who were also daily smokers. After seven days of receiving the medication regimen, participants were administered a priming dose of alcohol and assessed for subjective and physiological responses to their experience. Immediately after, participants were allowed a two-hour period in which they could continue to consume up to eight additional alcoholic beverages. According to their results, varenicline significantly reduced the number of drinks consumed (M = 0.5, SD = 0.40) in the experimental group compared to the number of drinks consumed (M = 2.6, SD = 0.93) by individuals receiving the placebo. They also found minimal adverse events as

the result of use of varenicline and that when combined with alcohol, there did not appear to be any significant effects on physiologic reactivity or mood. This may differ for individuals who have more severe alcohol dependence or drinking patterns, but these preliminary findings are encouraging for this population of interest.

Bupropion has also been found to increase abstinence from smoking without compromising the recovery from other substances. Tonstad (2002) specifically examined the use of Bupropion SR (sustained release) to assist smokers with histories of depression or alcoholism in making a quit attempt. The results of this study suggest it does not appear that achieving abstinence from smoking while using Bupropion SR is significantly affected by depressive symptoms or alcoholism. In fact, because the use of substances, particularly alcohol, is strongly correlated with depression, it is thought the use of bupropion for smokers with a variety of mood disorders may be beneficial for multiple issues (Grant et al., 2004).

There are also social and psychological factors to consider in treating an addiction to nicotine. A number of therapies include components to address social factors associated with the maintenance of smoking behavior. For example, there are twelve step self-help groups that address dependence on nicotine. Other interventions include socially focused components such as teaching important communication skills needed to express to friends, family, and acquaintances the challenges and difficulties experienced when quitting smoking (Cohen et al., 2003). Lastly, smoking cigarettes can lead to developing habitual and ritualistic behaviors as well as psychological dependence based on perceived relief of distress or other negative affect when smoking. A number of psychotherapies, including Cognitive Behavioral Therapy (CBT) and motivation based

interventions (e.g. Motivational Interviewing, MET, and brief interventions) have been examined for their efficacy and effectiveness in reducing or ceasing smoking by addressing the psychological and behavioral components of smoking (Cohen et al., 2003). Best Practices recommendations for addressing smoking cessation for individuals with other substance abuse issues include combining the above mentioned components of smoking cessation interventions in order to adequately address the severity of nicotine dependence.

The U.S. Clinical Practice Guideline recommendations for populations with increased likelihood for nicotine dependence and more difficulty quitting are to deliver a combined intervention that includes not only pharmacotherapy and/or NRT, but also the use of psychosocial treatments (Fiore et al., 2008). Numerous studies have examined the efficacy of various forms of psychotherapy including CBT for smoking cessation. For example, using CBT is specifically helpful for smokers with a history of MDD or depressive symptoms (Hall, Munoz, & Reus, 1994). Individuals with a history of MDD or depressive symptoms who received CBT were more likely to be abstinent at 6 months or one year follow up. CBT specifically addresses mood management issues by increasing self-management skills and enhancing awareness of how cognitive issues can directly impact behaviors including smoking. As negative affect is common among substance using populations, it may follow that the effect of an intervention for smoking cessation that incorporates constructs relating to stress and mood management would be beneficial for substance using populations. Notably, few tobacco treatment programs have actually been adapted for clients with substance abuse problems; however, the most

commonly used models generally combine CBT with cessation medications like NRT (Fiore et al., 2008).

Cognitive Behavioral Therapy as a smoking cessation intervention seems to positively affect specific aspects of the change process. CBT seems to be particularly beneficial in enhancing abstinence self-efficacy for individuals quitting smoking. Mueller and colleagues (2012) compared the effects of CBT to relaxation techniques for smoking cessation offered to individuals in alcohol detoxification treatment. They found significant differences in reported self-efficacy and initial abstinence rates post treatment in favor of CBT above and beyond the effects of the relaxation techniques. However, there were no longer significant differences at six month follow up. Their findings are encouraging for the possibility of achieving successful quit attempts for substance abusing populations. Similarly, in a novel study aimed at discovering possible mechanisms underlying the effectiveness of CBT, Hendricks and colleagues (2010) found that change in abstinence self-efficacy mediates the effects of long term CBT on post treatment abstinence over time. A concluding point of CBT effectiveness as a smoking cessation intervention is that individuals addressing concurrent substance abuse issues may specifically benefit from CBT based smoking cessation because of its positive effects on self-efficacy.

Not all forms of smoking cessation interventions rely on in-person contact. Individuals in substance abuse treatment may benefit from the use of quitlines for smoking cessation. In a recent study of callers to the quitline in California, approximately 24% of the callers indicated that they currently struggle with either a drug or alcohol problem that may affect their quit attempt (Schroeder, McAfee, Hutchings,

Michael, & Morris, 2009). Initial research on cessation quitlines with behavioral health populations has focused on examining the possibility of addressing multiple comorbidities with phone counseling. To date, there have been less than a handful of published studies examining the effectiveness of quitline interventions with callers who have substance abuse issues specifically. In a limited study examining data from six states' quitline services, participation in a quitline for anyone who indicated having a substance use disorder and/or other mental health diagnosis was equal to callers without mental health issues. Notably, individuals with mental health issues were significantly less likely to be able to quit if they initially felt that their mental health issues would interfere with their quit attempt. This highlights the importance of tailoring the interventions to ensure extra support around expectations of success or failure. This, in combination with additional preliminary findings suggesting comparable effectiveness for cessation or number of quit attempts (Morris et al., 2009), suggests that quitline services is a viable and supportive option for smoking cessation in substance using populations.

Thus far, a select few best practice interventions have been reviewed for their efficacy in treating smoking behaviors among individuals with substance abuse issues. The interventions reviewed are most relevant for individuals concurrently quitting substance use and cigarette smoking. Different forms of NRT and pharmacotherapy, CBT, and quitlines all include intervention components that can assist individuals struggling with higher nicotine and psychological dependence issues related to smoking. However, the efficacy of these interventions hardly matters if patients are not motivated to quit smoking and thus, do not engage in these interventions. For example, Winhusen

and colleagues (2012, 2014) conducted a RCT to demonstrate the efficacy of integrating a multi-component smoking cessation intervention within substance abuse treatment for individuals struggling with stimulant dependence. However, only individuals who have an interest in quitting smoking and a willingness to participate in cessation interventions were included as a part of study eligibility. Their initial results indicate successful implementation and positive effects on both substance use behavior and smoking behavior. However, the question remains about how to engage individuals who did not indicate an initial interest in quitting.

Efforts toward increasing motivation and readiness to quit or reduce smoking should be considered prior to any intervention. Motivation and readiness to change involve specific elements such as increased interest, concern, and a committed decision to change. Previous research examining engagement of individuals in substance use interventions has found that increasing motivation and readiness to change prior to initiation of the intervention itself yields greater retention in the interventions (Carroll et al., 2006). Thus, an important goal of smoking cessation efforts with substance abusing populations in treatment would be to increase initial interest and motivation for smoking cessation as soon as feasible after entry to the treatment program. Before examining specific methods of increasing motivation for quitting smoking, it is important to acknowledge and understand the various components of motivation.

Transtheoretical Model and Important Mechanisms of Change

The Transtheoretical Model (TTM) of Prochaska and DiClemente (1983) conceptualizes change as a process. Rather than viewing behavior change like quitting smoking as a singular event based on a momentary decision, the TTM outlines the entire

change journey through the Stages of Change construct. According to the model, there are five stages of change representative of varying levels of interest, motivation, tasks, and change behaviors. The construct of the stages was meant to help depict how an individual can move through behavior change in terms of psychological attention and intentional behavioral actions. The TTM provides a theoretical perspective for understanding an individual's personal level of motivation and interest in changing behavior. This framework, particularly the stages of change described below, provides a therapeutic structure for efficient enhancement of personal motivation for behavior change.

The five stages of change include Precontemplation, Contemplation, Preparation, Action, and Maintenance. In the first stage of change, Precontemplation, an individual is typically not considering change for various reasons. As the model suggest there are multiple tasks that need to be accomplished within each stage before the individual progresses into the following stage. In the Precontemplation stage, increasing interest, concern, hope, confidence, and acknowledging reasons for change are the initial tasks that can lead to progression through the stages. The second stage is Contemplation. In this stage, the individual is now more aware of reasons for change, but is often ambivalent about change. They may be able to acknowledge both reasons for change and reasons for not changing. It is important in this stage for the individual to weigh the pros and cons for both continuing to maintain their current behavior as well as weigh the pros and cons of changing their behavior and resolving ambivalence. A thoughtful analysis of these considerations can help lead to a decision for change. Once this decision has been made, the individual faces Preparation tasks. In the Preparation stage of change, it is

important for the individual to strengthen their commitment to their decision for change by developing a personal plan for change that addresses their reasons, their triggers, etc. With a solid decision made and a well prepared plan for change, the individual moves into the Action stage in which implementation of their plan marks new behavior change. It is important for the individual to assess and monitor the progress of their plan and revise as necessary. The final stage of change is Maintenance which occurs as the new behaviors implemented within the individual's personal change plan are now integrated into their life. The individual works on maintaining their new behaviors and working to prevent slips and relapse. As mentioned before, the five stages illustrate a conceptualization of how individuals move through the process of changing a behavior like smoking.

Thus far, the change process has been reviewed generally without any specifics about individual or other factors that can influence the process or about how the process of behavior change may be different for specific populations. Not all individuals who smoke are in the same place in the journey regarding change of their smoking behavior and do not have identical factors in their lives that may affect the change process. Researchers and providers should take into consideration that there are a number of additional factors affecting individuals with substance use disorders who also smoke. These individuals are faced with a number of challenging factors that may affect engagement into the change process as well. In a recent study conducted in a Baltimore substance abuse treatment facility, participants in residential treatment were more likely to be unemployed, have less than a HS diploma, feel their health is fair, and identify as a minority (McClure et al., 2014). Education, SES, social support, and comorbid medical

issues are all identified stressors that can impact an individual's ability to quit (Businelle et al., 2010).

A number of factors specific to individuals who smoke and are entering or already participating in substance abuse treatment may affect where they are in the change process concerning their smoking. In what is called the Context of Change (DiClemente, 2003), individuals already in the midst of treating another addiction are likely to be facing interpersonal issues, coexisting psychiatric issues, and additional issues that can come with the prospect of trying to quit more than one substance at a time. Although these factors are likely to be occurring for these individuals, the desire to quit smoking is comparable to the general population. A number of previous studies have shown that while individuals in substance abuse treatment report a general desire to quit smoking (50-75%), a large majority report they do not have any intention of doing so in the near future (70-96%) (Sussman, 2002; Bobo et al., 1996). The lack of intention is indicative of being early in the change process for quitting smoking (Moore et al., 2007).

In a review of effective utilization of smoking cessation resources, Borrelli (2010) encouraged fellow researchers to think creatively about developing unique strategies for increasing the use of EBTs by specifically focusing on engagement. Similarly, Thurgood and colleagues (2015) conducted a thorough review of studies from 1990 until 2014 regarding efficacy of cessation interventions and aids for substance abusing populations. They discussed one of the gaps in the literature as a lack of research focusing on the engagement of individuals into using cessation support while in treatment. There has been a protocol stage Cochrane Review by Appollonio, Philipps, & Bero since 2012 that has not yet been published focusing entirely on the implementation

aspects of engaging individuals into cessation programming during substance abuse treatment. More research is needed to better illuminate how to effectively increase awareness and interest in using cessation support while in a controlled environment such as residential substance abuse treatment. Specifically, examining intervention effects on completing early stage of change tasks could hopefully lead to an increase in engagement strategies to maximize efficacy of cessation services.

A proposed research focus of this study was to examine whether use of a motivationally based intervention can assist smokers in residential substance abuse treatment in accomplishing tasks necessary to progress through the early stages of change (Precontemplation and Contemplation) and increase interest in utilizing best practices smoking cessation interventions. Specifically, a Motivational Interviewing (MI) single session intervention early in a substance abuse treatment program focused on addressing smoking was expected to help clients achieve accomplishment of early stage task and increase interest in using smoking cessation interventions.

Motivational Interviewing and Behavior Change Outcomes

Motivational Interviewing is a specific intervention designed to increase motivation and has strong empirical support for assisting individuals in changing behaviors (Miller & Rollnick, 2002, 2013; Heckman et al., 2010). Numerous efficacy studies have examined how participation in a MI intervention influences substance use behaviors, smoking behaviors, and health behavior changes over time (Miller et al., 2003). The authors of MI describe a number of principles, style components, therapeutic essence, and strategies that are specifically designed to help facilitate movement through the change process and the stages of change. For example, suggested strategies for

eliciting change talk include using open-ended questions, affirmations, reflections, and summaries.

Integrating brief interventions (e.g. single sessions of an MI based intervention) for smoking cessation early into the treatment process may be a way to help increase motivation to quit, however, a number of previous studies have reviewed the effects of single session MI based interventions on smoking behaviors have found the effects to be short term (Lai, Cahill, Qin, & Tang, 2010). The results of the meta-analysis suggest that multiple session formats of MI may be slightly more effective than a single session protocol in terms of smoking cessation, but both produce positive outcomes given typical settings level constraints to more intensive intervention implementation. Another common finding of the effects of MI based single session protocols on cessation outcomes is that there are no significant group differences between MI based single session interventions and other forms of smoking cessation when assessed at follow up time points beyond a year (Cambridge & Strang, 2005).

According to Miller (2005) in an editorial comment to the aforementioned study, he remarked that this finding of the "diminished" effects is consistent with brief MI exposure at longer follow up. However, Miller did note that behavior seldom returns completely to baseline and that the diminished group differences appears to be the result of the control group making gains in behavior change over that length of time. Although the long term (12 months or more) cessation effects of single session MI based interventions for smoking cessation small effect sizes compared to controls ($d = 0.11$), perhaps these types of interventions have different effects on other attitudes and behaviors earlier in the process of change (Miller, 2005). These findings also suggest

that perhaps MI is still engaging individuals into the change process and experiential processes rather than being as strongly related to behavior change that comes later in the change process. This highlights the necessity for research examining potential effects of an MI intervention on successful accomplishment of early stage tasks related to later behavior change.

Few studies have examined the effects of participating in a brief or single session MI based intervention on various attitudes and behaviors other than quitting smoking behaviors and the findings are encouraging for integrating a single session intervention for smoking cessation into early substance abuse treatment. Steinberg and colleagues (2004) conducted a study with the specific purpose of assessing the effects of a single session smoking cessation MI protocol on treatment seeking behaviors among individuals with either Schizophrenia or Schizoaffective Disorder. They randomized participants to participate in a single session motivational based intervention with feedback, a single session psychoeducational intervention, or a brief minimal control intervention lasting no more than five minutes. Results suggested that compared to the psychoeducational intervention and the brief minimal control, individuals who participated in the MI based single session were significantly more likely to contact a smoking cessation provider within seven days and at one month follow up be participating in the intervention (χ^2 (2, 77) = 13.247, $p < .01$; χ^2 (2, 77) = 7.737, $p = .02$). Approximately 32% of the participants from the MI group contacted a treatment provider at one month compared to the 12% of psychoeducational participants and 0% of the minimal control groups. The participants of the MI group were also significantly more likely to attend their first session with a smoking cessation interventionist compared to the other two groups. This study by

Steinberg and colleagues takes a unique approach to measuring the effects of a single session intervention by choosing to assess treatment seeking and participation behaviors as an outcome rather than smoking cessation outcomes.

Cooper and colleagues (2009) also found that the effects of participating in a 90 minute, multimedia single session combined intervention featuring some MI components with psychoeducation increased likelihood of participants utilizing smoking cessation interventions. This is particularly relevant as their sample consisted of 89 veterans in substance abuse treatment. Approximately 57% of participants who were currently smoking sought cessation services at any point while attending substance abuse treatment. In their study, they also measured reasons for wanting to quit during the session as well as previous use of NRT during quit attempts. The strongest predictor of attending a follow up smoking cessation group or individual counseling session was wanting to quit smoking for health reasons (OR = 9.416, 95% CI, 2.20-40.30). However, it is unclear to what extent individuals participating in this individual session were motivated for change prior to participating in the initial session. While this study's findings support the clinical utility of single sessions focused on smoking within substance abuse treatment programs, whether the intervention engaged the motivational constructs (i.e. interest, importance) is unclear.

The present study was also inspired by the study aims and design of Rohsenow and colleagues (2014) in their RCT examining the differences in smoking cessation behavior among individuals in residential substance abuse treatment who participated in an MI based intervention compared to those in a Brief Advice (BA) intervention. The authors were specifically interested in the effects of follow up as well as participation in

either intervention on long term cessation behavior. Their sample included 165 men (*n* = 91) and women (*n* = 74) diagnosed with alcohol dependence with a mean age of 33.8. Participants were randomized to either MI or BA and to either a single session or two booster sessions. They found that MI and BA produced equivalent confirmed abstinence with approximately 10% abstinence at 30 days and 2% abstinence at 12 months among both groups. However, participants who had more time in treatment prior to initiating the study with more pretreatment days (>22 days in 6 months) who were given the BA intervention had 7% abstinence at 12 months compared to 0% abstinence for individuals in MI or with less pretreatment time. The booster sessions seemed particularly helpful for individuals in the BA intervention as compared to the MI intervention in that they produced 16-31% fewer cigarettes per day. Notably, motivation to quit was higher after the BA intervention compared to the MI intervention. The current study used the same MI intervention manual to examine differences in motivation, interest in cessation aids, and other behaviors not limited to cessation behaviors.

Motivational Interviewing and the Early Change Process

There are specific tasks associated with each stage to progress further through the stages and specific processes of change that facilitate accomplishment of those tasks. Some of the tasks associated with early stages of change (i.e., Precontemplation, Contemplation) include increasing confidence, interest, hope, concern, and decision making. It is possible a brief MI intervention would encourage accomplishment of these tasks. Although there are not clear measures of each of these tasks, but there are some current measures that helped determine the impact of participating in an MI intervention on accomplishing tasks and moving forward in the change process. Thus in this study a

four question measure of confidence in ability to quit was used to assess change in confidence. A one item measure of perceived importance of quitting was used to assess change in concern and interest. A 39 item measure of the perceived risks and benefits of quitting was used to assess change in interest, concern, and decisional components. A one item measure of interest in using cessation aids was used to assess interest and hope. While information-seeking behavior is more consistent with exploring mixed feelings in the Contemplation stage or potentially examining details for a change plan in the Preparation stage, information-seeking behavior was measured to assess potential progress in change behaviors.

MI has consistently been found to be related to confidence in ability to change behavior for individuals who are struggling with various addictions (Apodaca & Longabaugh, 2009). One unique MI based strategy is to ask clients to rate their confidence to quit on a scale from zero to ten. Depending on how the client rates their confidence, the clinician uses specific strategies to elicit change talk and ideas for potential solutions to any barriers they see with change. Perhaps it is through this identification of potential barriers and then discussing solutions that helps build confidence in the ability to quit. One of four guiding principles of MI is to enhance confidence in the ability to quit and sustain change (Burke, Arkowitz, & Menchola, 2003). Affirmations, open ended questions and reflective listening as well as use of the confidence ruler mentioned above all increase the likelihood of evoking change talk. This gives the provider an opportunity to assess perceived barriers which may be affecting the individual's confidence in their ability to change.

Several studies have specifically examined the effects of participating in MI interventions on confidence or self-efficacy and how that in turn ultimately affects behavior change. Berman and colleagues (2010) specifically studied the effects of a MI single session on participants' self-efficacy or confidence in ability to abstain from using substances in a tempting situation. Study results suggest that individuals participating in the MI session experienced a significant increase in self-efficacy over time compared to individuals receiving treatment as usual (TAU). This increase in self-efficacy over time was directly related to transitioning further in the stages of change, particularly from Contemplation to Preparation. Increases in confidence may be particularly important to committing to a decision to quit or change behavior in some way. In the words of the authors, "the reflective MI process helps [clients] to perceive themselves as better able to abstain" (Berman, Forsberg, Durbeej, Kallmen, & Hermansson, 2010, p. 395). Cupertino and colleagues (2012) specifically examined self-efficacy as a mediator of the effects of MI on smoking behaviors. Their study confirmed that self-efficacy at baseline predicted higher self-efficacy at 6 months which in turn predicted quitting behaviors. Also, participating in MI interventions predicted an increase in motivation from baseline to 6 months. That relation between baseline motivation and quitting was mediated by self-efficacy in a structural equation model (CFI = 0.94, RMSEA = 0.045) and accounted for 31% of the variation in cigarettes smoked at 6 months.

Self-efficacy is an important motivational pathway to behavior change like quitting smoking. McClure and colleagues (2014) recently suggested that "motivational techniques may be particularly helpful and necessary, as evidenced by low confidence ratings for successful smoking cessation" in their study examining current smoker's

attitudes regarding quitting while in substance abuse treatment. Following their recommendations and previous literature findings, this study specifically included participant confidence as a construct potentially affected by an MI intervention.

In addition to confidence in one's ability to attempt and maintain behavior change, there are additional attitudes that seem to be related to increasing interest in change and accomplishing early stage tasks. An evaluation of the importance of changing behavior as well as the potential risks and benefits associated with change could give some indication as to whether or not the individual has increased their interest in change. Similar to confidence, the importance of quitting is another component of readiness and motivation. Importance suggests some level of need or reason to change possibly based on an exploration and organization of values. Level of importance is associated with stage of change such that individuals in earlier stages of change typically identify quitting smoking as less important than individuals in later stages of change (Boudreaux et al., 2012). Additionally, in this same study, the authors found that level of importance as identified in the single item importance ruler was significantly associated with smoking behavior change, F (2, 372) = 9.09, $p < .001$. It appears level of importance is also related to level of nicotine dependence; specifically, lower levels of dependence are associated with higher ratings of importance in quitting. The authors posit that change in importance is related to cognitive dissonance theory such that level of dependence and motivation interact in an effort to alleviate dissonance by the individual acknowledging and increasing their level of importance for quitting thus resolving feelings of discrepancy (Boudreaux et al., 2012).

Active components of motivation, such as the perceived risks and benefits of change and importance of change, may be indicative of early attitude shifts ultimately related to behavior change. Conceptually, perceived risks and benefits associated with change would also be related to the importance of and interest in change. The balance of the perceived risks and benefits of change is also potentially a representation of the discrepancy the individual is feeling as it pertains to their current behavior. The use of MI specific skills such as asking open ended questions, using reflections, expressing affirmations, and providing summaries allow a clinician to express empathy and increase an individual's awareness of any discrepant values and behaviors. For an individual who is early in the change process, this is indicative of not being as aware of the consequences associated with continuing their behavior. The strategies and style of MI are specifically oriented to increasing awareness of the consequences in order to better examine the perceived pros and cons of both continuing a behavior and changing a behavior. These pros and cons of changing are similar to the perceived risks and benefits of changing a behavior. However, focusing on reported changes in anticipated risks and benefits specifically associated with quitting over time may demonstrate attitude shifts due to experiencing discrepancy.

Additionally, exploring both the risks and benefits allows an individual to further examine any possible discrepancies they might be experiencing in terms of their values and what is important to them. A client discussing their perceived risks and benefits associated with quitting naturally allows for them to make self-motivated statements or change-talk (Miller & Rollnick, 2013). Change talk or client language including reasons, need, desire, and/or ability for change has been highlighted in previous research as a

promising and consistent mechanism of change (Apodaca & Longabaugh, 2009). Miller and Rose (2015) discuss the value of eliciting change talk as being particularly important to individuals who are ambivalent. These findings are consistent with Miller and Moyer's (2007) statements that because clients' own speech convinces them of their own beliefs, the therapist's use of MI skills to actively shape the client's language during sessions is crucial as an active ingredient of the treatment.

McKee and colleagues (2005) created the Perceived Risks and Benefits of Quitting (PRBQ) Questionnaire specifically to better understand smokers identified barriers and possible benefits that could occur in the event they decide to quit smoking. The perceived risks of quitting are significantly and negatively associated with pretreatment motivation and perceived benefits were positively associated with pretreatment motivation (β = -.29, $p < .001$; β = -.30, $p < .001$). Additional research findings suggest that there are significant differences in identified risks and benefits depending on whether the individual struggles with a serious mental illness (SMI) or not. For example, Filia, Baker, Gurvich, Richmond, and Kulkarni (2014) found that individuals with SMI were more concerned about experiencing negative affect and were less concerned about the loss of enjoyment after quitting compared to a general population sample. The SMI sample rated general well-being, self-esteem, and physical appeal benefits higher compared to the general population sample. The SMI population may be more closely related to individuals who are concurrently struggling with substance abuse issues and the use of this measure in this study clarified participants' perceived outcomes that may result from quitting smoking.

In addition to exploring in more detail previously found relations between the use of MI and motivation, attitudes, this study examined interest in use of cessation methods, changes in desire to quit smoking, and information-seeking behavior. In McClure and colleagues (2014) descriptive study examining smoking characteristics of individuals in residential substance abuse treatment in Baltimore, MD, they assessed the interest in using specific methods of cessation including not only Best Practices recommendations, but also other means such as snus or e-cigarettes. This study examined these and other options to better understand potential quitting aid preferences of individuals who are smoking in substance abuse treatment. This study also examined the effects of a MI intervention on overall desire to quit as well as information-seeking behavior as intermediate change process components.

The above reviewed literature regarding the relations between MI components and client factors supports the exploration of the effects of a single session of MI on motivation and cessation interest among individuals attending substance abuse treatment. Previous research findings show that there are several stage task related constructs engaged when individuals participate in MI based interventions. The goal of this project was to examine the relation between a single MI based session and the early experiential change process rather than the effect of MI on larger shifts in behavior. By choosing measurable motivation constructs that are representative of the stage tasks and interest in use of cessation aids, this study assessed the effect of a single MI based session on those constructs over a brief period of time early in residential substance abuse treatment.

Summary, Aims, and Hypotheses

Current research suggests that individuals who currently struggle with substance abuse issues and are entering treatment tend to have higher frequency and intensity of smoking. There are a number of barriers that seem to be related to the reduced likelihood of these individuals receiving best practices smoking cessation programming while they are in treatment. Although many studies have shown positive effects of smoking cessation efforts with individuals who have concurrent substance use disorders, less is known about specific strategies or interventions to enhance motivation or progress through the change process which could possibly increase the use of smoking cessation resources while in substance abuse treatment. Current research suggests that the use of a single session of MI has positive effects on reduction in ambivalence and behavior change including smoking. Further examination of motivation constructs associated with task accomplishment could lead to an increased understanding of intervention efforts that can efficiently increase motivation and behavior change. Underlying motivational indicators related to early stage of change task accomplishment in this study are changes in evaluation of risk and benefits to quitting, reported importance of quitting smoking, reported confidence in ability to change, desire for change, and interest in seeking more information about specific smoking cessation interventions. It was theoretically proposed that if the tasks associated with the Precontemplation and Contemplation stages were accomplished, participants would strengthen their commitment to learning more about quitting and potentially seek out additional information on cessation aids or at least increase interest in using aids to quit smoking in the future. The study targeted the early process of change for smoking cessation among individuals entering Intensive

Residential substance abuse treatment. This study also compared an MI-based single session intervention with a waitlist control to examine changes in motivation and cessation interest effects over a period of three weeks.

Aims

1) To experimentally examine the effectiveness of a single session of MI for increasing motivation for changing smoking behaviors among individuals participating in residential substance abuse treatment programs over time as measured by increased desire to quit, increased importance for quitting, and increased confidence in ability to quit compared to individuals participating in a waitlist control.
2) To experimentally examine the effectiveness of a single session of MI for increasing the perception of benefits and decrease the perception of risks associated with quitting smoking compared to participating in a waitlist control.
3) To experimentally examine the effectiveness of a single session of MI for enhancing interest in considering use of available Best Practices smoking cessation interventions among individuals participating in residential substance abuse treatment programs over time as measured by increased interest in using cessation aids to quit presently or in the future compared to individuals participating in a waitlist control.
4) To experimentally examine the effectiveness of a single session of MI for increasing likelihood of information-seeking behavior with regard to smoking

cessation aids and interventions while in treatment compared to individuals participating in a waitlist control.

Hypotheses

Hypothesis 1: Time and Group Interaction Effects of Desire, Importance, and Confidence to Quit

Individual responses were examined for a potential interaction between the effects of group and time on motivation as measured by desire to quit, level of importance, and confidence in ability to quit. It was hypothesized that there would be a significant interaction between the two groups across time.

Hypothesis 2: Time and Group Interaction Effect, PRBQ

Individual responses were examined for potential interactions between the effects of group and time on perception of benefits associated with quitting smoking and separately for the perception of risks associated with quitting smoking. It was hypothesized that individuals participating in the MI based intervention would report greater increases in perceived benefits of quitting over time compared to individuals in waitlist control. It was also hypothesized that individuals participating in the MI based intervention would report greater decreases in perceived risks of quitting smoking over time compared to individuals who participate in the waitlist control.

Hypothesis 3: Time and Group Interaction Effect, Cessation Interest

Individual responses were examined for a potential interaction between the effects of group and time on interest in using cessation aids. It was hypothesized that there would

be a significant interaction between the two groups across time. It was also hypothesized that individuals participating in the MI based intervention would report greater increases in cessation interest over time compared to individuals in the waitlist control.

Hypothesis 4: Group differences at two week follow up, Information-seeking Behavior

Individual responses were examined for significant differences between the MI based group individuals and the waitlist control group individuals' responses on the Information-seeking Behavior at two weeks follow up. It was hypothesized that individuals in the MI based group would report significantly more information-seeking for smoking cessation interventions.

Chapter 2: Method

Participants

Participants were recruited from two substance abuse treatment programs located in the Baltimore City area. Tuerk House is an Intensive Residential Treatment program offering services ranging from residential to intensive outpatient substance abuse treatment. The program includes addressing issues associated with co-occurring disorders, stress management, and chemical dependency. Individuals in treatment experience a structured schedule, learning behavioral tools and acquiring social skills to begin the path of drug and/or alcohol-free, long-term recovery. For the purposes of this study, individuals already participating in and entering the Intensive Residential Treatment were recruited. As mentioned before, state statistics indicate that approximately 70% of individuals seeking addiction services in the state of Maryland are current smokers. Tuerk House Intensive Residential Treatment Program had not conducted an internal investigation of the number of individuals who smoke entering their program. At the time of study recruitment, they were considering addressing smoking within their program by implementing both smoke free policies throughout their facility as well as integrating smoking cessation groups for individuals who smoke into their therapeutic program.

Gaudenzia offers Intensive Residential substance abuse treatment services to adult clients of diverse backgrounds. Their program emphasizes change with community and encourages using structured schedules, learning behavioral tools, and acquiring social skills to support long-term recovery. Treatment focuses on providing strategies that promote long-term abstinence including case management, discharge planning, and

helping patients make connections to activities that support meaningful recovery. Throughout their multiple sites and programs, the primary drugs of choice among residents are as follows: Cocaine (31%), Marijuana (23%), Heroin (19%), Alcohol (14%), and others (13%). The center chosen for this study is a men's and women's residential program. Notably, recruitment only involved participants from the women's program due to challenges with consistent resident issues in the men's program. To this investigator's knowledge, Gaudenzia has not as of yet conducted an internal study of the prevalence of smoking behavior among its residents.

Recruitment

The process of recruitment was standard across both clinics and involved two phases. The first phase focused on recruiting individuals currently receiving services regardless of the length of time they had been in treatment and could participate provided they met eligibility criteria and consented to participation. In light of the results of the study examining differences in MI and BA on smoking behaviors among individuals with Alcohol Dependence in substance abuse treatment finding group differences based on being in treatment for more than 22 days, length of time in treatment (in days) was treated as a covariate (Rohsenow et al., 2014). The second phase recruited individuals who were just entering treatment. Recruitment into the study was presented as participation in a health behavior study examining potential change in health behaviors related to attending treatment. Incentives varied by site due to research participation constraints. Individuals recruited from Tuerk House participated in a drawing to win a $50 gift card at the end of the study and were compensated $10 after completing the first post-session battery and $20 after completing the final two week follow up battery.

Individuals from Gaudenzia participated in a similar drawing, but were compensated with one healthy drink and one healthy food item after completing the first post-session battery. For completing the final two week follow up battery, they were compensated with one healthy drink and two healthy food items. Across both sites, for each battery completed (baseline, post-session, and follow-up), participants received a raffle ticket. Essentially, the more batteries completed, the higher the likelihood for winning the raffle.

For the purposes of this study, two questions were a part of screening eligible participants to ensure measurement of current smoking: 1) Have you smoked at least 100 cigarettes in your lifetime and 2) Have you smoked at least 20 cigarettes per week over the past 30 days? Individuals who indicated a positive response to both of these questions were considered current smokers and met the smoking eligibility criteria for this study. Program staff meeting individually with new intakes or counseling were encouraged to add interested individuals to a list to be screened for eligibility. Additionally, flyers were placed around the facilities to increase interest in participating. These flyers directed individuals interested to have their individual counselor add them to a list for recruitment. The primary investigator consulted this list weekly to facilitate recruitment. Additionally, there was a limit to how many people could enter the study from each site per week due to logistics, thus other interested people were added to a waitlist by date of expressed interest and recruited on a first come, first serve basis.

Eligibility Criteria

In addition to being current smokers, individuals needed to be English speaking and at least 18 years of age. This study recruited individuals interested in participating in

research about health behavior change and did not have to indicate an interest in quitting smoking either immediately or in the near future. The waiting period to begin recruiting for a study relating to addressing smoking behaviors within a substance abuse treatment program varies from study to study (Prochaska et al., 2004). This seems to be conceptually based and depends on a number of factors. In the second phase of recruiting, the investigator recruited individuals who had participated in treatment for at least one week to allow for a washout period due to other possible factors. Choosing to wait a shorter period of time compared to other studies (up to three weeks) also paralleled a theoretical timing premise that addressing smoking soon after entering treatment can demonstrate the treatment program's belief in overall health and wellness as an important aspect of treatment. In addition, individuals participating in this study needed to be screened for current stage of change as measured by the stage of change algorithm. Individuals in Precontemplation and Contemplation participated in the study. The final inclusion criteria for participation in the study was consenting to participate in the study protocol including randomization to an intervention, potentially being audio recorded for fidelity, and completing questionnaire batteries.

Exclusion criteria

Respondents who were not being sufficiently medically or psychiatrically stable enough to participate in a residential or intensive residential treatment program were not considered for recruitment. Respondents who were highly unlikely to be reached for follow-up due to imminent incarceration and respondents who were seeking detoxification only or methadone maintenance treatment were not included in recruitment efforts. Lastly, if individuals reported exposure to any form of brief intervention or

discussion of their smoking beyond just assessment of current smoking status since their admission to the program, they were not eligible for the study. This was assessed within the recruitment process by asking if they have had significant discussions regarding smoking and/or smoking cessation during their current treatment episode. Any intervention that could qualify as a brief intervention or more was grounds for already having exposure to smoking cessation in this treatment episode.

Study Design

Once individuals met inclusion criteria, had been recruited, and consented to participate in the current study, they completed the baseline assessment protocol. Certain items from the baseline battery were used for balancing participants between conditions including the single item measuring desire to quit smoking, the total score from the four items measuring confidence in ability to quit smoking, the total score from the Fagerström Test for Nicotine Dependence (FTND), and gender. Gender has a natural balancing division between male and female. The total FTND score was balanced using two levels, 6-10 (high) and 0-5 (low). The total score on the four items measuring confidence was balanced using two levels with 16 and above for high and 15 and below as low. The desire to quit smoking was balanced using two levels with 6 and above as high and 5 and below as low.

The investigator used urn randomization to appropriately balance the participants between the two conditions. Urn randomization is appropriate for smaller trials such as this study and has the benefit of keeping the probability of complete randomization of multiple variables across groups true (Stout et al., 1994). Specifically, once an individual consented to participation in this study, they were entered into an urn randomization

program to determine which intervention group they entered. According to Stout and colleagues (1994, p. 72), urn randomization "is systematically biased in favor of balance". It allows the investigator to keep variables balanced across intervention groups. The advantages of using urn randomization are that it preserves randomization as the basis of assignment into treatment condition, is challenging to manipulate relative to balance, and is less vulnerable to selection bias than other forms of randomization (Wei & Lachin, 1988). However, it can be difficult to implement depending on the number of variables to be balanced among groups. It violates the simple probability model of simple randomization because the probability of any given participant being assigned to any given intervention changes progressively and is not constant throughout. Stout and colleagues (1994) assure investigators that the complex probability structure of urn randomization is compatible with stronger assumptions like those within statistical analyses like ANCOVA.

The experimental condition received a single 45-minute smoking cessation session with a therapist trained in Motivational Interviewing entitled "Single Session Motivational Interviewing Protocol to Address Smoking Behaviors". In the control condition, participants were placed in a waitlist control group and received a 15-minute brief intervention session at the end of the study discussing smoking cessation reviewing a cessation aids pamphlet entitled "Brief Advice Protocol to Address Smoking Behaviors."

Two Masters level students in a clinical psychology doctoral program were available to each site and were trained in conducting the MI based single session intervention. Students had weekly allotted times for conducting these sessions that

alternated weekly to ensure that the protocol was implemented by more than one person at each site. For example, one student therapist dedicated Tuesday evenings to conducting at least two individual sessions and would alternate which site she went to by week. Participants were scheduled for their one-week intervention or waitlist questionnaire meeting and follow up meeting with the PI upon completing the Baseline Questionnaire.

Single Session Motivational Interviewing Protocol to Address Smoking Behavior

The emphasis of the Motivational Interviewing based intervention was based on therapeutic empathy, provider guidance, and embodiment of the MI spirit. Keeping these components of MI in mind, the content of the session was guided by the provider to discuss the participants' smoking. While the focus of the session was on smoking, the provider was to demonstrate empathy and maintain the MI spirit throughout the session. Ultimately, the goal was to help the participant begin to engage in the change process by having the opportunity to think in more depth about their smoking behavior within this session. It was expected that an adept provider would respond using the appropriate skills necessary to evoke thoughts and feelings about smoking behavior.

Therapeutic empathy, provider direction, and embodiment of the MI spirit helped provide fidelity markers for the experimental group as captured by the global scores of the MITI 3.1.1. Empathy involves seeing the world through the client's eyes, thinking about things as the client thinks about them, feeling things as the client feels them, sharing in the client's experiences. While there are many benefits to clients perceiving empathy from their providers, there are two very specific effects that were considered important for the MI based single session. First, when clients feel their provider is

empathetic, they are more likely to feel they can open up and share their personal experiences. This allows a provider to assess important factors such as what types of issues should be the focus of the session and continuing work, when the client typically needs support, and what barriers may present themselves as the individual begins the change process. Secondly, when a client perceives empathy from their provider, they also become more open to being gently challenged by their provider about any issues or beliefs that are shared. This is an important part of the change process. Feeling understood without judgment can make a client feel open to encouragements to understand their feelings about change better. Additionally, this MI based session incorporated psychoeducation about smoking to assist with increasing awareness and perhaps increasing concern.

Direction was also an important component of the motivationally based single session. Unlike some of the other components of Motivational Interviewing, being highly directive is not necessarily consistent with motivational teachings. Direction refers to the degree to which clinicians maintain appropriate focus on a specific target behavior or concerns directly tied to it. It is important to understand that clinicians can still implement focus and direction in a session by reinforcing client discussion towards topics related to increasing concern or interest in changing behavior. High direction by a provider however in session can also be indicative of an unyielding and domineering style which is not consistent with MI spirit. On the other hand, low direction is not necessarily in the best interest of the client either. For example, a provider who exerts minimal direction does not exert much influence concerning the topic and the course of a session. This means sessions may lack structure and topics can vary based upon

whatever the client brings up as important to discuss. While clients should have the space to discuss topics they are concerned about, if a client is unaware or avoidant of discussing topic relevant to changing behavior, it will not likely be addressed by the provider. Measure of provider direction within the session will be an additional important component of the Motivational Interviewing based session.

The spirit of MI is also important to this single session protocol. In addition to empathy, the provider is expected to demonstrate a willingness to collaborate with the participant. Demonstrating a sense of collaboration within any type of therapeutic intervention has been found to enhance clients' sense of equality and autonomy within the working relationship (Rollnick, Butler, Kinnersley, Gregory, & Mash, 2010). The provider includes them as the expert on their own behavior in helping shape a conceptualization of the behavior in question. For example, an individual who is in treatment for other substance abuse may feel their smoking is a permissible outlet to either cope with other stressors in their life or cope with their urges to use their substance of abuse or both. Collaborating with them in discussing their smoking behavior and feelings about smoking can help establish that the nature of this single session is meant to guide them towards change. Rather, it is simply meant to help them explore possible discrepancies they may be experiencing as a result of their smoking and guide them in exploring their motivation for change.

In addition to collaboration, MI encourages providers to use skills to evoke desire and reasons for changing smoking behavior from the participant. While psychoeducation was a component of this session, most of any MI consistent session should be spent listening to the participant's thoughts and feelings about their smoking. To evoke, or

draw out, a participant's own reasons for changing their behavior is more powerful than simply providing them with good reasons to quit. For most individuals who smoke, they spend a significant amount of time contemplating or feeling ambivalent about their smoking. To successfully progress fully through Contemplation to Preparation involves successfully completing and understanding a decisional balance process for an individual's smoking (DiClemente, 2003). A participant must be able to honestly generate their own reasons for behavior change in order to firmly decide to quit smoking and create a personal change plan for quitting. A skillful provider can assist in this process of generation by not judging, by using open ended questions, by affirming, and by demonstrating that they are listening and understanding the smoker (Miller & Rollnick, 2013). However, it was not anticipated that a single session would lead to an opportunity to move with a client through entire stages to a decision to quit. It was more likely that smaller increments of change happen as a result of this evocation of a participant's personal feelings about their smoking.

The last component of the spirit of MI critical to the MI based intervention session was provider support of participant autonomy. An autonomy-supportive provider can accept a client's stance on their behavior change, even if it is deciding not to quit or even reduce smoking. This was very important for a single session therapeutic format because the provider had limited time to meet with the participant and discuss smoking behavior. Perhaps it would be easy to commandeer the 45 minutes to push the participant in the direction of change whether that is reduction or quitting. However, MI consistent provider contact includes a lack of coercion and direct persuasion for change. This promotes a sense of autonomous behavior change in a recipient that is largely the result

of helping the participant connect change behavior with their broader goals, values and sense of self (Resnicow & McMaster, 2012).

In following the manual previously used by Rohsenow and colleagues (2014), specific content expected to be shared included costs of smoking relative to their income, smoking rate compared to state norms, pros and cons to changing, and the relationship between tobacco use and other substance use and to sobriety. It was important for the therapist to provide this feedback while still recognizing where the participant is in the stages of change. Ultimately, the content mentioned above is helpful for individuals early in the change process (e.g. Precontemplation or Contemplation stages) because it can help increase concern and interest in change.

Waitlist Control Group

Individuals who were randomized to the waitlist control group completed the assessment batteries at baseline, one week, and two week follow up. They received a brief intervention after they have completed the two week follow up to meet ethical standards and offer current smoking information about their smoking and resources for quitting. This information was meant to be representative of a brief intervention and at least offer individuals who participated in the waitlist control to receive information about quitting options. The protocol followed the BA content outlined within Rohsenow and colleagues (2014) recently published study comparing the effects of an MI based single session to that of brief advice on cessation outcomes over time. This brief advice session was about 15 minutes in length and follow AHRQ recommended methods (Rohsenow et al., 2014). The PI assessed smoking rate and interest in quitting, followed

by directly advising participants to stop smoking during substance abuse treatment while in residential treatment. Participants were given advice about useful methods for quitting such as use of a group, QL, NRT/Pharmacotherapy, community resources, individual counseling as well as asking them to set up a quit date in the next two weeks if at all possible. Participants were given a pamphlet for smoking cessation with local and state resources and were provided with corrective information if they express concerns about smoking cessation affecting treatment outcomes and sobriety.

Intervention Training and Group Supervision

Two Masters level students in a doctoral clinical psychology program were trained in the MI single session protocol. These students already had academic and clinical training in Motivational Interviewing through their graduate studies thus allowing for a shortened training for the purposes of this study. The training consisted of one, 4-hour session to teach the manual, fidelity measure, and scheduling logistics. The following training outline covers the materials reviewed within the training. The first two hours taught the background information including a brief rationale for integrating smoking cessation into treatment, Motivational Interviewing's styles, techniques and skills, as well as opportunities to practice skills and activities necessary to use based upon client stage of change. This part of the training also informed the students of use of the Motivational Interviewing Treatment Integrity Code (MITI 3.1.1) to ensure treatment fidelity including its components and scoring. As will be reviewed later in the measures section, the sessions were recorded to ensure fidelity of the MI intervention. The third hour reviewed content that is important to cover with every participant including

reviewing the referral processes for the QL, information about individual or group smoking cessation interventions available, information about NRT and pharmacotherapy. This section of the training was informed by what was available in both treatment sites. The final hour allowed for questions, comments, and practice. Both intervention protocols, including the BA intervention offered at the end of the study to the waitlist control group, were completely outlined within brief manuals provided during the intervention training. To review the manuals, please see Appendix H. To review the training agenda more thoroughly, please see Appendix I.

Therapists in this study met with a licensed psychologist once monthly to receive feedback on their MI skills and address questions or concerns that came up during intervention sessions. The therapists were compensated for their time by receiving supervision and were able to count the participation as therapists as clinical intervention hours as well as being given $15 for each session completed with a participant.

Baseline and Current Behavior Measures

Baseline Questionnaire

The baseline questionnaire included demographic information (i.e. age, gender, marital status, race, and ethnicity). This questionnaire also included information about health behaviors including but not limited to smoking. It briefly assessed current eating and sleeping behaviors as these are also important health behaviors that may or may not be related to their smoking behavior. In terms of participants' smoking behavior, several items were included from the Smoking History Questionnaire to assess how long participants have been smoking, the degree to which they smoke a complete cigarette,

how deeply they inhale, and their past quit attempts. Lastly, information regarding substance abuse history and current treatment episode was also assessed within this baseline questionnaire.

Current Smoking Behavior and Nicotine Dependence

Current smoking behavior examined both frequency and intensity and was composed of two items. The originally proposed item meant to measure smoking intensity item was, "On average, how many of the following do you smoke each <day/week>?" The options for items possible to have smoked included manufactured cigarettes, hand-rolled cigarettes, pipes full of tobacco, cigars/little cigars/cigarillos, water pipes, and bidis/kreteks. This item was taken from the Global Adult Tobacco Survey (IARC, 2013). According to Shiffman and colleagues (2004), smoking intensity as measured by this item demonstrates convergent validity and is strongly associated with indicators of nicotine dependence. Unfortunately, it had to be modified upon cognitive interview because participants struggled with comprehending the meaning of the question. The other tobacco items were removed from the item to just include cigarettes.

Frequency of use refers to the number of days tobacco is used during a given time period. The item chosen to assess frequency is "During the past 30 days (one month), on how many days did you smoke cigarettes?" The response options included 0 days, 1 or 2 days, 3 to 5 days, 6 to 9 days, 10 to 19 days, 20 to 29 days, or all 30 days. This item appears on the Global Youth Tobacco Survey (IARC, 2013). Notably, everyone in the final sample indicated smoking daily. According to Hyland and colleagues (2004), smoking frequency is a predictor of quitting with more frequent use associated with a

lower probability of quit attempts compared to less frequent use. The questions are included in the baseline questionnaire and was included with the Stages of Change Algorithm questions in follow up time points.

Interest in Smoking Cessation Measures

Interest in Cessation Measure

McClure and colleagues (2014) included two items in their study to assess interest in smoking cessation. The first item was a dichotomous response option item, "Are you considering quitting in the next 30 days?" The second item assessed interest in types of cessation aids including Best Practice recommendations (e.g., Patch or medication) as well as options that are not evidence based (e.g., electronic cigarette). While their response options were inclusive and their sample indicated variability in their preferences for types of aids, the authors did not include any form of therapeutic intervention such as smoking cessation groups, individual counseling, or the Quitline as response options. For the purposes of this study, those three response options were added to assess participants' preferences for assistance in quitting smoking if they wanted to do so in the future. The first question about considering quitting was adapted to have them rate their interest in using support, aid, or an intervention to help them with quitting or reducing their smoking within the next 30 days. A third item was also added to help assess general preference for type of cessation support (e.g., individual therapy, group, or Quitline) if they were to think about quitting or reducing in the future. In the analysis sample for the present study, Cronbach's alpha for the primary interest item was .82.

Information-seeking Behavior Questionnaire

The Information-seeking Behavior Questionnaire is a 4-item questionnaire with the purpose of measuring whether or not individuals participating in the study sought additional information regarding specific smoking cessation resources. This was meant to represent smaller, incremental shifts in interest and motivation to change their smoking behavior. For example, the first item is "In the past two weeks and NOT counting any of the participation in this study, have you looked for additional information about participating in a smoking cessation group (either in your treatment center or in community) to help you change your smoking?" Each item has a dichotomous response option ("Yes" or "No"). This measure has not been used before in research. One individual from each site consented to participate in the study in the capacity of providing cognitive interviewing regarding the questionnaire. Minor wording adjustments were made to the instruction of the questionnaire to inform participants that the following questions were to be considered within the timeframe of their participation in the study only. This measure was used for descriptive purposes without a total score. However, each item was used as a dichotomous outcome to determine if group type predicted positive endorsement of information-seeking behaviors. In the analysis sample of the current study, Cronbach's alpha indicated relatively low internal consistency (α = .63). This can be interpreted cautiously given that not all items would be expected to be strongly related with one another as they are indicative of preference or interest in types of smoking cessation support or aids.

The PI followed the basic processes including comprehension of the questions, retrieval from memory of relevant information, decision processes, and response

processes during cognitive interviewing of the information-seeking behavior questions. The PI used verbal probing as a cognitive interviewing strategy with an individual from each of the sites prior to beginning the recruitment and collection of data. Assessed areas included comprehension and interpretation, asking participants to paraphrase questions in their own words, confidence in participant response, and general follow up questions. Specifically, information from the interviews was used to revise the Information-seeking Behaviors Questionnaire to increase validity and comprehension. Individuals who participate in this cognitive interviewing were compensated $10 for their time.

Motivation Measures

Perceived Risks and Benefits Questionnaire

The Perceived Risks and Benefits Questionnaire (PRBQ) is a 40 item questionnaire assessing current smokers' feelings about the potential risks and benefits that would be associated with quitting smoking (McKee, O'Malley, Salovey, Krishnan-Sarin, & Mazure, 2005). This measure includes two subscales, Perceived Risks and Perceived Benefits, each consisting of six domains. The domains assessed within Perceived Risks include weight gain, negative affect, attend/concentrate, social ostracism, loss of enjoyment, and craving. The domains assessed within Perceived Benefits include health, well-being, self-esteem, finances, physical appeal, and social approval. Items include statements such as "I will miss the taste of cigarettes" and "I will gain weight". The PRBQ requires participants to respond to the stem "Use the scale below to rate how likely each item would be if you were to stop smoking" with items being rated on a Likert scale assessing likelihood (1 = no chance to 7 = certain to happen). The Perceived

Risks subscale demonstrated internal consistency reliability alpha of .90 and the Perceived Benefits subscale demonstrated strong internal consistency with an alpha of .93. The authors also found both scales showed acceptable to good test-retest reliability (r = .82 for Risks, r = .61 for Benefits). For the sample in the present study, Cronbach's alpha for the Perceived Risks subscale was .90 and .83 for the Perceived Benefits subscale. The PRBQ demonstrated significant, positive and negative correlations as expected with the pros and cons of the Decisional Balance Scale. Also, the creators of this scale found that increases in identified benefits were associated with increases in quitting, the odds of having an abstinence goal and success of change increased (McKee et al., 2005). Within research the two scales are used separately and not combined for a single score. In the analyses of this study, the scales were treated separately to test null hypotheses regarding treatment effects.

Importance Ruler

The creators of Motivational Interviewing (MI) created several 10 point rulers intended to assess constructs such as the importance of behavior change. A provider can use this ruler to gauge a client's feelings about their current perception of the importance to quit and use their response to evoke motivation to change. The importance ruler is a single item question with a ten-point scale assessing level of importance in quitting, "On a scale from 1 to 10, how important it stopping smoking to you?". The ruler has demonstrated construct validity through expected positive associations with indicated stage of change. A study examining the psychometric properties of the Confidence and Importance Rulers found that importance and confidence scores increased with each

progressive stage of change (Boudreaux et al., 2012). The results of this same study suggest that the rulers also demonstrate predictive validity as measured by predicting change in smoking behavior in a two-week span controlling for demographic variables and nicotine dependence. The prediction of change in smoking behavior was also correlated with stage of change which is a strong test of predictive validity. For this present study sample, the importance ruler demonstrated acceptable levels of internal consistency (α = .87).

Confidence

Confidence was measured using a four item measure created by Juliano and colleagues (2006). Participants were asked how confident they are that they could "quit smoking at this time", "abstain from cigarettes for the next 24 hours", "abstain from cigarettes until the end of the study", and that they could "not be smoking one month from today". Confidence is measured on a 7-point scale ranging from 0 (not at all confident), to 6 (extremely confident). These four items demonstrated high internal validity in the original study (α = .90). In the present study, Cronbach's alpha indicated lower, but still acceptable internal consistency (α = .80). McClure and colleagues (2014) used the same questions in their study and found their sample of individuals in opioid replacement therapy (ORT) and non-ORT substance abuse treatment expressed low confidence in their ability to abstain from smoking for up to 24 hours or one month.

Desire to Quit Smoking

Juliano and colleagues (2006) also created a single item to assess desire to quit smoking. This item was included with the confidence items as it has the same 7-point

scale ranging from 0 ("No desire at all") to 6 ("Extreme desire"). From their study, desire to quit was consistent with participant report on the contemplation latter such that individuals who had higher scores on the single desire item had higher scores on the contemplation latter. On average, individuals in their study scored 5.50 indicating a high desire to quit smoking. The scores within this study were expected to be lower. In their study, they also included this item in their internal consistency value of .90 reported in the confidence measure above. Cronbach's alpha within the present study indicated similarly strong internal consistency (α = .88).

Stage of Change Algorithm

The algorithm of the Stages of Change by DiClemente and colleagues (1991) is a brief algorithm consisting of four questions: "Are you currently a smoker?", "In the last year, how many times have you quit smoking for at least 24 hours?", "Are you seriously thinking of quitting smoking in the next 6 months?", and "If yes in the next 6 months, are you planning on quitting in the next 30 days?" The stages of change algorithm were used in this study to corroborate possible change in stage. According to previous studies, the algorithm has been found to have valid and reliable. Stage as determined by the algorithm are related to frequency and intensity of smoking behavior, nicotine addiction, self-efficacy, self-help manuals, and quit attempts (Crittenden, Manfredi, Lacey, Warnecke, & Parsons, 1994; DiClemente et al., 1991; Fava, Velicer, & Prochaska, 1995; Farkas et al., 1996). Appendix H shows the decision-tree for classifying respondents into Stages of Change for smoking cessation based on their answers. The algorithm screened for participants in early stages of change to participate in the study and to corroborate

theoretical relations between measured constructs of motivation and potential shifts in stage of change.

Treatment Implementation and Fidelity

MITI 3.1.1.

The Motivational Interviewing Treatment Integrity Scale (MITI) is an instrument meant to measure the degree to which the provider is interacting with a participant, client or patient in a manner consistent with Motivational Interviewing (Moyers et al., 2005). The MITI gives two types of scores: behavior counts and global scores. During the interaction, the rater counts specific MI behaviors (e.g. open-ended questions, reflections) which are later tallied and used to calculate specific summary scores. The rater can potentially use the tally to help them rate their overall judgment of the interaction concerning specific dimensions of MI. These global scores of five dimensions are on a 5-point scale and the dimensions include evocation, collaboration, autonomy/support, direction, and empathy. Typically, at least two trained raters listen to a 20-minute segment of a provider and participant interaction for the MI intervention. Typically, a middle 20-minute segment of the MI session is rated. At this time, each rater gives a global score on each dimension to represent the rater's global impression or overall judgment of the clinician's adherence to the skills within the interaction. The ratings are on a five point Likert scale, 1 is Low, 5 is High. Each MI based session was recorded by the intervention provider. Each recording was reviewed and rated using the MITI 3.1 global scales by at least one reviewer. It was important that the global scores reflected the expected scores for MI consistent behaviors.

The MITI encourages use of a behavior count on the part of the rater. A behavior count requires the reviewer to tally occurrences of specific interviewer behaviors. Raters make these counts throughout the segment of the session that they listen to. Simply, they are not required to rate the quality of the behaviors, but merely record the frequency of MI consistent behaviors. The behavior count protocol, outlined within the MITI instructions, is very specific. First, an utterance is defined as a complete idea in which a number of utterances can be expressed by an interviewer to a client. The utterance or sequence thereof ends when the client speaks. Second, there are five primary behavior codes that an utterance can be assigned potentially: 1) Giving information; 2) MI adherent; 3) MI Nonadherent; 4) Questions; 5) Reflections. The details of these types of ratings and the information regarding coding multiple sequenced utterances were addressed within the training.

As a measure within this study, the MITI was used to enforce fidelity of the MI based intervention. The global spirit rating was given for each session. This included totaling the global score for three domains, evocation, collaboration and autonomy/support and dividing by three to get a mean Global Spirit Rating. A score of 3.5 is considered beginning proficiency, a score of 4 is considered competent. It was expected that for each MI based session, the student therapist would have a score of at least 3.5. For fidelity purposes, if a session score was lower than 3.5, it was not considered consistent with MI principles and not included in the study analyses. There were no sessions rated below 3.5 however.

Two raters were trained according to MITI training recommendations following a multiple level competency protocol. Competency is typically demonstrated or measured

by inter-rater reliability and matching to a gold standard. Trainings typically begin with raters being able to consistently demonstrate coding of Level I tasks including parsing utterances, identifying giving information, and coding open/closed questions. Level II tasks include demonstrating the ability to consistently identify reflections and overall MI adherence and non-adherence. Once a rater demonstrated the ability to concurrently do all the Level I and Level II tasks in one rating session, they moved on to practicing Level III competencies which includes adding Global Ratings to the coding process.

Both individuals coding for this research project had previous experience coding, one specifically using the MITI. To update their skills and appropriately train them, they were asked to complete a series of MITI 3.1.1 training tasks to ensure competence and reliability of their coding sessions. There was an initial meeting for the coders to meet each other and to discuss their experience using the MITI in the past. The meeting was also an opportunity for the PI to review of the study protocol and informed consent to ensure that coders have an understanding of the research context in which study audio clips were created. The PI gave the coders the outline of the coder training and asked for feedback on the training process. They were given the MITI 3.1.1 manual and asked to review it at their leisure prior to the next training date. They were also given an assignment to review two uncoded transcripts to practice coding behavior counts and adherence. They met a second time with the PI to discuss and review their coding with already coded transcripts for feedback. Also during this meeting, both coders listened simultaneously to other previously coded sessions to pause and discuss how they would have coded utterances. Within one week of this second training, they were assigned five brief audio clips to practice coding using the MITI. They submitted their ratings of these

clips (totaling approximately 43 minutes) to the investigator who used their responses on the behavior counts and the global ratings to assess *Average Measures* ICC for an estimate of initial reliability. The *Average Measures* ICC is the appropriate statistic to report if future coding is expected to employ multiple coders, as is encouraged for psychotherapy coding endeavors. The PI and the coders met a third and final time to complete ratings of two assigned MI video clips given by the PI. Again, they discussed how they would have coded certain utterances and compared their responses on both behavior counts and ultimately global scores. Their ICC on these two clips met criteria for sufficient inter-rater reliability. As only one coder was able to submit their codings of weekly sessions, compliance was assessed to estimate fidelity.

Measure Implementation Protocol

There were three measurement time points within this study. The investigator implemented the recruitment into the study in both sites along with coordinated efforts of intake and other staff. As primary recruiter into the study, the investigator ensured all participants met the inclusion criteria and also gave the baseline battery of assessments. The investigator used the previously identified information within that battery to randomize participants to the two groups. At baseline, participants also completed a study ID form. Once the battery was completed, the investigator gave the participants a time for their next study participation without informing them of their specific trial arm. The student therapists were informed of their weekly schedule based on recruitment the week prior. The second measurement time point was completed within one week of the initial entry into the study. The battery was completed immediately post-session for the intervention participants or during a meeting with the PI for the waitlist control

participants. For both types of participants, the PI gave and collected the questionnaires to help reduce biases. At the time of completing their questionnaires for this post-session time point, the PI provided the healthy food options to the participants at Gaudenzia and scheduled payment for the other participants at Tuerk House.

The third measurement time point was scheduled two weeks after the one-week session date or meeting time with the PI. At this time, participants met with the investigator to complete their final battery. This battery included the previously asked questionnaires and measures as well as the information-seeking questionnaire. Similar to the previous time point, participants from Tuerk House were scheduled for payment and participants from Gaudenzia were given healthy food options upon completion of the battery. All measures were given in person. Table 1 provides additional clarification about the proposed study batteries.

Table 1
Proposed Study Battery and Measure Timing

	Baseline	Post-session	Two Week Follow-Up
Baseline Questionnaire	✓		
Health Behaviors	✓	✓	✓
Current Smoking Behavior	✓	✓	✓
Stages of Change Algorithm Questions	✓		✓
Interest in Cessation Questionnaire	✓	✓	✓
Information-seeking Behavior Questionnaire			✓
Perceived Risk and Benefits Questionnaire	✓	✓	✓
Importance Ruler	✓	✓	✓
Confidence	✓	✓	✓

Note: Please see Appendices A through G for a copy of each measure.

Analyses

Hypothesis 1-Motivation Constructs

Three separate 2 x 3 between and within subjects analyses of covariance were performed on three dependent variables of interest: Level of perceived importance of quitting smoking, desire to quit smoking, and confidence in ability to quit smoking. Clinic site and length in of time in treatment were included as covariates in each analysis. Clinic site was treated as a categorical variable while length of time in treatment was treated as a continuous variable. The analyses included the following independent variables: a between subjects variable, treatment group (MI based individual session or

waitlist control), and a within subjects variable, time point measured (baseline, post-session, 2-week follow-up). The investigator assessed for conditions of assumptions being met including homogeneity of variance, homogeneity of covariance, and sphericity. Interactions were assessed for significance followed by main effects of the IVs if the interaction was not significant.

Hypothesis 2-PRBQ

A two way factorial ANCOVA was conducted individually on each of the two scales, Perceived Risks and Perceived Benefits, of the PRBQ. Adjustment was made for two covariates, clinic site and length in treatment. Clinic site was treated as a categorical variable while length in treatment was a continuous variable. Independent variables were a between subjects variable, treatment group (MI based individual session or waitlist control), and a within subjects variable, time point measured (baseline, post-session, 2-week follow-up).

All assumptions were first tested and appropriate reporting steps were taken when assumptions were not met. The first step taken in interpreting the factorial ANCOVA was to assess the significance of the interaction between the two IVs and the two covariates. If the interactions between any of the covariates and IVs were significant, then further ANCOVA analyses was not necessary. Since ANCOVA is adjusting group means as if subjects scored equally on covariates, each covariate was analyzed for its influence on the DV of interest (either risk or benefit). Significance and effect sizes were examined to determine the amount of variance accounted for by each covariate. The next step analyzed the significance of the interaction between the two IVs, group and time. If no

interaction was present, then the main effects of each on the DV were interpreted. As mentioned in the beginning of this section, separate ANCOVAs were conducted for the two scales as separate DVs.

Hypothesis 3-Interest in Cessation Aids

Similar analytic steps to those of the previous hypotheses were taken to examine the effects of group and time on interest in cessation aids controlling for site and length of time in treatment.

Hypothesis 4 – Group Differences in Information-seeking Behavior at Two Week Follow-up

The MI Smoking Cessation Single Session Group and the waitlist control group were contrasted on their 2-week post intervention measures of change behaviors including reporting information-seeking about or arranging to attend group cessation within treatment, information-seeking or possibly trying NRT/Pharmacotherapy, information-seeking about or possibly calling the QL, information-seeking and discussion with individual counselor about smoking cessation. To do this, logistic regressions were run for each individual item on the information-seeking behavior questionnaire. The dichotomous responses were coded Yes = 1 and No = 0 to assist with interpretation of the results. Intervention group was used as a predictor with site and length of time in treatment entered as first step covariates.

Logistic regression was used to determine which variables including group, site, and treatment length of stay, predicted if participants seek additional information about various cessation methods. Regression analyses were used to indicate overall model fit

and percent of subjects correctly classified. Lastly, summary model statistics including Wald and odds ratios were interpreted to determine if the IVs of group and time predicted information-seeking behaviors.

Power Analyses

The study conducted by Rohsenow and colleagues (2014) found small to moderate effect sizes for the MI base intervention interacting with a variety of variables (e.g., substance of abuse prior to treatment). The a priori power analyses included here demonstrated the number of observations necessary to meet adequate power and small to moderate effect sizes. For the ANCOVA analyses proposed in hypotheses 1, 2, and 3, an a priori analysis for an ANCOVA with fixed effects, main effects, and interactions was conducted with expected effect size of .20, error probability of .05, power of .80, six groups, and a numerator degrees of freedom of 2. The expected sample size to meet these criteria is 36 participants per group. For logistic regression to sensitively detect small effect sizes of .15 with similar criterion, there would need to be a minimum of 77 individuals in the total sample.

The recruitment period was approximately four months and in that time collected a total of 91 individuals total with 46 participants in the intervention group and 45 participants in the control group. After attrition, the total number of participants in this study was 71 including 40 participants in the intervention arm and 31 in the waitlist control arm. Similarly, in regard to the first three hypotheses, the expected number of individuals per intervention group after recruitment should have been adequately powered to detect moderate effect sizes. Effect sizes were used for reporting all

outcomes to provide meaningful interpretation of any significant intervention differences detected.

Chapter 3: Results

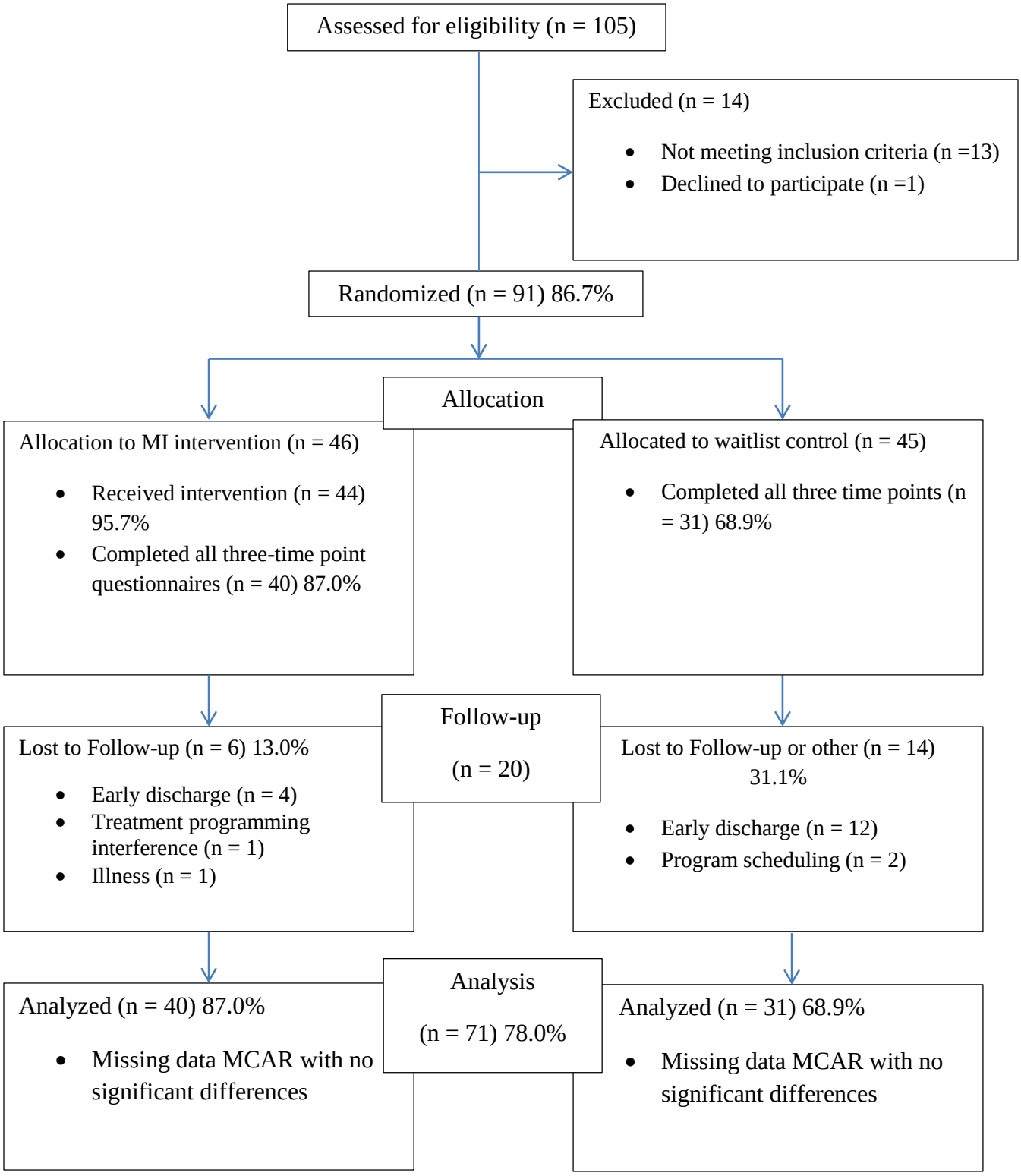
Recruitment and Attrition

Recruitment and data collection for the study began March 16, 2015 and continued through July 7, 2015. Approximately 105 individuals were approached about participating. Of these, 14 individuals (13.3%) did not participate: 13 were not eligible due to their impending treatment discharge date interfering with participation, and one individual declined to participate upon hearing the study description. A total of 91 individuals (86.7%) initiated the study. Of those 91 participants who consented to participate in the study and completed a baseline questionnaire, 45 individuals were randomized to the control group (49.5%) and 46 were randomized to the intervention group (50.5%).

Of the 91 individuals who consented and completed baseline questionnaires, 20 (22.0%) were lost to follow-up or otherwise unable to participate during at least one of the two follow-up time points (hence referred to as participants lost to follow-up). Five participants completed a baseline questionnaire only, 14 completed a baseline and the post-session or control condition follow-up questionnaire, and one completed a baseline and a two-week follow-up packet. It is important to note that of these 20 individuals missing data at one or more time points, six were from the intervention group (13.0% of total intervention group) and 14 were in the control group (31.1% of total control group). Chi square analyses confirm that the rate of attrition by group is a significant difference, $\chi^2(1, N = 91) = 4.33$, $p = .04$, indicating significantly more individuals were lost from the control than the intervention group. Reasons for attrition varied and included illness, treatment programming, and unanticipated early discharge from treatment. Notably,

attrition rate was also significantly different by site, $\chi^2(1, N = 91) = 6.12$, $p = .04$. This may be specifically related to site programming. Other factors potentially accounting for this significant difference are addressed in the discussion. Please see CONSORT flow diagram in Figure 1.

Figure1.


Assessed for eligibility (n = 105)
Excluded (n = 14)
Not meeting inclusion criteria (n =13)
Declined to participate (n =1)
Randomized (n = 91) 86.7%
Allocation
Allocation to MI intervention (n = 46)
Received intervention (n = 44) 95.7%
Completed all three-time point questionnaires (n = 40) 87.0%
Allocated to waitlist control (n = 45)
Completed all three time points (n = 31) 68.9%
Follow-up
(n = 20)
Lost to Follow-up (n = 6) 13.0%
Early discharge (n = 4)
Treatment programming interference (n = 1)
Illness (n = 1)
Lost to Follow-up or other (n = 14) 31.1%
Early discharge (n = 12)
Program scheduling (n = 2)
Analysis
(n = 71) 78.0%
Analyzed (n = 40) 87.0%
Missing data MCAR with no significant differences
Analyzed (n = 31) 68.9%
Missing data MCAR with no significant differences

Final Sample Selection and Description

Analyses of patterns between individuals who continued to participate in the study (n = 71) and individuals who were lost to follow up (n = 20) found no significant differences with regard to baseline characteristics or reported behaviors. T-tests were conducted to examine baseline data for any significant group differences between the 20 individuals who did not meet with the PI at all three expected time points and the 71 individuals who completed a questionnaire battery at each time point. At baseline, there were no significant differences between the completers and non-completers for tobacco dependence as measured by the Fagerström Tobacco and Nicotine Dependence scale (FTND), $t(89) = 0.04$, $p = 0.97$; importance of quitting smoking, $t(89) = 1.03$, $p = 0.31$; confidence to quit smoking, $t(89) = 0.90$, $p = 0.37$; readiness to quit smoking, $t(89) = 1.29$, $p = 0.20$ interest in using cessation aids, $t(89) = -0.21$, $p = 0.83$; desire to quit smoking, $t(89) = 0.62$, $p = 0.54$; risks for quitting smoking, $t(89) = 0.34$, $p = 0.73$; and benefits of quitting smoking, $t(89) = 1.09$, $p = 0.28$. Further information regarding the baseline values for the control group and the intervention group can be found in Table 2, including tests examining for baseline differences between the two groups.

Table 2.

Baseline measures by group.

	Intervention Group (n = 41) *M (SD)*	Control Group (n = 30) *M (SD)*	*t*	*p*
Desire to Quit	2.88 (1.68)	2.23 (2.03)	-1.47	.145
Importance of Quitting	6.10 (3.03)	5.06 (3.53)	-1.32	.188
Confidence to Quit	2.29 (1.36)	1.86 (1.30)	-1.35	.183
Interest in Cessation Aid	5.55 (2.90)	4.94 (3.42)	-0.80	.415
Perceived Risks	4.47 (1.05)	4.61 (1.16)	0.53	.599
Perceived Benefits	5.72 (0.82)	5.88 (0.62)	0.95	.347
Current smoking (# of cigarettes)	11.58 (5.30)	12.10 (6.01)	3.88	.699
			χ^2	*p*
Stage of Change	1.58 (0.64)	1.35 (0.49)	3.20	.202

There were no significant differences between the participants who completed a battery at all three time points and those lost to follow up only as noted in above table. The 71 individuals who participated in all three meetings were used for the data analyses. Participants in the final sample were split evenly with regard to sex (50.7% male). Additionally, they primarily identified as African American (67.6%) and having less than a high school education (43.7%). Age ranged from 21 to 56 years, with a mean of 40.90 (*SD* = 11.30). The majority of participants reported being single or having never married (78.9%). All 71 participants reported more than one substance of current/past problematic use. The three most commonly identified were heroin (64.8%), cocaine (54.9%), and alcohol (49.3%). With regard to site of recruitment, 48 participants (67.6%) were from Tuerk House and 23 (32.4%) were from Gaudenzia. This was an anticipated difference in the pacing of recruitment from each site and supports the decision to include

site as a covariate in each analysis. Table 3 displays the demographic characteristics of the analysis sample. Additionally, the correlation matrix for key study variables is shown in Table 4.

Table 3.

Demographic and other baseline characteristics of analysis sample.

Characteristics	*n* (%)
Gender	
Male	35 (49.3%)
Female	36 (50.7%)
Race	
African, African American, Black	48 (67.6%)
American Indian, Native American	1 (1.4%)
Asian, Asian American	0 (0%)
Native Hawaiian, or Pacific Islander	1 (1.4%)
White, Caucasian, European	20 (28.2%)
Other, Multiracial	1 (1.4%)
Ethnicity	
Hispanic	1 (1.4%)
Non-Hispanic	70 (98.6%)
Relationship status	
Single, never married	56 (78.9%)
Married	10 (14.1%)
Divorced	2 (2.8%)
Widowed	1 (1.4%)
Cohabitating	2 (2.8%)
Level of education	
11^{th} grade or less	31 (43.7%)
High school graduate or GED	15 (21.1%)
Some college, technical school, 2-year or Associate's degree	21 (29.6%)
4-year degree or higher	4 (5.7%)
Problematic substances of abuse (Past and present)	
Alcohol	35 (49.3%)
Heroin	46 (64.8%)
Opiates	30 (42.3%)
Cocaine	39 (54.9%)
Marijuana	16 (22.5%)
Amphetamines	5 (7.0%)
Other	8 (11.3%)
	M (SD)
Age	40.9 (11.3)
Time in treatment (days) upon starting	26.4 (32.0)

Table 4.

Correlation Matrix for Key Variables

	B.Aid Int.	B. Import	B. Desire	B. Conf.	B. Risks	B .Benefits	1.Aid Int.	1. Import	1. Desire	1. Conf.	1. Risks	1 .Benefits	F.Aid Int.	F. Import	F. Desire	F. Conf.	F. Risks	F .Benefits	Info Total
B.AidInt.	1																		
B.Import	.692*	1																	
	.000																		
B.Desire	.719*	.714	1																
	.000	.000																	
B. Conf.	.418*	.630*	.576*	1															
	.000	.000	.000																
B. Risk	-.023	-.015	-.073	-.070	1														
	.847	.903	.548	.563															
B.Benef.	.247*	.234*	.201	.078	.340*	1													
	.038	.049	.093	.518	.004														
1.AidInt	.588*	.531*	.550*	.389*	-058	.245*	1												
	.000	.000	.000	.001	.632	.040													
1.Import	.585*	.651*	.607*	.387*	-.103	.175	.704*	1											
	.000	.000	.000	.000	.394	.145	.000												
1.Desire	.595*	.631*	.685*	.501*	-.096	.165	.694*	.856*	1										
	.000	.000	.000	.000	.427	.168	.000	.000											
1.Conf	.468*	.513*	.515*	.517*	.005	.063	.540*	.710*	.759*	1									
	.000	.000	.000	.000	.969	.602	.000	.000	.000										

Note: B = Baseline, 1= Week 1, F = Final Follow up. Top number in each cell denotes Pearson correlation. Bottom number in each cell denotes statistical significance level (2-tailed). Correlations that are statistically significant ($p < .05$) are starred.

	B.Aid Int.	B. Import	B. Desire	B. Conf.	B. Risks	B .Benefits	1.Aid Int.	1. Import	1. Desire	1. Conf.	1. Risks	1 .Benefits	F.Aid Int.	F. Import	F. Desire	F. Conf.	F. Risks	F .Benefits	Info Total
1.Risk	.024	.048	-.044	-.026	.742*	.292*	.144	.051	.032	.105	1								
	.843	.692	.715	.830	.000	.013	.230	.672	.789	.382									
1.Benef.	.276*	.206*	.186	.079	.301*	.578*	.265*	.241*	.297*	.303*	.364*	1							
	.020	.035	.120	.515	.011	.000	.025	.043	.012	.010	.002								
F.AidInt	.545*	.597*	.527*	.363*	.050	.346*	.679*	.655*	.590*	.446*	.084	.338*	1						
	.000	.000	.000	.002	.679	.003	.000	.000	.000	.000	.484	.004							
F.Import	.520*	.628*	.604*	.379*	.018	.229	.581*	.790*	.740*	.657*	.095	.290*	.710*	1					
	.000	.000	.000	.001	.883	.055	.000	.000	.000	.000	.428	.014	.000						
F.Desire	.529*	.539*	.614*	.444*	-.090	.166	.630*	.767*	.944*	.767*	.065	.210	.643*	.726*	1				
	.000	.000	.000	.000	.455	.166	.000	.000	.000	.000	.590	.079	.000	.000					
F.Conf	.262*	.367*	.401*	.483*	-.038	.046	.414*	.590*	.671*	.719*	.010	.126	.515*	.602*	.720*	1			
	.027	.002	.000	.000	.753	.704	.000	.000	.000	.000	.937	.297	.000	.000	.000				
F.Risk	-.111	-.110	-.217	-.043	.747*	.172	.024	-.139	-.112	-.016	.821*	.209	-.020	-.086	-.071	-.028	1		
	.358	.361	.070	.720	.000	.152	.843	.248	.351	.891	.000	.080	.866	.478	.559	.818			
F.Benefit	.125	.138	.084	.033	.287*	.518*	.226	.219	.247*	.243*	.338*	.778	.416*	.287*	.276*	.172	.309*	1	
	.299	.250	.484	.786	.015	.000	.059	.067	.038	.041	.004	.000	.000	.015	.020	.152	.009		
InfoTotal	.291*	.226	.374*	.299*	-.086	.196	.269*	.390*	.356*	.376*	-.014	.108	.319*	.397*	.345*	.470*	-.075	.029	1
	.014	.058	.001	.001	.475	.101	.023	.001	.002	.001	.908	.371	.007	.001	.003	.000	.536	.809	

Note: B = Baseline, 1= Week 1, F = Final Follow up. Top number in each cell denotes Pearson correlation. Bottom number in each cell denotes statistical significance level (2-tailed). Correlations that are statistically significant ($p < .05$) are starred.

Using data from the analysis sample, Specific Missing Values Analyses (MVA) were conducted for dependent variables for each hypothesis. All missing data were deemed to be missing completely at random (MCAR) as indicated by Little's MCAR test, (desire, importance, confidence: $\chi^2(15, N = 71) = 20.83$, $p = .14$; interest in cessation aids: $\chi^2 (5, N = 71) = 6.63$, $p = .25$; risk and benefits: $\chi^2 (10, N = 71) = 7.48$, $p = .68$).

Individual Response Missing Data

In the analysis sample (N = 71), there were few missing responses among the individual participants. At baseline, three individuals had missing responses on the age they began smoking and two participants were missing responses to how deeply they inhale when smoking. Mean imputation from the overall sample means were used for age as this accounted for less than 4% of the sample. The modal value for baseline depth of inhalation was used for the baseline inhalation. At the second time point, there were two missing responses on the number of cigarettes smoked per day. The participants' previous response from baseline was used for this missing value as a conservative estimate of no change. At the final two week follow up, two individuals were missing responses to the depth of inhalation and one individual was missing a response to current health. As these are categorical values, the modal values were again used for imputation given the small percentage of individuals with missing data. Pre and post means for each of the items with missing responses is presented in Table 5.

Table 5.

Values for variables missing data before and after imputation.

Variable	N	Mean	SD	Post N	Post Mean	Post SD
Age began smoking in years	68	15.25	5.41	71	15.25	5.30
# of cigarettes (week 1)	69	8.82	0.42	71	8.81	0.42
	N	Mode		Post N	Post Mode	
How deeply inhale (baseline)	69	5		71	5	
How deeply inhale (2 week F/U)	69	5		71	5	
Health value (2 week F/U)	70	2		71	2	

Outliers

The next step of the data screening process involved identifying potential univariate and multivariate outliers using box plots and studentized residual values. There was one univariate outlier on the mean perceived risks for smoking at baseline. However, the participant's score was very close in value proximity to the next closest participant value, so the outlier score was modified by replacing their value with closest less extreme value, as suggested by Tabachnick and Fidell (2007). Additionally, one participant's subscale score on the perceived benefits of smoking was significantly lower compared to other participants' at all three time points. This participant was both included and excluded in the analyses to determine this affected results. No differences in overall significance of time or group on the perceived benefits were found in these analyses. As such, reported results include this participant's scores.

Assumptions within Analyses

All analysis variables were assessed for violation of the respective analysis assumptions. The Shapiro-Wilks statistic was examined to determine the normality of the distribution, and kurtosis and skewness values were assessed to examine the shape of the distribution. In this sample, distributions were often non-normal. However, in a community-based sample, it is not uncommon for the values on the identified variables to violate the assumption of normality (Tabachnick & Fidell, 2007). Moreover, ANCOVA analyses are typically robust to violations of normality and it is simply noted that these violations occurred in some of the dependent variables (Tabachnick & Fidell, 2007).

For each ANCOVA, homogeneity of variance, homogeneity of covariance, and sphericity were also examined. Violations of these assumptions were noted and appropriate steps were taken to ensure integrity of the analyses. For example, the Greenhouse-Geisser significance test is reported when the assumption of sphericity is violated. For each logistic regression, case diagnostics were performed if indicated, and linearity between continuous variables was also assessed.

Generally, when conducting analyses comparing groups, it is important to examine whether the two groups have approximately equal numbers of participants. Although group sizes were unequal in this study (40 participants in intervention group, 31 in control), this is not of concern in this particular case due to the use of time as the repeated measurement in ANCOVAs. More specifically, if time is used as the repeated measurement, then the analyses are balanced over the three measures regardless of group size, so long as valid data are available at all waves as is the case here (Mertler & Vannatta, 2005).

Intervention Fidelity

Each week, a trained coder listened to a 20-minute segment of both sessions by one therapist. Additionally, the coder alternated listening to a different therapist's sessions each week ensuring that the coder repeatedly had opportunities to code both therapists. Throughout the course of the study, 30 sessions were coded including weeks when the coder listened to all four sessions for both therapists. The coding included behavior counts and global ratings for a 20-minute segment of each session. The spirit rating including the mean score of global scales evocation, collaboration, and autonomy suggested that the therapists were competent with a mean score of 4.72 on a scale of 1 to 5. The competency marker for the spirit rating is expected to be minimum of 4. Each session also demonstrated that the therapists were exhibiting a number of MI consistent behaviors including open ended questions, simple reflections, and complicated reflections. Initially, this study was going to have two coders to ensure inter-rater reliability, but there were difficulties with receiving completed ratings from the second coder. However, given the training and background of the individual coder, the coded values support MI adherence and thus, adequate compliance with the intervention can be assumed.

Hypothesis 1: Motivational Composite

This study proposed to assess an overall effect of group and time on a "motivation composite," derived from several measurable constructs related to motivation: desire to quit smoking, importance of quitting smoking, and confidence to quit smoking. However, preliminary analyses found strong positive correlations across all relations for all three time points. The weakest correlation was between Importance of Quitting at baseline and

Confidence to Quit Smoking at the final time point, $r = .37$, $p = .002$. Although this correlation is of weak to moderate magnitude, it is still a stronger relation than recommended for dependent variables in MANCOVA analyses. The more strongly and positively correlated DV pairs, the more redundant they become, as no unique variance is added to the model. As such, each of these three variables was examined separately with Bonferroni corrections made for potential inflation of Type I error. Each analysis included treatment site and time (total days) in treatment at baseline as covariates.

Contrary to hypothesis, there was no statistically significant interaction between the intervention group and time on current desire to quit smoking, $F(2, 134) = 0.93$, $p = .38$, partial $\eta^2 = .01$. However, within the entire sample, there was a significant increase in desire to quit smoking over time, $F(2, 134) = 6.35$, $p < .004$, partial $\eta^2 = .09$. There were no significant group differences with regard to desire to quit smoking, indicating the intervention did not affect desire to quit, $F(1, 67) = 2.08$, $p = .15$, partial $\eta^2 = .03$.

There was also no statistically significant interaction between intervention group and time on importance of quitting, $F(2, 134) = 0.21$, $p = .78$, partial $\eta^2 = .003$, indicating no effect of intervention group on importance over the course of the study. Generally, the importance of quitting slightly increased across the sample at all three time points, though these increases were not statistically significant. Notably, neither time, $F(2, 134) = 1.16$, $p = .31$, partial $\eta^2 = .02$, nor group membership, $F(1, 67) = 1.87$, $p = .18$, partial $\eta^2 = .03$,was a significant predictor, indicating importance remained stable throughout the study and across the sample.

Similar to desire to quit smoking, confidence to be able to quit also appeared to increase significantly for the entire sample across all three time points, $F(2, 134) = 6.88$, $p \leq .002$, partial $\eta^2 = .093$. Results did not support the hypothesis that individuals who participated in the intervention group would show greater increases in confidence across the study compared to the waitlist control participants, $F(2, 134) = 2.43$, $p = .12$, partial $\eta^2 = .03$.

Hypothesis 2: Perceived Risks and Benefits of Quitting

For risks of quitting smoking, there were no notable positive effects of participating in the intervention group, $F(1, 67) = .84$, $p = .36$, partial $\eta^2 = .01$. Additionally, across both intervention and control groups, passage of time was not associated with significant improvements in risks of quitting smoking, $F(2, 134) = .21$, $p = .81$, partial $\eta^2 = .003$.

For benefits of quitting smoking, the analyses were run completely with the individual indicated as a multivariate outlier. There were no differences in the results. There were no significant increases or decreases in the perceptions of benefits by group, $F(1, 67) = .02$, $p = .88$, partial $\eta^2 = .00$, or across the entire sample over time, $F(2, 134) = .10$, $p = .35$, partial $\eta^2 = .02$.

Hypothesis 3: Interest in using cessation aids

One of the central aims of this study was to examine if participation in the intervention group would lead to a significant increase in willingness and interest to use cessation aids compared to the control group over the course of the study. In trying to maintain theoretical integrity of potentially wanting to use support while available in

treatment, the item assessed interest in the next 30 days. The results indicated that there was not only a lack of group differences over time, $F(1, 67) = .87$, $p = .35$, partial $\eta^2 = .01$, but that there was no significant change in interest across the entire sample, $F(2, 134) = 1.48$, $p = .23$, partial $\eta^2 = .02$. This may be due to the time frame as opposed to the actual desire to use support upon quitting.

The majority of participants selected only one preference at any given time point, and among these participants' interest in individual therapy was steady throughout the study, interest in group participation declined, and interest in the Quitline increased. However, there were no significant differences in preference by intervention vs. control at baseline, $\chi^2(6, N = 71) = 9.37$, $p = .15$, and were not significantly different at the final time point, $\chi^2(6, N = 71) = 4.42$, $p = .49$. Taking multiple preferences into account at the final time point, roughly 42.2% of the sample indicated they would prefer group, 47.9% indicated they would prefer to meet individually, and 43.6% would prefer to use the Quitline.

Table 6 includes the means and standard deviations at each time point for both intervention and control groups to illustrate general direction of change for all the dependent variables examined within the first three hypotheses discussed above. ANCOVA results from these first three hypotheses can be found in Table 7.

Table 6.

Mean scores by group and time point.

Dependent Variable	Baseline *M(SD)*	Week 1 *M(SD)*	Two Week Follow-up *M(SD)*
Desire to Quit Smoking			
Intervention	2.88(1.68)	3.83(1.62)	3.67(1.70)
Control	2.23(2.03)	3.06(2.03)	3.35(2.04)
Total Sample	2.59(1.86)	3.49(1.84)	3.53(1.85)
Importance to Quit			
Intervention	6.10(3.03)	6.48(3.09)	6.98(2.78)
Control	5.06(3.53)	5.48(3.15)	6.29(2.88
Total Sample	5.65(3.27)	6.04(3.12)	6.68(2.82)
Confidence to Quit			
Intervention	2.29(1.36)	2.70(1.35)	2.98(1.43)
Control	1.86(1.30)	2.15(1.33)	2.65(1.71)
Total Sample	2.11(1.35)	2.46(1.36)	2.83(1.56)
Interest in Cessation Aids			
Intervention	5.55(2.90)	5.98(3.06)	6.18(2.67)
Control	4.94(3.42)	5.35(3.04)	5.68(2.75)
Total Sample	5.28(3.13)	5.70(3.04)	5.96(2.70)
Perceived Risk of Quitting			
Intervention	4.47(1.05)	4.33(1.16)	4.42(1.24)
Control	4.61(1.16)	4.57(1.23)	4.77(1.29)
Total Sample	4.53(1.09)	4.43(1.19)	4.58(1.27)
Perceived Benefits of Quitting			
Intervention	5.72(0.82)	5.96(0.82)	6.13(0.73)
Control	5.88(0.62)	5.96(0.67)	6.03(0.67)
Total Sample	5.79(0.74)	5.96(0.75)	6.09(0.70)
Stage of Change			
Intervention	1.58(0.64)	--	2.00(0.82)
Control	1.35(0.49)	--	1.68(0.54)
Total Sample	1.48(0.58)	--	1.86(0.72)
Current Smoking			
Intervention	11.58(5.30)	8.75(4.43)	7.90(3.63)
Control	12.10(6.01)	8.90(4.55)	8.26(4.71)
Total Sample	11.80(5.58)	8.82(4.45)	8.06(4.11)

Note: Desire to Quit, Importance to Quit, Interest in Cessation Aids are all measured on a 10-point scale. Confidence to quit is measured on a 7-point scale (0-6). Risk and Benefits are both subscale mean values scored from 18 items and 22 items, respectively, out of the 40 item measure and a 7-point scale (1-7). Stage of Change was treated as a 5 item ordinal scale to better interpret change in stage values. Current smoking is a continuous measure of participants' self-reported current number of daily cigarettes.

Table 7.

ANCOVAs: Motivation, interest in cessation aids, perceived risk and benefits

	F	*P*	η_p^2
Main effects: **Desire**			
Group	2.08	.15	.03
Time	6.35*	.004	.08
Covariates			
Days in tx	1.06	.31	.02
Site	.38	.54	.006
Main effects: **Importance**			
Group	1.87	.18	.03
Time	1.16*	.31	.02
Covariates			
Days in tx	.09	.76	.001
Site	.13	.72	.002
Main effects: **Confidence**			
Group	2.43	.12	.04
Time	6.88*	.002	.09
Covariates			
Days in tx	1.97	.17	.03
Site	4.85	.06	.05
Main effects: **Interest**			
Group	.87	.35	.01
Time	1.48	.23	.02
Covariates			
Days in tx	1.35	.25	.02
Site	.34	.56	.005
Main effects: **Perceived Risk**			
Group	.84	.36	.01
Time	.21	.81	.003
Covariates			
Days in tx	.33	.57	.005
Site	.77	.38	.01
Main effects: **Perceived Benefit**			
Group	.02	.88	.00
Time	1.02*	.35	.02
Covariates			
Days in tx	.22	.64	.003
Site	1.13	.29	.02

*Notes F statistic is Greenhouse-Geisser test of significance. Bolded significance levels.

Hypothesis 4: Information Seeking Behavior

Four separate logistic regressions were conducted to examine the effect of intervention group on each of the four items on the information seeking behavior measure. In addition to the primary predictor (intervention group), time and site were included as covariates in each model. The significance of these predictors, as well as model fit and significance, were assessed in each analysis.

For three of the four information-seeking items, overall logistic regressions were not significant, nor were any of the three individual predictor variables. Specifically, the following information seeking items were not predicted by intervention group, time, site, or the overall model: likelihood that individuals sought additional information about participating in smoking cessation groups either in their treatment setting or in the community, $\chi^2(4) = 6.27$, $p = .18$; likelihood that individuals sought additional information about the Quitline during the study, $\chi^2(4) = 5.36$, $p = .25$; and likelihood individuals sought information about individual smoking cessation treatment, $\chi^2(4) = 10.48$, $p = .23$.

By contrast, likelihood that individuals discussed the use of NRT or pharmacotherapy with their health care provider was predicted by the regression model, $\chi^2(4) = 14.28$, $p = .006$. The model explained 25% (Nagelkerke R^2) of the variance in asking about NRT or pharmacotherapy and correctly classified 71.8% of the cases. However, none of the three predictor variables were significant. This is not an uncommon finding in logistic regressions with multiple predictors in a model. These findings most likely indicate that the combination of site, time in treatment, and group type account for some of the variance of information seeking behavior regarding

NRT/Pharmacotherapy. However, independent of one another, they are not strong enough predictors of probability of information seeking behavior. Table 8 displays the proportions of individuals who responded yes to each information seeking behavior and Table 9 displays the findings from each of the logistic regressions.

Table 8.

Proportions of Information Seeking Behavior by Group

	Information Seeking #1: Group	
	Yes	No
	n(%)	*n*(%)
MI participants	16 (40%)	24 (60%)
Waitlist control participants	13(42%)	18(58.1%)
	Information Seeking #2: Quitline	
	Yes	No
	n(%)	*n*(%)
MI participants	11(27.5%)	29(72.5%)
Waitlist control participants	8(25.8%)	23(74.2%)
	Information Seeking #3: Individual Therapy	
	Yes	No
	n(%)	*n*(%)
MI participants	16(40%)	24(60%)
Waitlist control participants	14(45%)	17(55%)
	Information Seeking #4: NRT/Pharmacotherapy	
	Yes	No
	n(%)	*n*(%)
MI participants	12(30%)	28(70%)
Waitlist control participants	13(42%)	18(58%)

Table 9.

Logistic Regression: Group, quitline, individual, and NRT/Pharmacotherapy

Independent Variable	Model 1				
	B	SE	Wald	*P*	OR
Group Treatment					
Site	-1.10	.64	2.96	.09	.33
Days in tx	0.01	.11	.01	.91	1.01
Intervention	-0.08	.51	.02	.88	.93
Quitline					
Site	-1.14	.78	2.17	.14	.32
Days in tx	0.13	.14	.83	.36	1.14
Intervention	0.11	.56	.04	.85	1.12
Individual Treatment					
Site	-0.69	.64	1.17	.28	.50
Days in tx	0.26	.13	4.41	.04	1.30
Intervention	-0.27	.51	.28	.60	.77
NRT/Pharmacotherapy					
Site	-1.47	.81	3.28	.07	.23
Days in tx	-0.16	.13	1.45	.23	.85
Intervention	-0.59	.56	1.13	.29	.55
		Chi-Square	df	*P*	
Model		14.28	4	.006	

Secondary Analyses

Participants' current stage of change was measured at both baseline and the final two week follow up time point to help corroborate the proposed hypotheses regarding motivation and behavior change. Stages were coded as follows: 1= Precontemplation, 2 = Contemplation, 3 = Preparation, 4 = Action, and 5 = Maintenance. Stage was determined

using the classification stage of change algorithm, and the variable was treated as ordinal. Although ANCOVA is not typically used with ordinal labeling, the differences in the means from the baseline to two-week follow-up could still be theoretically relevant in interpreting change over time.

Participants in both the control and intervention groups positively changed with regard to stage. In examining if the change from baseline to the final time point differed significantly by group, the interaction was not significant, $F(1, 67) = .27$, $p = .61$. However, it appears that time was a significant predictor of change in stage across the entire sample, $F(1, 67) = 9.525$, $p < .003$, partial $\eta 2 = .124$.

Although there were no significant differences with regard to an interaction, there were numerical differences between the two groups in their stage values. Notably, participation in the intervention compared to the control indicated significant and positive effect on stage movement, $F(1, 67) = 5.008$, $p < .029$, partial $\eta^2 = .070$. The mean stage of change value was 1.58 for individuals in the intervention group at baseline and the mean stage of change value for the control group was 1.41. The final stage of change value for the intervention group at the 2 week follow up was 2.00 indicating an exact mean value of Contemplation and the mean value of the control group was 1.68. The findings indicate the need to look at differences, particularly in these two early stages.

Stage was alternatively treated as categorical variable consistent with more traditional conceptualization and analyses. Proportions were examined and chi-square analyses were undertaken to evaluate the relationship between group and stage of change at the final time point. At baseline, 20 (64.5%) individuals in the control group initiated

the study in Precontemplation and the remaining 11 (35.5%) were in Contemplation. Of the intervention participants, they were evenly split between Precontemplation and Contemplation with 20 (50.0%) in Precontemplation and 20 (50.0%) in Contemplation. It was not anticipated that regardless of intervention assignment, the majority of the sample (56.3%) would be in Precontemplation at the initiation of the study. However, there was some movement into other stages within both groups by the end of the study. At the two-week follow-up among participants in the control group, the proportions shifted to be an opposite mirror of the baseline proportions with more in Contemplation compared to Precontemplation. There were 11 (35.5%) individuals in Precontemplation and more individuals (n = 19, 61.3%) in Contemplation. There was also one individual who moved into Preparation (3.2%). Within the intervention group, there were 11 (27.5%) individuals in Precontemplation and an even higher proportion (n = 20, 50.0%) of participants in Contemplation. Somewhat unexpected were the seven (11.5%) individuals who moved into Preparation, and two (5.0%) into Action. These changes in stage were not found to be significantly different with regard to group assignment, $\chi^2(3) = 5.47$, $p = .14$. Although the findings were not significant, it is noteworthy that more individuals in both groups had progressed further in the change process as to note a difference in their future intention to quit smoking. Two participants in the intervention group initiated a quit attempt in the course of the study.

Examining correlations between stage of change, desire to quit, and confidence to quit across the course of the study revealed some interesting differences in those relations by group. The waitlist control participants had strong and significant correlations between their final stage of change and almost every measure of confidence and desire to

quit. This likely represents the stable responses to confidence and desire to quit result in a similar stage of change. As neither construct changed over time for the control individuals, neither did their stage of change. However, the same pattern of correlations was not found for participants in the intervention group. The strongest relations with final stage of change are found between the confidence to quit post-session ($r = .443$, $p < .004$), final confidence to quit ($r = .625$, $p < .001$), and final desire to quit ($r = .554$, $p < .001$). The fact that confidence after the session is so strongly related to end of study stage of change suggests that the level of confidence an individual feels after participating in an intervention suggests it is possible this could impact intention to quit even weeks after the intervention. Said differently, directly affecting an individual's confidence to quit may lead to increasing their intention to quit sooner.

Lastly, an additional exploratory analysis was undertaken to examine change in the behavioral measure of number of cigarettes smoked daily over time to compare with attitude- based changes regarding smoking cessation. There was a significant decrease in number of cigarettes smoked across the whole sample, $F(2, 134) = 7.693$, $p < .001$, partial $\eta^2 = .103$. Participation in the intervention group did not have a significant effect on daily cigarette quantity, ($p = .717$). This overall significant reduction in the number of cigarettes smoked occurred across the sample over time (Baseline $M = 11.80$, One Week $M = 8.82$, Final Follow Up $M = 8.06$). Please see Table 10 for the results of the secondary analyses.

Table 10.

Secondary analyses: SOC and CPD

Baseline	Precontemplation *n*(%)	Contemplation *n*(%)		
MI session	20(50.0%)	20(50.0%)		
Waitlist Control	20(64.5%)	11(35.5%)		
2 Week Follow-Up	Precontemplation *n*(%)	Contemplation *n*(%)	Preparation *n*(%)	Action *n*(%)
MI session	11(27.5%)	20(50.0%)	7(17.5%)	2(5.0%)
Waitlist Control	11(35.5%)	19(61.3%)	1(3.2%)	0(0.0%)

	χ^2	*p*	df
SOC			
Group*SOC	3.20	.202	1
Baseline			
Group*SOC 2 week	5.47	.140	3
	F	*p*	η_p^2
Main effects: CPD			
Group	.133	.717	.002
Time	7.693	.001**	.103
Covariates			
Days in tx	2.633	.109	.038
Site	.690	.490	.010

Note * significance $p < .05$, ** significance $p < .01$.

Chapter 4: Discussion

Findings

The primary aim of the current study was to examine the effects of a single contact, brief motivational intervention on motivational factors and interest in smoking cessation aids to quit in the future among clients in residential substance abuse treatment. Specifically, the study examined the intervention's effects on 1) motivational components of desire to quit smoking, importance of quitting smoking, and confidence in ability to quit smoking, 2) the perceived risks and benefits of quitting, 3) interest in using cessation aids to support future quit attempts, and 4) information-seeking behavior (specifically, ascertaining additional information about specific cessation aids and support). The study specifically targeted individuals in residential substance abuse treatment, to see if brief intervention could increase interest in or use of empirically supported best practices (e.g., cessation aids, interventions) while in treatment.

Research findings have consistently shown the deleterious effects of tobacco use on health and mortality, particularly among individuals who also struggle with substance abuse issues. Unfortunately, tobacco use in this population differs not only in terms of topography (e.g., initiation, intensity), but also in the degree to which physical and psychological dependence develops. This, in turn, leads to increased likelihood of lifetime tobacco use and risk of considerable health consequences and/or mortality.

Research has found considerable resistance to the implementation of tobacco cessation efforts within substance abuse treatment due to provider and cultural beliefs. Notably, these beliefs do not appear well-founded, as more than 10 years of research have consistently demonstrated that cessation efforts actually increase likelihood of abstinence

from other substances and that individuals with substance use disorders reports similar rates of interest in quitting tobacco compared to the general population. The current study meant to add to this literature by establishing that initiating a discussion about tobacco use early in residential substance abuse treatment can impact motivation, knowledge about and interest in cessation aids/support, and behavior. Importantly, the present study specifically tested for the presence of smaller, incremental changes by examining the use of motivational interviewing to assist in accomplishing tasks associated with the first two stages of change. Assessment of task accomplishment due to participation in an intervention proved challenging because the early tasks do not deconstruct into specific behavior changes. It seems the initial forward movement through the Precontemplation and Contemplation stages is mostly a cognitive and experiential process that can potentially be affected by not only participating in a motivationally focused intervention, but also by the mere discussion and thought about smoking behavior. The results of this study only minimally support the hypothesized impact of a brief motivational intervention delivered in a residential treatment setting on motivational constructs and interest in cessation support/aids. However, participation in the study led to some changes in attitudes and smoking behavior regardless of condition. Notably, there were differences in intention to quit at the end of the study in terms of the proportions of individuals in differing stages though not due to intervention participation.

Analyses related to the first hypothesis of the study did not support that participation in a brief intervention affects desire, importance, or confidence in ability to quit smoking. Across the sample, importance of quitting smoking was not highly endorsed and was found to be strongly correlated with both stage of change and baseline

desire to quit. On a 10-point scale, the mean importance of quitting at baseline was 5.65, which represents a sentiment that quitting is important, but not important enough at this time to consider intentionally changing behavior. The overall trend was for the importance of quitting to increase over the course of the study, but not at a statistically significant rate.

By contrast, there was significant improvement across the sample with regard to desire and confidence from baseline to the final 2-week follow-up. Though suggestive of a sample-wide motivational shift towards changing smoking behavior, these changes were of small magnitude. For example, desire to quit smoking increased by approximately one point on a 10-point scale ($M_{baseline}$ = 2.59, M_{final} = 3.54). Despite being small, these upward shifts in desire to quit represent increased flexibility/willingness to consider change. Thus, they can and should be taken as a step in a positive direction, particularly given the pernicious impacts on health in this population. In sum, this result lends support to the body of literature indicating that, contrary to popular belief that individuals with substance use concerns do not want to quit smoking, desire to quit is in fact malleable.

Although changes in confidence also were not statistically significant by group in this study, even small shifts can be clinically meaningful in terms of supporting an individual's success with changing their smoking behavior. Indeed, previous studies have shown that confidence in ability to quit smoking is particularly important in this population, as it is typically found to be lower than the general population who smokes (McClure et al., 2014). It may also be related to quit attempts, depending on current smoking behavior (Gwaltney, Metrik, Kahler, & Shiffman, 2009). Participating in a

treatment program for addiction while concurrently participating in a trial poses a challenge to separating treatment effects on confidence to quit. Given these possible contributing factors, continued efforts to enhance interventions that increase confidence to quit are essential.

In analyses related to the second hypothesis, the perceived risks and benefits of quitting remained stable throughout the study for both individuals who participated in the intervention and those assigned to the waitlist control condition. Theoretically, it was possible that if individuals were in the Contemplation stage upon initiation of the study, their individual session would be an opportunity to further explore perceived risks and benefits of quitting and influence decision making. It was not anticipated that the majority of the sample (56.3%) would report being in Precontemplation at baseline and thus at a stage of readiness that may not have been well-matched to the decisional balance part of the intervention. That is to say, given their initial level of motivation, intervention participants may not have been ready to explore the balance of potential reasons for change and reasons to maintain smoking, and the intervention may not have been sufficient to help them complete Precontemplation related tasks. It should be noted that the means of the perceived risks were lower than those of the perceived benefits across the sample and throughout the study. Hence, although no significant shifts were observable in this particular study, the higher recognition of benefits at baseline ($M_{benefits}$ = 5.79, M_{risks} = 4.53) in a mostly Precontemplative sample suggests that this population is aware of the common positive and negative aspects of quitting. This stands in contrast to beliefs commonly held in treatment culture (e.g., that individuals who smoke do not understand the risks of doing so or the benefits of quitting).

As a part of the third hypothesis, the study's intervention was designed with a primary aim of enhancing patient motivation for seeking information about smoking cessation aids and increasing interest in using aids for future quit attempts. Anecdotal evidence suggests that substance use disorder treatment sites are increasing their awareness of the need to address smoking behavior and resources to do so, such as interventions and cessation aids. As such, it was of interest to see if participation in an initial brief intervention could increase patients' awareness of and desire to use that support while in treatment or in the future. On a 10-point scale, participants across the sample indicated they had mixed feelings ($M_{baseline}$ = 5.28) about using cessation aids to quit smoking in the next 30 days. By the end of the study, the mean was 5.96, indicating that interest in using aids increased numerically, though the change was not statistically significant.

At baseline, over half the sample indicated they would prefer to use NRT in a quit attempt, and NRT remained the most preferred aid for cessation throughout the study. A slightly smaller proportion, but still over half, preferred electronic nicotine delivery systems, and interest remained consistent across the study. This is a new area of research interest in finding potential benefits or general effects of electronic nicotine device use in this population. It is interesting to note that there was clearly an awareness of what these devices were, but less interest in using them for cessation purposes compared to NRT. By contrast, much smaller portions of the sample expressed interest in pharmacotherapy, particularly by the end of the study (14.1%). Insofar as it indicates a lack of awareness of the benefits of a first-line cessation aid among a population who can benefit greatly from

it (McKee et al., 2009; Piper et al., 2008), this is problematic and may warrant further study.

As previously mentioned in the results, the majority of participants selected one preference for cessation aid at any given time point. With regard to preferences of counseling forms of intervention, interest in individual therapy was steady throughout the study, interest in group participation declined, and interest in the Quitline increased. However, there were no significant differences in preference by group assignment at baseline and groups were not significantly different at the final time point. When considering participants who indicated having more than one preference at the end of the study, almost half the participants indicated they would prefer to meet individually.

Another aim of this study was to examine if there were significant group differences with regard to seeking out additional information about cessation support options and cessation aids. It was hypothesized that individuals who participated in the intervention would be more likely to seek information about what was available to them within their treatment. As previously indicated, NRT/pharmacotherapy was most identified the preferred cessation aid in the event that they decide to quit. When examining predictors of seeking more information about this preferred aid, the model including multiple predictors was significant, but no one individual predictor (including intervention vs. control) was by itself significant. Thus, it may be that the intervention had no effect on information-seeking behavior. Alternatively, it may be that intervention participants had the opportunity to find out more about support and aids available to them during their session and thus had no need for additional information about these resources thereafter. It is noteworthy that there were higher proportions of information seeking

behavior in the control group participants on three out of the four information seeking items. Specifically, almost half (45%) of the waitlist control participants sought information about smoking cessation in individual sessions, approximately 42% sought information about groups either in their setting or in the community, and approximately 42% sought information about NRT/Pharmacotherapy.

Lastly, several secondary analyses of change in stage over time and change in quantity of daily cigarettes were assessed as alternative markers for motivational shifts occurring during the study. Notably, there were positive changes in the proportions of individuals who initiated the study in Precontemplation and Contemplation in both groups. There were at least seven individuals in Preparation and two individuals in Action from the intervention group by the end of the study. Although, these positive shifts were not found to be significantly different by intervention group in more traditional analyses, there is clinical utility in noting changes in intention to quit smoking. It is possible that the intervention facilitated a discussion that led to changes in the longer term intention to quit that were not well captured by other motivational constructs in the study. Alternatively, it may be that the information gleaned within the intervention allowed those participants to further begin considering the role of smoking in their lives and thus shifting a longer term intention to quit. It is feasible that an increase in future-oriented thinking about quitting comes before motivational constructs related to more immediate behavior change.

Also, as a behavioral marker of change, smoking behavior over the course of the study was examined, with the expectation that there would not necessarily be significant group differences given the intervention was focused on earlier, cognitive change

processes. As expected, there were no significant differences in cigarettes smoked per day by intervention group. However, across the sample, there was a significant reduction from almost 12 cigarettes a day (M = 11.8), to eight cigarettes a day (M = 8.06). A reduction in four cigarettes a day may not seem significant in terms of typical trials aimed towards complete abstinence; nonetheless, it is clinically relevant, given that any reduction in smoking reduces likelihood of negative health outcomes. As this decrease in smoking was found across the entire sample, it likely represents an increased awareness of smoking behaviors simply by virtue of participating in a smoking cessation study. As expected, the correlations between current cigarettes smoked per day and confidence increased in their magnitude and significance across the time, $r_{baseline}$ = -.206, p = .08, r_{post} = -.28, p = .02, r_{final} = -.36, p = .002. This may be indicative of the synergistic relation between reduction as a behavior change and its impact on confidence in ability to quit smoking entirely.

Limitations

There are several limitations relevant to interpreting the findings of this study. First, power to detect intervention effects was at the minimum. A priori power analyses suggested that 72 participants were needed for analyses. While 91 individuals were able to complete baseline during the 4-month recruitment window, only 71 completed follow-up questionnaires and had sufficient data to be included in the analysis sample. Ultimately, it is unclear if some of the research questions may have been more clearly answered with a larger sample. That being said, it is noteworthy that some effects were detected even in an underpowered study. Moreover, it is possible the trends noted as

non-significant group differences may have reached statistical significance had the sample been larger.

Additionally, although it was anticipated that individuals recruited from these two inner city residential treatment facilities would have lower socioeconomic status, the impact on reading comprehension, demonstrated by participants asking questions about the meaning of questions and words as they completed batteries, was not as well anticipated. This raises the question of how many may not have asked to clarify the meaning of a question they did not understand. As this study did not specifically include any measures of reading comprehension, there is no way to determine potential comprehension effects on the outcomes of the study with regard to self-reported motivation, interest, etc.

As has been noted in previous research on ecological approaches to addressing tobacco use in substance abuse treatment programs (Martinez, Guydish, Le, Tajima, & Passalacqua, 2015), another limitation of the present study is that there were not consistent quitting smoking support systems within either site. When initially conceptualized, this study intervention was designed to be conducted in sites that had received training and were implementing a smoking cessation program, including potentially working to design, implement, and evaluate smoke free policy. In practice, neither site had advanced to that point in their tobacco cessation efforts (though, as noted below, some efforts were in place). Specifically, many of the staff continued to smoke and take smoke breaks with the clients and participants. Moreover, staff members were not trained in smoking cessation to support offering individual or group interventions to interested participants. Environmental support and consistent tobacco-related messaging

(e.g., that smoking cessation is not only important, but an expectation of treatment) is consistently shown to improve the likelihood of quit attempts and associated attitudes/motivation in this population (Martinez et al., 2015). Hence, the lack of availability of such support and intervention in the settings where this study was implemented may have contributed to participants' lack of perception that change of behavior was possible.

Additionally, it is difficult to know how study incentives may have impacted responses and interest in participating. It is possible that individuals may not have wanted to be excluded from the study and answered dishonestly with regard to the exclusion and inclusion criteria merely for the sake of incentives. Even though participants were asked not to discuss the nature of the study with individuals outside the study, possible communication about the criteria to be in the study may have occurred. There was also expected to be uniformity in the incentives across both sites, but prior to initiating recruitment, one of the sites requested that the incentive not be money, but healthy food incentives. Qualitatively, money and healthy food still seemed to hold similar value to potential participants, and no observable differences were noted in general interest in participation between the sites.

A final limitation is that, independent of study procedure, both sites were monitoring number of cigarettes smoked daily by residents, and most individuals reported that their quantity and frequency of smoking was decreased in treatment as a result. Given that both intervention and control participants were exposed to these programmatic influences, they do not necessarily represent a threat to internal validity of between-group analyses. However, given that reduction can impact many factors related to the change

process including quit attempts (Cook et al., 2016), self-efficacy (Lindson-Hawley, Aveyard, & Hughes, 2012; McCarthy et al., 2008), and nicotine dependence (Baker et al., 2012), it is possible they may account for some of the changes over time seen in the full sample. Furthermore, they may have some impact on generalizability of results, given that not all residential substance abuse treatment centers have such policies in place. It is hard to know how this intervention would have impacted participants who had no or minimal change in smoking behavior prior to beginning the intervention.

Implications and Suggestions for Future Research

In spite of the aforementioned limitations of this study, there are still several implications for future research and practice within treatment programs. One of the strengths of this study design was the effort to capture smaller incremental representations of change in motivation. This more nuanced approach uniquely captures potential completion of tasks related to stage progression. Notably, there was significant change in intention to quit, as well as small, non-significant shifts in constructs related to stage of change across the sample. It was conceptually new to consider that information-seeking behavior may be an early behavioral marker of increasing interest and confidence in changing smoking.

In support of previous literature, confidence was found to be particularly important and unique to this study and this population. Confidence to quit smoking increased over the course of the study for the entire sample, suggesting that mere exposure to thinking about smoking behavior (i.e., through study assessments, which occurred fairly frequently and within a relatively short period of time) may be enough to increase confidence in ability to quit.

The reduction in daily quantity of cigarettes smoked across the sample is a positive behavioral marker of change and suggests that some aspect(s) of engaging in treatment at these particular facilities or participating in the study may have influenced behavior. This behavior coincided with increases in both desire to quit and confidence in ability to quit, as well as advances in stage of change. Specifically, at the outset of the study, all participants were in either Contemplation or Precontemplation, whereas by the end there were eight in Preparation and two in Action. This is clinically relevant in considering the significant shifts to considering the prospect of quitting and increased intention to do so within the near future.

As was addressed in the introduction, it is important to consider the potential impact of even minute change in the process of changing such a risky behavior. In the context of the significant damage smoking behavior causes for this particular population, even slight shifts in motivational constructs in a positive direction is in the very least clinically significant. Upon exiting the study and being debriefed, many participants discussed how shocked they were to have an opportunity to talk or even think about their smoking during treatment. Admittedly, it was not always completely embraced, but even being "forced" to think about it was more than would have occurred otherwise. Taken together, the quantitative findings and the discussions that occurred during debriefing suggest that participants may have progressed in the change process without corresponding observable change on measures of motivational constructs like decisional balance, attitudes, or confidence. Specifically, participants often said they learned new things about their smoking and how to quit, but had not yet had the time to consider how the information applied to how or when they would quit in the future. If the study had

captured entire treatment episodes or if participants had been provided more exposure to smoking cessation resources and tools, it is possible this may have ultimately increased motivation to quit or reduce. This is consistent with new research suggesting that motivational interventions affect treatment engagement and interest when they are more intensive and include multiple sessions (Guydish, et al., 2016). These findings support evaluating the potential impact of a multiple session individual or group format focused on cessation engagement early in treatment programming.

Additionally, there were several unique features of this study with respect to how it examined interest in using quit aids and interventions. First, it asked not only about interest in specific types of aids (e.g., NRT, *p*harmacotherapy) but also about interest in specific types of interventions (e.g., groups, individual, quitline). Second, the aids and interventions about which the study inquired were those that are currently designated as best practices (in contrast to previous research which has often asked about interest in other aids and interventions with less empirical support). Finally, in this study, for both types of interventions and types of aids, participants were allowed to choose more than one option in indicating their preferences.

This study design sought to contribute to a body of community-based research on a population desperately in need of reducing and quitting smoking. The incredibly harmful effects of smoking on health and mortality among individuals abusing substances continue to challenge both clinicians and researchers seeking to understand how to effectively intervene and support quit attempts. This study adds to literature by helping to demonstrate the feasibility of engaging individuals initiating residential substance abuse treatment into concurrent smoking cessation interventions.

Future studies should take into account the aforementioned limitations in order to more efficiently explore how to affect motivational constructs aside from just intention to change, thereby increasing the likelihood of cessation efforts during treatment. It is true that individuals coming into substance abuse treatment in Precontemplation and Contemplation for smoking cessation may be unlikely to make significant behavioral changes in within the treatment episode. However, greater shifts in behavior (i.e., cigarettes smoked per day) occurred within this study than anticipated and even among individuals not participating in the study intervention. Nonetheless, there is great value in making strides in motivation to quit and increased knowledge in how to quit or reduce (e.g., what supports are available) during treatment, which may then support a future quit attempt, even after discharge from substance use disorder treatment.

Future research may attempt to take a closer look at initial engagement and motivational strategies beyond a single session with an individual therapist. It would appear that a single session was not enough to significantly impact measures of attitudes and motivation typically associated with behavior change. However, it provided an introductory opportunity for residents to learn more about available supports and aids should they decide to quit as well as the plan or intention to quit within the next six months. It is difficult to attempt to isolate the beneficial aspects of the intervention other than helping residents increase their intention to quit in the future. This may in fact be a reflection of recognizing a need or ability to change without having yet identified the need for that change to happen immediately. Perhaps meeting more than once would have increased opportunities to further explore and develop the sense of need or ability to change.

Conclusion

In sum, the present study sought to discern whether participation in a single session motivational intervention affected motivational factors, interest in using cessation aids and support, and information-seeking behavior in a group of individuals currently participating in residential substance abuse treatment. Overall, there were few demonstrated effects of the intervention, although this may be partially due to lack of sufficient power. Notably, desire and confidence to quit smoking both increased significantly across the sample over the course of the study, and both were related to final stage of change. Number of daily cigarettes smoked also decreased by one third, and given the harm associated with this particular behavior, reduction of this magnitude in a three-week period is clinically significant. In contrast to the hypothesized outcomes, stage of change shifted significantly for intervention participants compared to waitlist control participants without corresponding group differences in other motivational constructs. This seems to indicate that intention to quit may be a precursor to changing other motivational constructs and is concurrently related to initial behavior changes, such as cigarettes smoked per day.

Although these findings should be considered preliminary, they suggest that early contact focused on discussing (or even simply assessing) smoking behavior can lead to significant changes in both intention to quit and smoking behavior and that further examination of how to impact smoking behavior early in substance abuse treatment is warranted. Further the findings of this study indicate a more intensive intervention focused on engagement and interest may be more beneficial than a single session formatted for individual therapy. It is possible a multiple session group focused on

discussing attitudes related to cessation and interest or awareness in cessation support and aids could be a next step for this line of research.

Appendix A

Demographic Information

1) Unique ID:_____
2) Age:_____y.o.
3) Gender: Male Female Transgender Other Prefer no response
4) Marital Status (Please circle one):

Single Married Divorced Widowed Cohabitating Civil Union

5) What is the highest level of education you have achieved?

Less than high school

High school degree or GED equivalent

Some college

College Degree

Education beyond undergraduate degree

6) Race (Please circle one):

African American

Caucasian

Native American or Alaskan Native

Asian, Hawaiian, Pacific Islander

Biracial or Mixed Race

7) Ethnicity (Please circle one):

Hispanic Non-Hispanic

Health Behaviors

8) Nutrition

Frequency of meals: 1 per day 2 per day 3 per day 3+

Average daily serving of whole grains (i.e. wheat, oats, breads): _____servings

Average daily serving of fruits: _____servings
Average daily serving of vegetables:_____servings
I consider my health to be: Great Good Fair Poor

9) Sleep

Hypersomnia/insomnia: Too much Not enough

Waking in the night: Yes No

Difficulty falling asleep: Yes No

10) **Smoking**

Have you smoked at least 100 cigarettes in your lifetime? Yes No
Have you smoked at least 20 cigarettes per week over the past 30 days? Yes No

At what age did you start smoking?_____ years old

On average, how many cigarettes do you smoke? _____ per day/week/month

On average, how much of each cigarette do you smoke? (Please circle)

Less than half About half More than half or all of it

How deeply do you inhale the smoke? (Please circle)

Not Deeply Somewhat Deeply Moderately Deeply Quite Deeply

On a scale of 1-10, how ready are you to learn more about quitting smoking? (Please circle)

1 2 3 4 5 6 7 8 9 10

Substance Use History

11) I am currently participating in Substance Abuse Treatment for the following substances (Please write in space provided and circle primary substance of abuse):_____
_____
_____

12) Substance Use History

Substance	Past 30 days	Lifetime use	Route	Problematic in the past or currently (Y, N)

Alcohol				
Heroin				
Opiates (i.e. prescription pills, morphine, methadone)				
Sedatives (i.e. hypnotics, tranquilizers, barbiturates				
Cocaine				
Amphetamine, Methamphetamine, Speed, Ice				
Cannabis				
Hallucinogens				
Inhalants				

Post-Session Survey

Health Behaviors

1) **Nutrition** (Please circle):

   Frequency of meals: 1 per day 2 per day 3 per day 3+

   Balanced diet including whole grains, fruits and vegetables (Please circle one):

   Yes No

2) **Sleep** (Please circle):

   Hypersomnia/insomnia: Too much Not enough

   Waking in the night: Yes No

   Difficulty falling asleep: Yes No

   Are you currently taking medication for sleeping Yes No

3) **Smoking**:

   On average, how many cigarettes do you currently smoke? ____cigarettes per day/week/month

   On average, how much of each cigarette do you smoke? (Please circle)

   Less than half About half More than half or all of it

   How deeply do you inhale the smoke? (Please circle)

   Not Deeply Somewhat Deeply Moderately Deeply Quite Deeply

   On a scale of 1-10, how ready are you to learn more about quitting smoking? Please circle)

   1 2 3 4 5 6 7 8 9 10

Two Week Follow-Up Survey

Health Behaviors

1) **Nutrition** (Please circle):

   Frequency of meals: 1 per day 2 per day 3 per day 3+

   Balanced diet including whole grains, fruits and vegetables (Please circle one):

   Yes No

2) **Sleep** (Please circle):

   Hypersomnia/insomnia: Too much Not enough

   Waking in the night: Yes No

   Difficulty falling asleep: Yes No

   Are you currently taking medication for sleeping Yes No

3) **Smoking**:

   On average, how many cigarettes do you currently smoke? ____cigarettes per day/week/month

   On average, how much of each cigarette do you smoke? (Please circle)

   Less than half About half More than half or all of it

   How deeply do you inhale the smoke? (Please circle)

   Not Deeply Somewhat Deeply Moderately Deeply Quite Deeply

   On a scale of 1-10, how ready are you to learn more about quitting smoking? (Please circle)

   1 2 3 4 5 6 7 8 9 10

Appendix B

Smoking Cessation and Level of Interest Questionnaire

1) On a scale of 1 to 10, how interested are you in using support, aid, or an intervention to help you with quitting or reducing your smoking within the next 30 days? (Please circle your response)

   1 2 3 4 5 6 7 8 9 10

2) Please indicate which methods of quitting support you would prefer to use (please circle all that apply):
   a. Participating in a treatment or community based group for quitting or reducing smoking.
   b. Working with your individual counselor to incorporate quitting or reducing smoking to weekly individual therapy.
   c. Calling the Maryland Quitline and participating in four counseling sessions to help quit or reduce your smoking.
3) If offered any of these products, which ones would you try to help you quit? (please circle all that apply)
   a. Using NRT (e.g. gum, patch)
   b. Pharmacotherapy (i.e. Chantix®, Zyban®)
   c. Electronic Cigarettes
   d. Snus
   e. Smokeless Tobacco
   f. Low-nicotine, low-tar cigarettes
   g. None

Appendix C

Information-seeking Behavior

Since the intervention you participated in within this study (2 weeks ago), have you:

1) Looked for additional information about participating in a smoking cessation group (either in your treatment center or in community) to help you change your smoking? (Please circle your response)

   Yes No

2) Looked for additional information about the Maryland Quitline to help you change your smoking? (Please circle your response)

   Yes No

3) Asked your individual counselor about smoking cessation as a part your work together to help you change your smoking? (Please circle your response)

   Yes No

4) Discussed with your health care provider the use of NRT and/or Pharmacotherapy (i.e. Chantix®, Zyban®) to change your smoking? (Please circle your response)

   Yes No

Appendix D

PRBQ

INSTRUCTIONS: Use the scale below to rate **how likely** each item would be if you were to **stop smoking**. Circle the appropriate number?	**No Chance**	**Very Unlikely**	**Unlikely**	**Moderate Chance**	**Likely**	**Very likely**	**Certain to happen**
(1) I will eat more	1	2	3	4	5	6	7
(2) I will prove I can achieve abstinence from cigarettes	1	2	3	4	5	6	7
(3) I will avoid health problems down the road	1	2	3	4	5	6	7
(4) I will have more money for items besides cigarettes	1	2	3	4	5	6	7
(5) I will lower my chance of developing heart problems	1	2	3	4	5	6	7
(6) I will smell cleaner	1	2	3	4	5	6	7
(7) I will be healthier	1	2	3	4	5	6	7
(8) I will be less able to concentrate	1	2	3	4	5	6	7
(9) I will have the respect of my friends	1	2	3	4	5	6	7
(10) I will be more irritable	1	2	3	4	5	6	7
(11) I will be more inattentive	1	2	3	4	5	6	7
(12) The people who care most about me will approve	1	2	3	4	5	6	7
(13) I will have strong urges for a cigarette	1	2	3	4	5	6	7
(14) I will miss the taste of cigarettes	1	2	3	4	5	6	7
(15) I will miss the pleasure I get from cigarettes	1	2	3	4	5	6	7
(16) I will lower my chance of developing lung cancer	1	2	3	4	5	6	7
(17) I will no longer offend others by smoking	1	2	3	4	5	6	7
(18) I will get instant health benefits	1	2	3	4	5	6	7
(19) I will have a shorter attention span	1	2	3	4	5	6	7
(20) My thoughts will be more likely to wander	1	2	3	4	5	6	7
(21) I won't be able to lose weight as easily	1	2	3	4	5	6	7
(22) I will be able to save more money	1	2	3	4	5	6	7
(23) I will desire a cigarette	1	2	3	4	5	6	7
(24) My breath will be fresher	1	2	3	4	5	6	7

(25) I will breathe easier	1	2	3	4	5	6	7
(26) I will feel less calm	1	2	3	4	5	6	7
(27) I will feel a sense of achievement after quitting	1	2	3	4	5	6	7
(28) I will gain weight	1	2	3	4	5	6	7
(29) I will feel more energetic	1	2	3	4	5	6	7
(30) I will feel uncomfortable around smokers	1	2	3	4	5	6	7
(31) I will feel proud that I was able to quit	1	2	3	4	5	6	7
(32) I will be more in control of my life	1	2	3	4	5	6	7
(33) I will be less able to deal with stress	1	2	3	4	5	6	7
(34) I will be less able to focus my attention	1	2	3	4	5	6	7
(35) I will lower my chance of developing emphysema	1	2	3	4	5	6	7
(36) I will set a good example for others (e.g., children)	1	2	3	4	5	6	7
(37) I will be less welcome around my friends who smoke	1	2	3	4	5	6	7
(38) I will be more attractive to others	1	2	3	4	5	6	7
(39) I will experience intense cravings for a cigarette	1	2	3	4	5	6	7
(40) I will live longer	1	2	3	4	5	6	7

Appendix E

Importance Ruler

On a scale of 1 to 10, 1 being not very important, 10 being extremely important, how important is quitting smoking to you at this time?

1 2 3 4 5 6 7 8 9 10

Appendix E

Confidence Questionnaire

1) How confident are you that you could quit smoking at this time? Please circle your answer below.

0	1	2	3	4	5	6
Not at all confident	Not very confident	Less confident	Confident	Somewhat confident	Very confident	Extremely confident

2) How confident are you that you could abstain from cigarettes for the next 24 hours? Please circle your answer below.

0	1	2	3	4	5	6
Not at all confident	Not very confident	Less confident	Confident	Somewhat confident	Very confident	Extremely confident

3) How confident are you that you could abstain from cigarettes until the end of the study? Please circle your answer below.

0	1	2	3	4	5	6
Not at all confident	Not very confident	Less confident	Confident	Somewhat confident	Very confident	Extremely confident

4) How confident do you feel that you could not be smoking one month from today? Please circle your answer below.

0	1	2	3	4	5	6
Not at all confident	Not very confident	Less confident	Confident	Somewhat confident	Very confident	Extremely confident

5) Rate your desire to quit smoking at this time.

0	1	2	3	4	5	6
No desire at all	Not much desire	Less desire	A little desire	Moderate desire	A lot of desire	Extreme desire

Appendix G

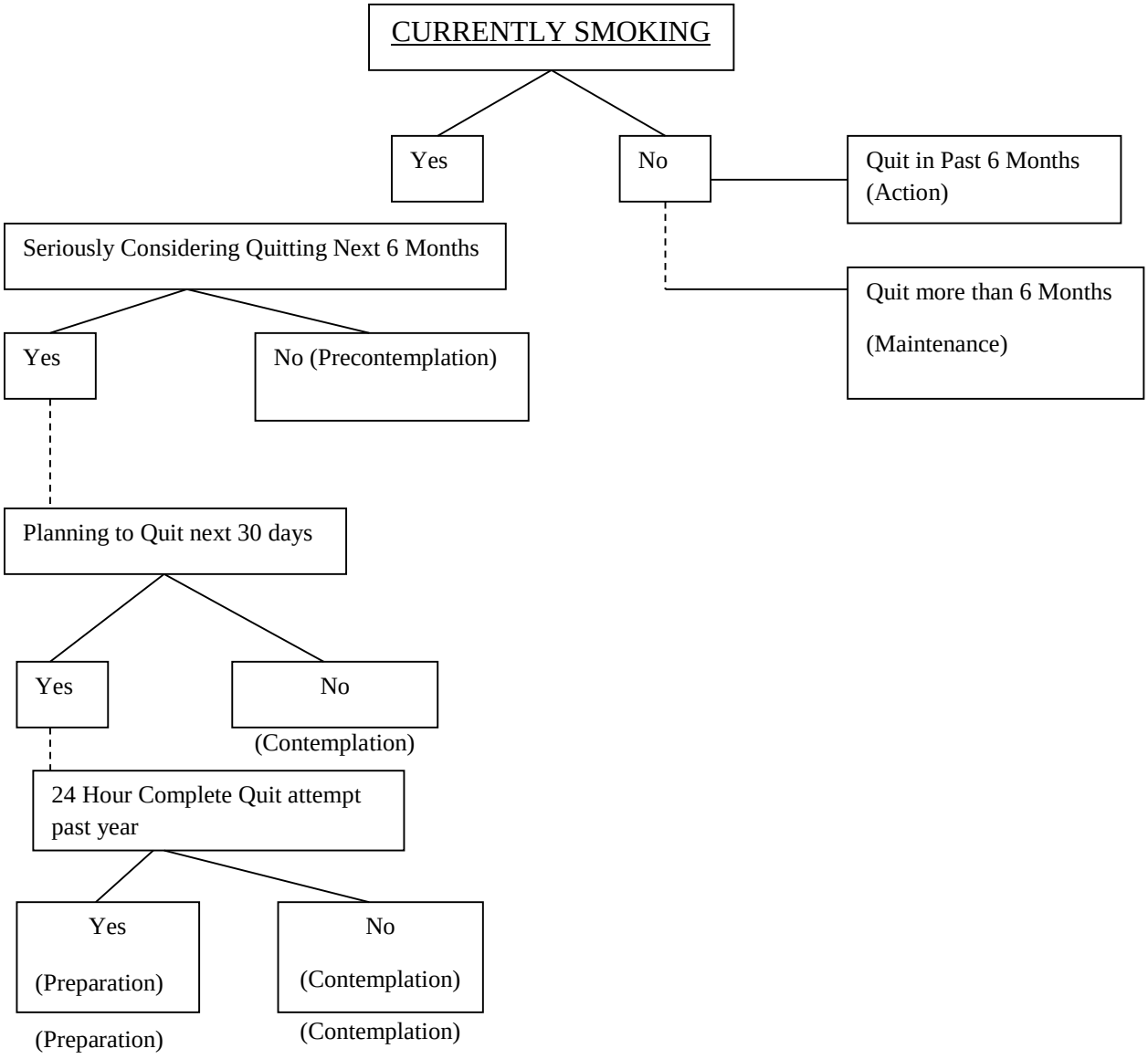
Stages of Change Algorithm

1) In the last year, how many times have you quit smoking for at least 24 hours?

2) Are you seriously thinking of quitting smoking completely?

3) If yes, within the next 30 days? Within the next 6 months?

Classification of the Stages of Change for Smoking Cessation



Appendix H

Motivational Interviewing Manual for Smoking Cessation and SUD

Brief Advice Manual for Smoking Cessation and SUD

MOTIVATIONAL INTERVIEWING FOR SMOKERS WITH SUBSTANCE USE DISORDERS

Damaris J. Rohsenow, Ph.D.

Brown University

Used in the following grant:

"Motivating Substance Abusers to Quit Smoking"

1R01DA013616

Version 7/25/2002

MOTIVATIONAL INTERVIEWING FOR SMOKERS

Initial Session Protocol

When working with the participant, it is important to develop a sense of what stage of change he or she is in. The way you present the information and questions will shift in focus based on where the client is in the change process.

Aim of session:

Understand participants' feelings about their smoking. Make no assumptions about it being a problem. Let them identify any problems or concerns. The overall goal is to elicit self-motivational statements.

Tasks to accomplish:

1) Understand the pros and cons of their smoking.

2) Highlight discrepancies for the participant. Highlight client's own personal ambivalence.

3) Elicit self-motivational statements.

4) Avoid contradicting participants' counselor advice to not give up everything at once; avoid arguing or lecturing.

RAPPORT AND ORIENTATION

Spend a few minutes making participant comfortable. Deal with any concerns about confident-iality, other issues.

What I'd like to do during our time together is talk to you about your smoking. I'm not here to try to tell you what to do. Only you can make those decisions. However, I would like to hear what you think and how you feel about smoking. Then if you like, we can talk about whether you are interested in cutting down or stopping. And if you do decide to cut down or quit smoking, I am here to help you in whatever way I can to make it a successful experience for you. How does that sound?

ASSESS MOTIVATION FOR CHANGE

Make entries on Decisional Balance Worksheet re: pros/cons & effects, noting that it will help both of you to understand how participant makes decisions about smoking. Use client's own words.

Refer to the Positive and Negative Effects of Smoking Scales (as needed) to prompt additional responses and include in Decisional Balance Worksheet.

Your Decisional Balance Worksheet

What I *Like* About Smoking Smoking	**What I *Don't Like* About**

What Matters Most To Me	**What Matters Most To Me**
_____	_____
_____	

Ways I Can Get the Positive Effects *Without Smoking*

_____

_____

_____

I Understand the pros of smoking.

-To start with, what do you like about your smoking? What else?

Reluctance to verbalize positive aspects of smoking may be handled by asking:

-What does it do for you?

Additionally, ask about other important effect(s) reported on Pos/Neg Effects Q. that participant failed to mention.

II Understand the cons of smoking.

-What don't you like about your smoking? What else? *(Ask about other important effect(s) reported on Pos/Neg Effects Q. that participant failed to mention).*

III Elicit overall reactions.

-Of the things you *like* about smoking, which matters most to you?

-Of the things you *don't like* so much about smoking, which matters most to you?

IV Highlight ambivalence.

-Summarize the pros and cons and important effects, using "you" language and double-sided reflection.

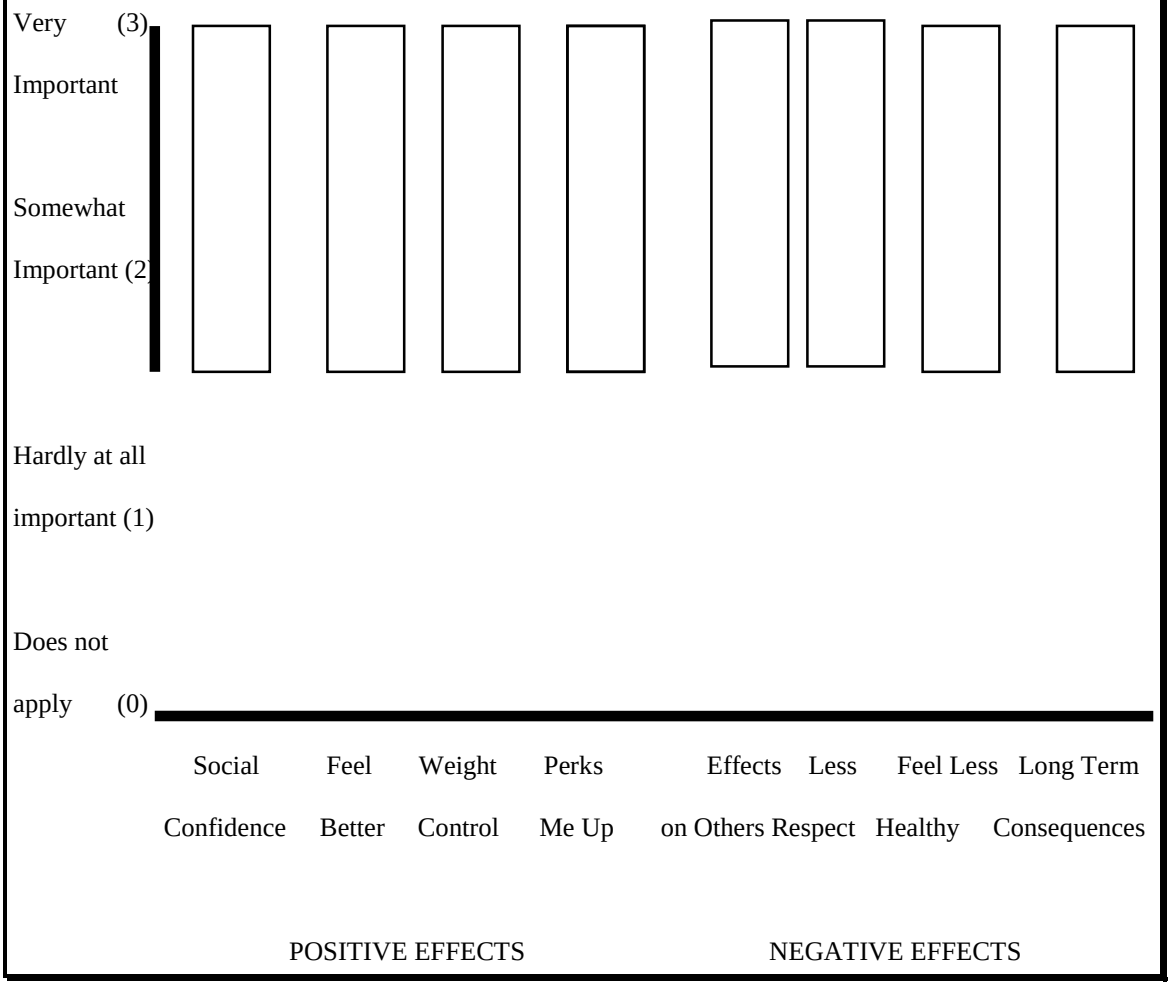
-Ask participant about some of the ways s/he could gain each of the positive effects without smoking.

If unable to identify positive effects or fails to understand the Q., Ask:

What are some things you could do that give you pleasure in place of smoking?

Interviewer: Reference this scale *only* when participant leaves out important effects during the pros and cons of smoking section. In a neutral manner, comment that when you reviewed the Positive and Negative effects they endorsed in the Smoking Effects Questionnaire, you noticed (specific important effects left out); ask if these effects are still important or still have meaning for the participant.

POSITIVE AND NEGATIVE EFFECTS OF SMOKING



**Rohsenow et al. (2003), The Smoking Effects Questionnaire for adult populations*

Positive Effects

***Social Confidence*:** Something to do with your hands; Social occasions feel better; Self-confidence with others; More relaxed with people; Something to do w/hands in a grp.

***Feel Better*:** Reducing feelings of anger, irritability & frustration; Bored; After a meal; Upset or uncomfortable about something; Uptight, nervous or tense.

***Weight Control*:** Resist sweets; Stay slim; Help lose weight; Not eat as much.

***Perks Me Up**:* Don't slow down; Perk up; Wake up when sleepy; Gives a lift; Helps to work hard.

Negative Effects

Less Respect: Family or friends respect you less; Respect yourself less; Some think you lack the character to quit; Embarrassed when you smoke; Feeling less attractive.

Feel Less Healthy: Shortness of breath; Weaker physically; Tire easily; Hard to exercise or play sports; Morning cough.

Long Term Concerns: Worrying about getting or having emphysema, cancer, heart trouble, and high blood pressure.

Effects on Kids and Others: My smoking hurts health of others around me; Makes kids less healthy; Kids are more likely to smoke when they see me smoking.

ENHANCE MOTIVATION

I Feedback of test results.

Present results neutrally, elicit personal meaning of results, help participant consider implications for behavior change, deal with resistance sensitively. Whenever appropriate, enhance self-efficacy and personal responsibility.

Refer to participant's Personal Report including responses in appropriate boxes prior to interview.

-Let's go over the results of some of the questionnaires you completed.

-Please feel free to ask me questions or make comments as we go along.

-Before we begin, let me ask you this: What percentage of adults in the United States age 18 and older do you think are smokers?

HOW MUCH DO YOU SMOKE?

Currently, only about 23% of adults smoke cigarettes (USA).

You said that in the *past month* before treatment you've smoked an average of ____ cigarettes *per day*.

Among smokers in general, the average number of cigarettes smoked per day is 18.

Interviewer: Review individualized pie graph.

-You said you were smoking about ____ cigarettes a day before treatment, so that puts you here.
ASK: What do you make of this? or What does this mean to you?

-How much have you been smoking while in treatment? ____ *cpd*

(This information is particularly useful in interpreting CO results: If the levels are lower than expected for the amount of cigarettes reported smoked in the month prior to entering treatment, point out to client the positive effects on his/her lungs as a result of cutting down).

If participant cut down smoking since entering the program and states that s/he "had to cut down" due to restrictions of program, reframe statement by enhancing self-efficacy and personal responsibility:

-You chose to cut down.

Interviewer: Have participant turn to individualized CO Scale and explain:

CO CHART CLARIFICATION

Smoking causes **Carbon Monoxide** to build up in your lungs. Carbon monoxide is the same gas that's expelled in a car's exhaust. The level of carbon monoxide in your lungs was _____ parts per million (ppm). *(Indicate on scale:)* you fall in this range, while a non-smoker has a carbon monoxide level of 4 ppm or less. If you were to cut down or stop smoking, your carbon monoxide level would go down and your breathing and energy would improve.

***CO Levels:** Results of the CO test vary depending upon the amount of time elapsed between last cigarette and administration of test. All participants should be allowed a cigarette break just *prior* to the *initial assessment* and CO levels should be registered within *15 minutes* of last cigarette.

***Withdrawal Symptoms Relevant to High CO Levels:** Individual will experience an increased level of headaches during withdrawal due to exchange of CO and Oxygen.

***CO Poisoning:** CO levels of <u>50-60</u> indicate CO poisoning.

If the levels are <u>lower than expected</u> for the amount of cigarettes reported smoked in the month prior to entering treatment, point out to client the positive effects on his/her lungs as a result of cutting down.

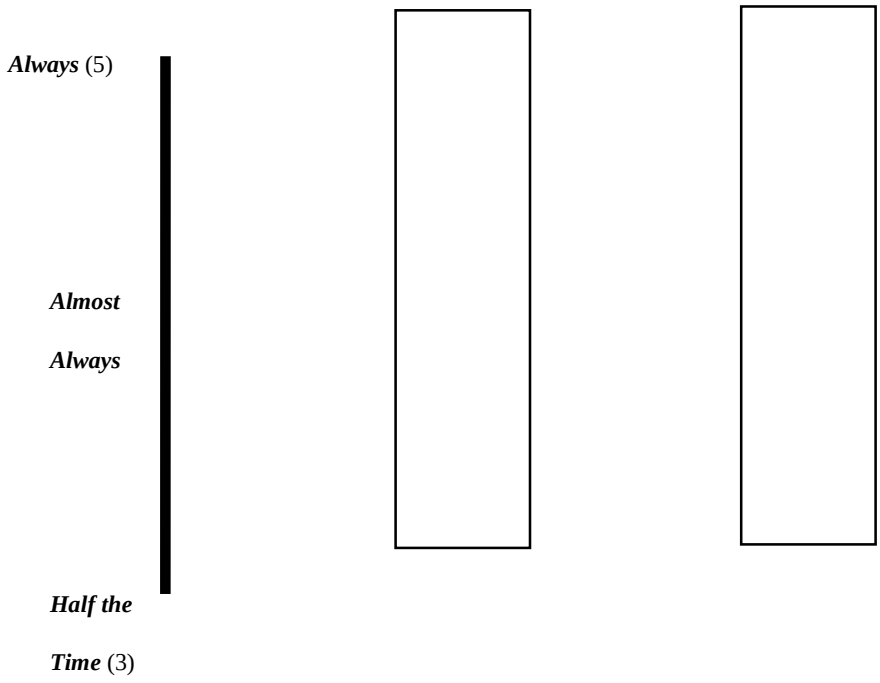
***CO LEVEL REDUCTION**

CO & nicotine levels decline rapidly after you stop smoking. Your body begins to improve within 12 hours after your last cigarette; heart & lungs begin to repair damage caused by cigarette smoke; sense of smell & taste may improve within a few days; begin to breathe easier and cough will begin to disappear (however, will continue to cough for awhile). Within a month, all the CO will have left your body.

Interviewer: Introduce this scale, if relevant. Whenever feasible, use double-sided reflection to interpret results.

EXPECTATIONS ABOUT SMOKING AND SUBSTANCE USE

These scales show your expectations about the interactions of smoking and substance use.



	When I smoke I want to drink or use drugs more.	***When I drink or use drugs, I want to smoke more.***

From Nicotine and Other Substances Interaction Expectancies Questionnaire (NOSIE); Rohsenow et al., 2005.

<u>Based upon participant's levels</u>: Use scale interpretations below, as needed or when appropriate, to help participant understand the connections between smoking and drinking.

Smoking increases urges to drink or use drugs, or increases drug use or drinking:

-Continued smoking may put you at an increased risk for relapse, so, this could be an ideal time for you to stop smoking *(Contemplator or Action)* / cut down *(Precontemplator)*.

Substance use increases urge to smoke:

-How do these expectations compare with your current situation, i.e., having not used substances since entering treatment; have you been smoking more/less; have your urges to smoke changed?

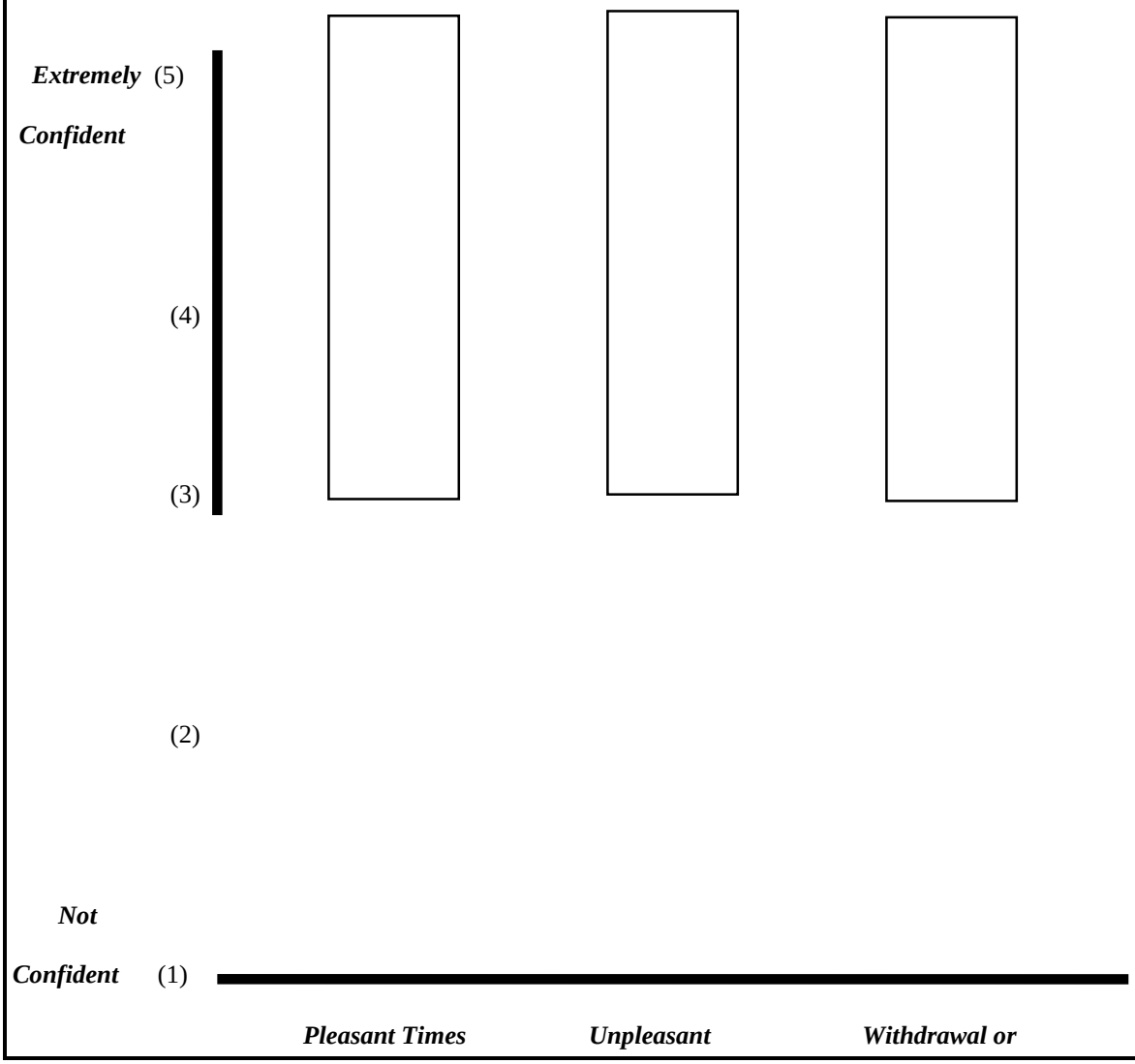
-You won't want to smoke as much when you're not drinking or using drugs.

-People smoke less when they're clean and sober, so it could be an ideal time to stop smoking or cut down.

SMOKING SITUATIONS

The following graph is a profile of the situations in which you reported being more or less confident you would not smoke:

Your Situation Profile for Smoking



with Others.	***Emotions.***	***Low Energy***

From Situational Confidence Questionnaire, Velicer et al., 1990

-There are some situations where you are less confident you would not smoke. [Describe] **Do you agree?**

-You may find that situations when you are the least confident will be some of the hardest for you to deal with if you are trying to quit or cut down.

-What could you do instead of smoking in these situations?

Use your judgment when probing for alternatives to smoking. Approach should vary depending upon participant's stage of change. Use open-ended questions to generate alternatives to smoking in highest risk situations.

Pleasant Times with Others:

With others smoking; Happy and celebrating; See someone enjoying smoking; Talking and relaxing; With friends at a party.

Alternative Examples: Having a soda in your hand. Letting others know you've quit.

Unpleasant Emotions:

Feeling frustrated; During arguments; Feeling very angry; Feeling extremely depressed; Feeling extremely anxious or stressed.

Alternative Examples: When feeling down it helps to focus on some pleasant activity. Physical activity can be helpful to reduce anxiety or stress. Talk to a friend.

Withdrawal or Low Energy:

First get up in the morning; Haven't smoked for awhile; Realize quitting smoking is an extremely difficult task for you; Need a lift; Less physically active.

Alternative Examples: Sometimes chewing gum or having a piece of candy can help with urges to smoke. Get right out of bed and shower. Physical activity to raise energy.

II Reactions to Feedback

-What do you make of all this? or How does it strike you?

Explore reactions before asking:

-Is there any part you have questions about?

III Summary

Summarize succinctly, highlighting the primary or most important effects of smoking using double-sided reflection where appropriate.

-We've just talked about some of the things *you like* and *don't like so much* about your smoking _____, in particular (what matters most_____ _____).

-How your smoking fits in compared to other smokers (and as a smoker you represent ____% of the US population).

-We also looked at your CO level compared to a normal lung (which was ____ _____ppm).

Note significantly high or low levels and what they mean: Heavy smoker entering the danger zone and any sx's s/he noticed; Smoker recently cut down on own and how this is reflected in the CO level.

-We discussed why sobriety provides an ideal time to do something about your smoking.

Feedback any positive interpretations or motivational statements participant previously declared.

-You've determined your highest risk situations for smoking which, if you were to cut down or quit smoking, you may find the most difficult (particularly:_____ _____).

You've begun thinking about how you might handle these.

-Which information is most surprising to you?

-Which information concerns you the most?

-What additional questions or comments do you have at this point?

IV Envisioning the Future

- What do you imagine your life would be like <u>one year</u> from now if you <u>gave up</u> smoking.

Probe: financial, social, health, recreation, personal satisfaction, self-esteem, & family relations.

Begin by noting participant's previous observations or motivational statements, using his/her own words.

Personalize Probe: since areas may be of no consequence e.g. financial, and may be omitted while other areas may be sensitive e.g. self-esteem and require using participant's own words such as "alienation".

HELP WITH DECISION MAKING

Where you go at this point depends on participant's prior responses and readiness to change. For everyone, start with the first question. Then use your judgment.

I Assess Interest in Change

-Where does this leave you now?

-How would you like things to be different?

II **Barriers to Change** *Responses inserted from "Barriers to Quitting Smoking in Substance Abuse Treatment", Rohsenow et al. in preparation 2014; adapted from version for alcoholics, Rohsenow et al., 2003.*

-What was it like for you when you tried cutting down or quitting in the past?

Listen for barriers. Reinforce any successes to increase self-efficacy.

-You answered some questions about some of the things that might make it harder for you to quit or cut down on your smoking. Let's go over some of your concerns.

GUIDELINES: Briefly summarize endorsed barriers . Address barrier(s) of *most concern* to participant first (rated 5 or4), other barriers if you can. Willpower (#'s 5-6), weight or hunger (#'s 7-9), withdrawal symptoms (#'s 10-13) and urges/relapse (#'s 14-17) may be addressed together, rather than individually.

-You reported that:

Importance

1. It's hard to quit because so many others around me are smoking. N
or ____

2. Smoking gives me a lift when I'm feeling tired. N
or ____

3. I need smoking to lift me up when I'm feeling down. N
or ____

4. If I quit smoking, my urges to smoke will be so strong I won't be able to stand it. N
or ____

Willpower

5. I don't have the willpower to quit smoking. N
or ____

6. I couldn't give up that first cigarette of the day. N
or ____

Weight and Hunger

7. If I quit smoking I would gain weight. N
or ____

8. If I quit smoking I would eat more. N
or ____

9. If I quit smoking I would feel hungry more often. N
or ____

Withdrawal Symptoms:

10. If I quit smoking I would feel anxious. N
or ____

11. If I quit smoking, I'll feel tense and irritable. N
or ____

12. If I quit smoking I won't be able to sleep. N
or ____

13. When I don't smoke, I feel restless, and I can't concentrate. N
or ____

Urges and Relapse:

14. I smoke cigarettes to cope with my urges to drink or use drugs. N or
_____

15. Quitting smoking during substance abuse treatment N
or ____

would make it harder to stay sober.

16. If I quit smoking, my urges to drinkor use drugs will be so strong N
or ____

I won't be able to stand it.

17. It's too hard to quit smoking while I'm quitting other substances. N or
_____

-What other things make it difficult for you to quit? *List*:

_____

_____

-At this point, which would you say is your greatest hurdle to cutting down or quitting smoking? Address first.

_____

Discussion Points for Barriers

-It's hard to quit when <u>others are smoking</u> around you.

1. You need to decide that this is important for you to do. Then you will need to take your breaks away from the smoking area. It can be easier to quit while here because there is only one place where people can smoke.

-You're concerned that you'll feel <u>tired</u> without a cigarette:

2. Once you quit smoking, you will feel *more* energetic. And the more physical exercise you get, the more energetic you will feel, and the better you will feel overall, both physically and emotionally.

-You mentioned that smoking cigarettes gives you a <u>lift</u> when you're feeling down:

3. That's because nicotine is a drug, just like alcohol, cocaine or heroin: they give you an initial lift but you always come down. However, once the drug wears off, you need more. But without drugs in your body, such as nicotine, your mood tends to stabilize and you don't experience the frequent ups and downs of drug use.

-You worry that your <u>urges</u> to smoke will be so <u>strong</u> that you won't be able to stand it:

4. Cravings can be a problem but you're used to dealing with cravings. With your experience handling cravings (other drugs), you know they'll go away with time. Craving a cigarette is a normal part of withdrawal and strongest in the 1st two weeks. Most cravings last for only a few minutes, some last longer but they always go away. After a few weeks of not smoking, cravings occur less often. For most people, when they do occur, they are not very strong. Some people cope with their cravings by chewing gum or sucking on a cinnamon stick or piece of hard candy. Some people go on the nicotine patch or chew nicotine gum, while other people find that they don't need anything at all. We can talk about these alternatives, if you're interested.

-You think you won't have the <u>willpower</u> to quit smoking, especially the first cigarette:

5. More than 3 million Americans stop smoking every year. Not everyone succeeds the first time, but many people are successful after several attempts. And, you know, quitting smoking is like quitting any drug: It takes more than just willpower. I have booklets of advice I can share with you, if you're interested. Think about what you can do when you first get up instead of smoking.

-You worry that you'll be <u>hungry</u>, eat more, or gain <u>weight</u>:

6. Not every person who stops smoking will gain weight however, most people do. Women tend to gain more weight than men, but the average weight gains are very small: about 10 lbs. When people gain, it's because they often get hungrier and eat more once they quit. The benefits of giving up cigarettes far outweigh the drawbacks of gaining a few pounds. Dieting at the same time as quitting has been found not to work but you can be careful about what you eat. Also, exercise can be good both for quitting smoking and avoiding some weight gain. But basically, it would be important to just focus on quitting and try to eat sensibly and then if you do gain a few pounds, take the weight back off *after* you've successfully quit smoking.

Combined Withdrawal Symptoms (#'s 7- 10):

-You're worried that you'll feel <u>anxious</u> without a cigarette or that you'll become tense and irritable, won't be able to concentrate, will feel restless and won't be able to sleep:

These are all typical symptoms of withdrawal, whether you're withdrawing from nicotine, alcohol or other drugs, such as cocaine or opiates. Withdrawal symptoms are a sign that your body is detoxing or cleansing itself of these chemicals. Withdrawal symptoms are strongest during the first few days, gradually disappearing after about four weeks. Many people report feeling better after the first few days. One way to deal with the discomfort of withdrawal is through physical activity. Physical activity is a great antidote for reducing stress and anxiety; it also helps to improve our moods and experience a more restful sleep. Once you quit smoking, you'll find that you have more energy overall and will feel like engaging in more physical activities.

Concerns about urges and relapse (#'s 11 & 13):

-You are concerned that if you quit smoking while in treatment your urges to use will be so strong that you'll have a <u>hard time staying clean and sober</u> and when you leave treatment, you'll relapse:

Quitting smoking during recovery does not increase risk of relapse to substance use for almost all substance abusers. In fact, the opposite occurs, people who quit smoking within 6 months of quitting alcohol and drugs have the best, long term (5 yr) recovery of all. About 40% of successfully recovering substance abusers eventually quit smoking. A few substance abusers have increased urges to use after quitting smoking. Quitting smoking while you are here in treatment, in a safe environment may help you to ride out the first few weeks which tend to be the most difficult for stopping all drugs, whether nicotine or alcohol or other drugs. And once you are out on your own, noticing how much better you feel in general, without *any* drugs in your body, will help you to stay sober from both nicotine and other substances.

III Discuss Goals

Goals will depend on a person's readiness to change. *Judgment should be used for what are appropriate short-term behavioral goals.*

-What are your thoughts right now about what you'd like to do about your smoking? *(or) If previously stated:*

-You mentioned that you're interested in: cutting down; quitting; learning more about how to cut down; *(or)* **you've mentioned that you're not yet ready to quit or cut down.**

If **no interest** in current smoking cessation or reduction:

What else would you like to do about your smoking other than cut down?

Mention that they are welcome to any of the ***brochures*** *we have; and that we are available to* ***discuss options*** *in the future. Also ask:*

-Would you be interested in learning about some of the things other people have done who are not currently interested in quitting but wanted to just try a few new things?

Provide Goals List, review ***first section.***

Here are some ideas about ways you can increase your knowledge about your own smoking.

If they show **any interest** in current or future smoking cessation:

- Would you be interested in learning more about how to cut down or resist cigarettes?

- We can talk about some things other people have tried. Which of these topics interests you? *(Show short list of goal topics.)*

Provide Ideas about my Smoking Goals List, go to sections client identifies. Read each idea, ask them if they want to try it, and if yes, fill in a target date (on both copies).

Client keeps client copy. Therapist keeps treatment copy and brings it to the next sessions.

If participant is not agreeable to any of the goals listed, try to elicit 2-3 goals that participant can commit to.

Patch and Pamphlets

*Discuss availability of nicotine **patch** at end of the daily CO readings, if medically cleared at that time and ready to quit or have quit.*

*Discuss availability of **hard candy** when ready to quit, and benefits of candy or gum when discharged.*

*Invite them to take **pamphlets**.*

*Give list of **resources** in the community.*

Smoking Goals Topics

I'd like to consider some ideas about:

- **Increasing my awareness of smoking and how it affects me**
- **Changing how much I smoke**
- **Changing where I smoke**
- **How to consider (think about) quitting smoking**
- **How to quit smoking and stick with quitting**

Use responses to these questions to go to the relevant section of the Goals List on the next page.

Ideas About My Smoking: Goals List

If you've been assigned to the quitting group there are a lot of things you can do to help you reach your goal and remain smoke free. Even if you aren't required to quit smoking, there may be some things that you'd like to try. Check out this list of ideas and if you like, add some of your own.

Ideas about increasing my awareness of smoking and how it might affect me: I will try this

Read about it in magazines, the paper, or the free handouts.

Pay attention to the ads on TV or the billboards on the highway.

Talk to other people about what how it feels to no longer smoke.

Count how many cigarettes I smoke each day.

List all the things I don't like about smoking.

Ideas about changing how much I smoke:

Wait one hour or longer before smoking my first cigarette of the day.

Set the number of cigarettes I will smoke each day and stick to it.

Smoke one rather than two cigarettes during break.

Break the automatic reach; use the other hand. _____
Avoid being around people who are smoking. _____
Avoid places where smoking is allowed. _____
_____ _____
_____ _____

Ideas about changing where I smoke:
Try not to smoke around kids. _____
Avoid smoking while watching TV or when on the phone. _____
Avoid places where I'll be bored or feel uncomfortable without a cigarette. _____
_____ _____
_____ _____

Ideas about how to consider quitting smoking:
Talk to a friend about what it might be like to quit together. _____
Get more physically active, drink more fluids and get plenty of rest. _____
Try to avoid negative thoughts about how hard it might be to quit. _____
Think about how great I'll feel once I quit. _____
List all the reasons I want to quit and carry them with me. _____
Read up on methods of quitting. _____
Get one clean breath sample while I'm here. _____
_____ _____
_____ _____

Ideas about quitting and sticking with it:
Pick a target day to quit.

_____

Ask a friend to quit with me.

_____

Tell friends/family I've quit.

_____

Put my cigarette money aside and make a list of things I'd like to buy.

_____

Throw out all my smoking things.

_____

Find something else to do during my smoking breaks.

_____

Have some hard candy instead of smoking.

Try to get as many clean breath samples in a row as I can.

Use nicotine replacement or another smoking medication

after the breath sample period is over.

Join smoking group in the community.

IV Enhance Self-efficacy and Personal Responsibility

Let client know that more than 3 million people quit each year, usually on their own! Try to identify client's other successes. Reinforce statements of self-efficacy, including discussion of past quit attempts, including other substances. Reiterate personal responsibility.

-What are some of the things about you or about your past experiences that help you to believe you could quit (cut down on) smoking?

-*[or]* **What makes you think that you could be successful in quitting smoking?**

-The choice is yours. Only you can change your smoking, no matter what anyone says. The responsibility is completely yours as to what to do.

DISCUSS BOOSTER SESSION

In one week I will meet with you again to talk about what thoughts you've had about smoking and how the past week has gone for you and the progress you've made towards your goals. It should only take about 15 minutes. Does that sound o.k. with you?

Schedule next session: _____

Client Copy

Ideas About My Smoking: Goals List

If you've been assigned to the quitting group there are a lot of things you can do to help you reach your goal and remain smoke free. Even if you aren't required to quit smoking, there may be some things that you'd like to try. Check out this list of ideas and if you like, add some of your own.

Ideas about increasing my awareness of smoking and how it might affect me: I will try this

Read about it in magazines, the paper, or the free handouts.

Pay attention to the ads on TV or the billboards on the highway.

Talk to other people about what how it feels to no longer smoke.

Count how many cigarettes I smoke each day.

List all the things I don't like about smoking.

Ideas about changing how much I smoke:

Wait one hour or longer before smoking my first cigarette of the day.

Set the number of cigarettes I will smoke each day and stick to it.

Smoke one rather than two cigarettes during break.

Break the automatic reach; use the other hand.

Avoid being around people who are smoking.

Avoid places where smoking is allowed. _____

_____ _____

_____ _____

Ideas about changing where I smoke:

Try not to smoke around kids. _____

Avoid smoking while watching TV or when on the phone. _____

Avoid places where I'll be bored or feel uncomfortable without a cigarette. _____

_____ _____

_____ _____

Ideas about how to consider quitting smoking:

Talk to a friend about what it might be like to quit together. _____

Get more physically active, drink more fluids and get plenty of rest. _____

Try to avoid negative thoughts about how hard it might be to quit. _____

Think about how great I'll feel once I quit. _____

List all the reasons I want to quit and carry them with me. _____

Read up on methods of quitting. _____

Get one clean breath sample while I'm here. _____

_____ _____

_____ _____

Ideas about quitting and sticking with it:

Pick a target day to quit.

_____

Ask a friend to quit with me.

_____

Tell friends/family I've quit.

_____

Put my cigarette money aside and make a list of things I'd like to buy.

_____

Throw out all my smoking things.

_____

Find something else to do during my smoking breaks.

_____

Have some hard candy instead of smoking.

Try to get as many clean breath samples in a row as I can.

Use nicotine replacement or another smoking medication

after the breath sample period is over.

Join smoking group in the community.

MOTIVATIONAL INTERVIEWING FOR SMOKERS (cont.)

BOOSTER SESSIONS

One, Two and Three Weeks Post Initial Interview: 15 Minutes

Throughout interview, reinforce self-efficacy and enhance motivation by supporting <u>any</u> incremental change since last contact. Take advantage of the setting as an inducement to change: it is easier to quit while in residential treatment and away from alcohol and other drugs, social situations, and other stressors encountered outside of treatment.

Bring photocopy of client's goal sheet completed the previous week.

I <u>Introduction</u>

As I mentioned in our last interview, I'd like to take a few minutes of your time to see how you've been doing over the past week and then briefly review what we went over the last time we met. How does that sound?

II <u>Assess Current Status</u>

Ask about smoking, quit attempts, urges to smoke, how participant dealt with urges.

What has the past week been like for you?

What has your smoking been like?

What are your goals about smoking when the payments are over?

<u>If smoking, not actively thinking about quitting:</u>

Goal: Contemplate quitting

What do you remember about what we talked about last week? What else?

Which things did you find yourself thinking about during the past week?

What do you think about these now?

What concerns do you have about smoking?

What concerns do you have about quitting smoking?

What would be good for you about quitting smoking?

If actively thinking about quitting:

Goal: Increase self-motivation, self-efficacy, discrepancy.

Where do you go from here? What's the next step?

You're still smoking yet say you want to quit. What do you make of this?

What makes it hard for you to take the next step?

Review what happened with goals.

If quit briefly but relapsed:

Goal: Debrief and problem solve around relapse.

What happened? *(Who, what, where, feelings, thoughts)*

What did you try to keep from going back to smoking?

What could you do differently next time?

If not smoking due to payments, but not thinking about staying quit:

Goal: Contemplate using opportunity to stay quit.

What would it be like if you stayed off cigarettes after the payments for quitting were over? *Explore pros and cons.*

What would keep you from continuing to not smoke?

Explore barriers, problem solve around these. Reinforce self-efficacy.

If not smoking due to payments, but contemplating staying quit:

Goal: Increase self-motivation, self-efficacy, discrepancy.

What would you like about staying quit for good?

What would make it hard for you to stay quit for qood?

What would help you to stay quit for good?

Generate new goals.

If not smoking and hoping to stay quit:

Goal: Relapse prevention strategies, self-efficacy, affirmation.

What do you like about quitting for good?

What don't you like so much about quitting for good?

What might make it hard to stay off cigarettes?

Help client think of solutions.

What could help you continue to stay off cigarettes?

What makes you believe you can do this?

Briefly summarize participant's recollections, add any important information left out, referring to feedback form and Decisional Balance Worksheet

III Goals

Have additional copy of clients' goals sheet available for participant to review.

Let's review the goals that we worked on last week.

Which goals did you try to meet this week?

Which goals didn't you attempt to meet this week?

What was hard about trying to get started? What got in the way?

Which goals do you want to work on for next week?

What new goals would you like to add?

Give copy of updated goals sheet to participant.

IV Schedule

Schedule next booster session for one week from today's session:

__/ /__ _____ __:__

Date Day of Week Time

or say when first follow-up session is due.

If discharging within week, check address, phone where will be.

V Last session only

How would you like to use this experience to help you with your future?

Assess interest in NRT. If yes, do medical screening for patch.

Remind about follow-up interviews.

Check address/phone they'll go to, in case it has changed.

BRIEF ADVICE FOR SMOKERS IN SOBRIETY SETTINGS

TREATMENT MANUAL

Damaris J. Rohsenow, Ph.D.

Brown University

Used in the following grant:

"Contingent vouchers for smoking in substance abusers as adjunct to nicotine patch"

1R01DA023995

Version 10/14/2008

BRIEF ADVICE FOR SMOKERS IN SOBRIETY SETTINGS:

INITIAL SESSION

I. Assess Current Smoking Status and Interest in Quitting

Bring to initial session: CM assignment, CM script, CM Tx Expectancy form w/envelope, BA/NRT Tx Expectancy form w/envelope, Barriers to Change, Client Copy of Ideas About My Smoking, Instructions on Using the Patch

All participants are asked these initial questions. If participant is not interested in quitting, strongly advise to quit. If participant is interested in quitting, offer assistance.

If you are aware of answers to questions through previous contact with participant, present the question as a statement, e.g., (participant) stated an intention to quit; (participant) set a quit date; (participant) stated a desire to begin NRT.

Pre-counseling

1. Read CM/NR assignment, go over relevant part of CM script

2. Have participant complete CM Tx Expectancy form, seal it in envelope. Tell them you won't see it.

What I'd like to do during our time together is to briefly talk with you about your smoking.

1. **You said that you usually smoked about _____ cigarettes/packs per day before treatment and**

   about _____ cigarettes per day since entering treatment.

2. **Are you currently interested in stopping smoking?**

(OR: You mentioned that you're interested in stopping smoking.)

3. **You said that you have/have never tried to stop before.**

If so, **What happened:** _____

Interviewer: *If Not Interested in Quitting* *go to* ***Sec II.***

If Interested in Quitting or Has Quit, go to ***Sec III.***

NOT INTERESTED IN QUITTING

II. Advise Participant to Quit Smoking

Only if participant is not interested in quitting: Give simple, straightforward advice to consider quitting smoking. Do not engage in any motivational techniques.

Wherever appropriate, remind participant that she/he will not receive a demerit if your advice is not taken to quit smoking.

1. **As a substance abuse counselor, I must advise you to stop smoking now. Right now, you're being treated for substance abuse problems and I know that quitting smoking while you're in the early part of treatment can seem like an overwhelming idea. I would just like to talk to you about a few things that you might want to consider if and when you decide to quit smoking.**

2. **Quitting smoking is one of the most important things you can do for yourself. It will improve your current health because you will feel better and have more energy. Not smoking will also protect you from developing any number of health problems like cancer and lung diseases in the future.**

3. Furthermore, quitting smoking helps people stay sober: people dependent on alcohol or drugs who quit smoking in recovery are more likely to stay clean and sober over the next 5 years. About 40% of successfully recovering substance abusers eventually quit smoking. Since smoking and drinking or drug use often go together, smoking can increase urges to use or drink for people who have abused

drugs or alcohol, and this might be why quitting smoking helps with recovery. You already know how to handle substance withdrawal and urges to use or drink without using or drinking. Therefore, you have better abilities to quit smoking than most smokers because you can use this knowledge when you quit smoking.

4. **When and if you decide to quit, I can recommend a few things to you to help you out.**

Interviewer: *Continue with* ***Section IV****,* *Recommendations for Quitting Smoking.*

INTERESTED IN QUITTING SMOKING OR HAS QUIT

III. Assist Participant in Quitting Smoking

Only if participant is interested in quitting smoking. Give simple, straightforward assistance for quitting smoking. Do not engage in any motivational techniques.

1. **You said that you were interested in quitting smoking.** (OR: You said that you've already quit smoking). **That's great, because quitting smoking is one of the most important things you can do for yourself. It will improve your current health because you will feel better and have more energy. Not smoking will also protect you from developing any number of health problems like cancer and lung diseases in the future.**

2. Furthermore, quitting smoking helps people stay sober: people dependent on alcohol or drugs who quit smoking in recovery are more likely to stay clean and sober over the next 5 years. About 40% of successfully recovering substance abusers eventually quit smoking. Since smoking and drinking or drug use often go together, smoking can increase urges to use or drink for people who have abused drugs or alcohol, and this might be why quitting smoking helps with recovery. You already know how to handle substance withdrawal and urges to use or drink without using or drinking. Therefore, you have better abilities to quit smoking than most smokers because you can use this knowledge when you quit smoking.

3. **When and if you decide to quit, I can recommend a few things to you to help out.**

(OR: I can recommend a few things to you to help you out to remain tobacco free.)

Interviewer: *Continue with* ***Section IV****, Recommendations for Quitting Smoking.*

IV. Recommendations for Quitting Smoking or Remaining Smoke Free

All participants receive the following recommendations, regardless of level of motivation or stage of change.

Message is tailored to reflect participant's immediate or future desire to quit, or remain tobacco free.

1) One thing that people have found helpful is to set a specific quit day. It is especially helpful if you quit while you are doing the daily monitoring so you can see how it affects your carbon monoxide level. Have you given some thought to when you would like to quit? We can set a date within the next few days.

Date To Quit: _____

(OR: You mentioned that you'd like to quit on (or: you quit on) _____. Good, because that's one of the things that people have found helpful once they've made the decision to quit (for example, to set a date and stick with it).

2. **People have also found it helpful to use nicotine replacement therapies like the nicotine skin patch** [and you've already said you'd like to go on the patch]**. The patch can help you to manage withdrawal symptoms and urges to smoke right after you quit. I know that the patch can be pretty expensive, though, which is why we will give them to you free if you start in the next 7 days. I strongly advise you to use the patch to help you quit smoking. Are you willing to start the patch in the next week?** *If no:* **Would you be willing to try it for at least one day?**

We can start you on the patch this afternoon or any time in the next 7 days, and we will give you more as you return the used patches. The nicotine patch is used for about 8 weeks so we will give you the rest of your 8 week supply to take home on the day you discharge if you were using the patch while you were in here. [Review location, dispensing procedures.]

3. **Read about quitting. There are some pamphlets here that can help that you are welcome to take. Here is a pamphlet that gives you some additional information about ways to quit and using the nicotine skin patch.**

Interviewer: *Give participant "*Freedom From Smoking Self-Help Manual" *and offer packet of topical handouts.*

4. **Get support from family and friends about quitting smoking. There are also other resources in your community for getting help with quitting. Here is a pamphlet that can help you find some once you leave Gateway.**

Interviewer: *Give participant the "Directory of Rhode Island Smoking Cessation Services".*

5. **We have a list of ideas other people have used to help them quit smoking. Let's look at this list and have you pick a few that you would like to try.** *Go over "Ideas About My Smoking" sheet; have patient choose two or three to try; give patient a copy of the list.*

Treatment Provider Copy

Partici

pant ID_____

Ideas About My Smoking: Goals List

If you've been assigned to the group where you have to quit smoking to earn rewards, there are a lot of things you can do to help you reach your goal and remain smoke free. Even if you aren't required to quit smoking to earn rewards, there may be some things that you'd like to try. Check out this list of ideas and if you like, add some of your own.

Ideas about increasing my awareness of smoking and how it might affect me: I will try this

Read about it in magazines, the paper, or the free handouts.

_____

Pay attention to the ads on TV or the billboards on the highway.

_____

Talk to other people about what how it feels to no longer smoke.

_____

Count how many cigarettes I smoke each day.

_____

List all the things I don't like about smoking.

_____

_____

_____

_____

_____

Ideas about changing how much I smoke:

Wait one hour or longer before smoking my first cigarette of the day. _____
Set the number of cigarettes I will smoke each day and stick to it. _____
Smoke one rather than two cigarettes during break. _____
Break the automatic reach; use the other hand. _____
Avoid being around people who are smoking. _____
Avoid places where smoking is allowed. _____
_____ _____
_____ _____

Ideas about changing where I smoke:
Try not to smoke around kids. _____
Avoid smoking while watching TV or when on the phone. _____
Avoid places where I'll be bored or feel uncomfortable without a cigarette. _____
_____ _____
_____ _____

Ideas about how to consider quitting smoking:
Talk to a friend about what it might be like to quit together. _____
Get more physically active, drink more fluids and get plenty of rest. _____
Try to avoid negative thoughts about how hard it might be to quit. _____
Think about how great I'll feel once I quit. _____
List all the reasons I want to quit and carry them with me. _____
Read up on methods of quitting. _____
Get one clean breath sample while I'm here. _____
_____ _____
_____ _____

Ideas about quitting and sticking with it:
Pick a target day to quit.

_____

Ask a friend to quit with me.

_____

Tell friends/family I've quit.

_____

Put my cigarette money aside and make a list of things I'd like to buy.

_____

Throw out all my smoking things.

Find something else to do during my smoking breaks.

Have some hard candy instead of smoking.

Try to get as many clean breath samples in a row as I can.

Use nicotine replacement or another smoking medication.

Join smoking group in the community.

V. Barriers to Change

-What was it like for you when you tried cutting down or quitting in the past?

Listen for barriers. Reinforce any successes to increase self-efficacy.

-You answered some questions about some of the things that might make it harder for you to quit or cut down on your smoking. Let's go over some of your concerns.

Get client's answers to the Barriers Questionnaire.

Ask which ones are the most important obstacles to quitting.

Benefits and craving

2. Smoking gives me a lift when I'm feeling tired. N
or

10. If I quit smoking, my urges to smoke will be so strong I won't be able to stand it. N
or ____

11. It's hard to quit because so many others around me are smoking. N
or ____

15. I need smoking to lift me up when I'm feeling down. N
or ____

Willpower

4. I couldn't give up that first cigarette of the day. N
or ____

8. I don't have the willpower to quit smoking. N
or ____

Weight and Hunger

1. If I quit smoking I would gain weight. N
or ____

5. If I quit smoking I would eat more. N
or ____

16. If I quit smoking I would feel hungry more often. N
or ____

Withdrawal Symptoms:

3. If I quit smoking I would feel anxious. N
or ____

7. If I quit smoking, I'll feel tense and irritable. N
or ____

9. If I quit smoking I won't be able to sleep. N or ____

14. When I don't smoke, I feel restless, and I can't concentrate. N or ____

Urges and Relapse:

6. It's too hard to quit smoking while I'm in recovery. N or _____

12. Quitting smoking during recovery would make it harder to stay sober. N or ____

13. I smoke cigarettes to cope with my urges to drink or use drugs. N or _____

17. If I quit smoking, my urges to drink or use drugs will be so strong N or ____

I won't be able to stand it.

-What other things make it difficult for you to quit? *List*:

_____

_____

_____

_____

Discussion Points for Barriers

-It's hard to quit when <u>others are smoking</u> around you. (#11)

You need to decide that this is important for you to do. Then you will need to take your breaks away from the smoking area. It can be easier to quit while you're here because there is no smoking indoors.

-You're concerned that you'll feel <u>tired</u> without a cigarette: (#2)

Once you quit smoking, you will feel *more* energetic. And the more physical exercise you get, the more energetic you will feel, and the better you will feel overall, both physically and emotionally.

-You mentioned that smoking cigarettes gives you a <u>lift</u> when you're feeling down: (#15)

That's because nicotine is a drug, just like alcohol, cocaine or heroin: they give you an initial lift but you always come down. However, once the drug wears off, you need more. But without drugs in your body, such as nicotine, your mood tends to stabilize and you don't experience the frequent ups and downs of drug use.

-You worry that your <u>urges</u> to smoke will be so <u>strong</u> that you won't be able to stand it: (#10)

Cravings can be a problem but you're used to dealing with cravings. With your experience handling cravings (for other drugs), you know your cravings to smoke go away with time. Craving a cigarette is a normal part of withdrawal and is strongest in the 1st two weeks. Most cravings last for only a few minutes, some last longer but they always go away. After a few weeks of not smoking, cravings occur less often. For most people, when they do occur, they are not very strong. Some people cope with their cravings by sucking on a cinnamon stick or piece of hard candy. Some people go on the nicotine patch while other people find that they don't need anything at all. We can talk about these alternatives, if you're interested.

-You think you won't have the <u>willpower</u> to quit smoking, especially the first cigarette: (#'s 4,8)

More than 3 million Americans stop smoking every year. Not everyone succeeds the first time, but many people are successful after several attempts. And, you know, quitting smoking is like quitting any drug: It takes more than just willpower. I have booklets of advice I can share with you, if you're interested. Like for example, think about what you can do when you first get up instead of smoking.

-You worry that you'll be <u>hungry</u>, eat more, or gain <u>weight</u>: (#'s 1, 5, 16)

Not every person who stops smoking will gain weight however, most people do. Women tend to gain more weight than men, but the average weight gains are small: about 10 lbs. When people gain, it's because they often get hungrier and eat more once they quit. The benefits of giving up cigarettes far outweigh the drawbacks of gaining a few pounds. Dieting at the same time as quitting has been found not to work but you can be careful about what you eat. Also, exercise can be good both for quitting smoking and avoiding some weight gain. But basically, it would be important to just focus on quitting and try to eat sensibly and then if you do gain a few pounds, take the weight back off *after* you've successfully quit smoking.

There is evidence that sucking hard candies can help people to not smoke. These might be useful things to use when feeling a little hungry as well. Mint candies are most useful because most people don't like to smoke after having some mint.

Withdrawal Symptoms (#'s 3, 7, 9, 14):

-You're worried that you'll feel <u>anxious</u> without a cigarette or that you'll become tense and irritable, won't be able to concentrate, will feel restless and won't be able to sleep:

These are all typical symptoms of withdrawal, whether you're withdrawing from nicotine, alcohol or other drugs, such as cocaine or opiates. Withdrawal symptoms are a sign that your body is detoxing or cleansing itself of these chemicals. Withdrawal symptoms are strongest during the first few days, gradually disappearing after about four weeks. Many people report feeling better after the first few days. One way to deal with the discomfort of withdrawal is through physical activity. Physical activity is a great antidote for reducing stress and anxiety; it also helps to improve our moods and experience a more restful sleep. Once you quit smoking, you'll find that you have more energy overall and will feel like engaging in more physical activities.

Concerns about urges and relapse (#'s 6, 12, 13, 17):

-You are concerned that if you quit smoking while in recovery your urges to use will be so strong that you'll have a <u>hard time staying clean and sober</u> and might relapse:

Quitting smoking during recovery does not increase risk of relapse to substance use for almost all substance abusers. In fact, the opposite occurs, people who quit smoking after quitting alcohol and drugs have the best, long term (5 yr) recovery of all. About 40% of successfully recovering substance abusers eventually quit smoking. A few substance abusers have increased urges to use after quitting smoking but most don't.

VI. Wrap-Up

1. ***If planning to use patch*: Let's go over how to use the patch.** *Review/give Instructions on Using the Patch.*

2. *Have participant complete BA/NRT Tx Expectancy form and seal it in envelope.*

3. I'm glad you gave me some of your time so that we could talk about smoking. Do you have any questions right now?

***If Yes*: Answer questions in an action-oriented manner and refer to reading materials.**

Interviewer: *Arrange follow-up.*

We will meet again for a brief interview on:

Schedule booster for 7 days from now.

(Booster Session #2) ___/___/___ _____ ___:___

Date ***Day of Week*** ***Time***

Interviewer: *Give participant appointment card. Remind participant of our continued follow-up procedures, payment schedule, and the importance of our ability to continue to contact them.*

Appendix I

Motivational Interviewing and Enhancement Background for MI based single session.

1) Emphasize the MI style and Fidelity.
    a. Style of Motivational Interviewing: Engage, Focus, Evoke, and Plan will briefly be examined as important components of exploring and assisting participants in the change process.
    b. Types of Talk:
        i. What does Change talk sound like?
        ii. What does Sustain talk sound like?
        iii. Discuss the importance of understanding how the type of talk the person uses is an important indicator of the internal process of grappling with change. This transitions into the role of the provider in eliciting change talk over sustain talk.
        iv. Observe a video demonstrating eliciting change talk
    c. Skills:
        i. Open Ended Questions
        ii. Affirm
        iii. Reflections
        iv. Summaries
        v. Activity to practice use of skills in combination.
        vi. Video clip demonstrating use of skills (individual therapy format)
    d. The MITI components and review process:

i. The training will include teaching the students about both the global measures and the behavior checklists. They will also learn about the specific scoring.

Part 2. Specific Techniques to use for the MI based session.

2) Emphasis on Matching the Techniques to where the person is in terms of change:
    a. If the person is in Precontemplation: It is important to work on engaging the person into the session. It is important to make them feel heard and understood. Open ended questions can help engage the person and increase your understanding of their feelings about their smoking. Reflections let them know you are listening. It is critical to increase concern, interest in changing smoking behaviors.
        i. Reevaluate the addictive behavior
        ii. Provide accurate and objective personal feedback
        iii. Reach out and offer help instead of waiting for the client to ask
        iv. Provide information about current risks associated with levels of smoking in order to increase concern
    b. If the person is in Contemplation: It is really important to help the individual evaluate their mixed feelings regarding smoking.
        i. Gather and evaluate the client's positive and negative attributions about change
        ii. Help the client compare these attributions to promote the resolution of decisional conflict in the direction of quitting tobacco use

iii. The processes of change below are expected to be particularly helpful to clients in this Stage of Change.

c. If the person is in Preparation: You should affirm the individual's decision to quit and help them solidify that decision by assisting them with components of a change plan.

i. Completing a Change Plan Worksheet is helpful in this stage. The worksheet consists of having the client identify what changes he/she wants to make, important reasons for change, necessary steps to facilitate change, who and how others can help support change, etc.

ii. Help the client understand their tobacco use pattern and the triggers that are associated with use.

iii. Discuss how other problems in life are related to tobacco use.

iv. Examine decisional balance and perceived self-efficacy to quit.

v. The processes of change below are expected to be particularly helpful to clients in this Stage of Change.

Part 3. Additional Information to be covered.

3) Content that has to be covered: Different options for treatment.

a. NRT/Pharmacotherapy: Training materials will include information about types of NRT, mechanisms of pharmacotherapy, and the importance of guided use. The final component will include information about connecting participants to resources for NRT and/or pharmacotherapy.

b. Groups: Not all of the sites chosen for this study have smoking cessation groups as an intervention component of their treatment programs. For programs that already have this available, this part of the training will discuss warm hand-offs and referring to the groups. For programs that do not have this component, discussing how to refer to a community based cessation group (i.e. offered through the county health departments) will be discussed.

c. Individual smoking cessation intervention: Potentially, individual counselors may or may not be comfortable, knowledgeable about conducing individually based smoking cessation interventions. If this is not available to participants, it will not be a resource presented in either intervention session.

d. Quitline: The Quitline will be presented as a free and confidential resource available to participants who have access to a phone. Staff will be taught about the content of the calls as well as the additional support provided through the quitline including free NRT.

Part 4. Differences with the "Prescribed Advice Single Session".

4) The final hour of the training will elaborate on the Brief Advice intervention. The training will run through the manual protocol including specific content to be covered within the intervention. The trainees will learn how to move through the necessary aspects of the intervention while keeping the intervention brief. Some of this hour will be spent discussing the differences in approaches between the two session and practicing the skills necessary to providing personal feedback.

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