CROSSING THE THRESHOLD: WHAT MOTIVATES INDIVIDUALS WHO ARE ACTIVELY ABUSING SUBSTANCES TO ENTER TREATMENT?

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ABSTRACT

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Crossing the threshold: What motivates individuals who are actively abusing substances to enter treatment?

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Although there is an abundance of research in the area of substance abuse, much of it samples people who are already enrolled in treatment. The treatment seeking population may differ from people who are actively using substances. One aim of this study is to describe a sample of individuals who have not sought out treatment, but still actively use substances. Specifically, the investigators assessed 51 county detention facility inmates recently arrested on drug- or alcohol-related charges, examining the factors that both inhibit and promote treatment seeking. We hypothesized that motivation levels for seeking treatment would differ based on several factors: family and social distress, psychological distress, medical problems, severity of drug and alcohol abuse, and primary drug of abuse. Results demonstrated that high levels of psychological distress, as well as distress in one's family/social life, were related to higher levels of motivation for change. We also examined perceived barriers to treatment, which revealed that participants endorsed barriers related to motivation (lack of) and self-perception of drug use. The results of this study have implications for developing brief interventions that could help facilitate the entry of moderately motivated substance users into treatment settings. Shortening the gap between a person's introduction to substance abuse and entrance into treatment could prevent an escalation of substance use that would incur greater consequences, both to the individual user and to society.

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Introduction

Many individuals who struggle with substance abuse disorders have difficult lives fraught with financial, legal, and medical problems. The costs of substance abuse to greater society, however, occur on a much larger scale, incurring detrimental effects on economic and legal institutions, as well as the public's health. Measured in actual dollar amounts, drug-related crime costs comprise over half of the entire economic costs of drug abuse in the United States (Office of National Drug Control Policy; ONDCP, 2004). While substance use is clearly related to societal problems, a silver lining comes in the form of research on the effectiveness of many types of treatment for this population (Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997). Because treatment works, and has been shown to decrease costs to society (Ettner et al., 2006), it seems imperative to find ways of directing the population of substance users into treatment settings. Therefore, important aspects about substance abuse behavior merit examination. One of these aspects is etiology of a person's addiction. That is, how are people influenced to experiment with substances? Perhaps more importantly, investigating why people progress from initial substance use to problematic substance abuse and dependence may help in developing prevention strategies. Another important aspect to consider is what motivates active substance abusers to seek treatment. Research in this area has implications for developing intervention strategies for substance abusing individuals. Because much of the research conducted with substance abusing samples utilizes participants who are already in treatment, we believe it is important to examine motivational factors in a non-treatment seeking sample.

Etiology of addiction

The etiology of substance use disorders is undoubtedly a combination of biological, psychological, and social factors. However, the degree to which each of these factors contributes to the development of substance use disorders is a subject of considerable debate among theorists and researchers. Furthermore, this is obviously an area in which researchers show a great deal of interest. For example, the literature overwhelmingly supports the idea that family factors play a role in adolescent substance use. The family environment may serve as a protective factor in delaying or reducing in frequency of substance use (Kumpfer & Alvarado, 2003).

A perusal of the literature on family therapy for substance abuse will reveal several references to the concept of substance abuse as a "family disease" (e.g., Kumpfer, Alvarado, & Whiteside, 2003; Whittinghill, 2002). This perspective is one heavily influenced by family systems theory. From this viewpoint, substance abuse is believed to develop from, and is maintained by, a dysfunctional family unit. For example, family members may enable the substance abuser to keep using in order to reduce conflict or restlessness (Saatcioglu, Erim, & Cakmak, 2006). Family may also serve as a risk factor for predicting problematic drug use; for example, in the instance of low attachment between parent and child (Barnes, Barnes, & Patton, 2005). Other risk factors that predict adolescent substance abuse include sexual abuse, non-sexual violence (Clark, Lesnick, & Hegedus, 1997; Lipschitz, Grilo, Fehon, McGlashan, & Southwick, 2000), and peer substance use (Bray, Adams, Getz, & McQueen, 2003). It should be noted that the literature on predictors of substance abuse focuses primarily on adolescent populations. Examining adolescent substance abuse is important because the younger a person is when

he or she begins to use substances, the more likely he or she is to later develop a substance use disorder (Shedler & Block, 1990).

The aforementioned variables that predict the development of substance use would be best described as environmental, in terms of their locus of influence. Other, more detailed models of the development of addiction have been proposed by researchers spanning the discipline, typically utilizing the biopsychosocial model as a foundation. For example, researchers have discussed the importance of genetic influences on substance abuse (Crabbe, 2002; Wahlsten, 1999). Lende and Smith (2002) also talk about a biological mechanism (the mesolimbic dopamine system) as a contributor to the development of substance abuse. They describe the etiology of addiction through an evolutionary framework, viewing some substance use as an adaptive, short-term life strategy. The authors argue that our dopaminergic systems have not developed appropriate regulation to detect, and correct for, the maladaptive behavior of excess substance use. In other words, the human body is evolutionarily ill equipped to contend with the abundance of available psychoactive substances that are now available in our environments. The authors contend that the lack of self-limiting environment is especially harmful for individuals who have more sensitive dopamine systems (due to heritability).

Although researchers generally accept that genes contribute to part of the equation of explaining human behavior, other etiological models that also include the psychological and social factors provide a more complete picture of the development of substance use problems. For example, a model intended to explain the development of alcohol abuse exclusively is the Alcohol Expectancy Process (Goldman, 1999). According to this model, it is thought that early learning experiences influence

subsequent drinking decisions. Specifically, information from these alcohol-related experiences (and anticipated reinforcement) is thought to be stored in memory, later serving to influence future drinking-based decisions. Evidence in support of this model comes in the form of studies comparing heavy and light drinkers on their expectations (Rather, Goldman, Roehrich, & Brannick, 1992). As alcohol expectancy theory would indicate, heavier drinkers associate drinking with arousal and positive expectations, whereas lighter drinkers associate alcohol with its sedating effects. This model also encompasses social factors. That is, vicarious learning or modeling are highlighted as evidence that alcohol expectancies appear in children before they begin drinking (Bauman & Bryan, 1980; Dunn & Goldman, 1996).

A slightly different spin on the alcohol expectancy theory is provided by Newcomb and Earleywine (1996), who discuss the importance of intrapersonal contributors to the etiology of addiction. The authors implicate expectancies (cognitions) as causal factors in drug use, but also focus on other intrapersonal factors. For example, the personality traits that fall under the general heading of "behavioral undercontrol" have been linked to increased substance use behavior (Sher, Walitzer, Wood, & Brent,1991). Affect is another intrapersonal factor that has been shown to be related to substance use. Specifically, depression and negative feelings towards the self have been examined as variables that may be "medicated" by the use of substances (Kaplan, 1987).

Ultimately, most researchers agree that substance use disorders are likely to arise from a complex interplay between a person's biology, the environment, and intrapersonal or psychological variables. What these models and corresponding studies are missing, however, are detailed accounts of why the individual user believes he or she developed

substance difficulties. It is possible that one's individual perception is an important aspect of understanding the etiology of substance use disorders. Such individual accounts could be important in determining which etiological factors are more salient for certain groups of individuals. While we believe it is important to consider how a person initially became addicted to substances, this consideration does not directly ameliorate the problems and societal costs associated with drug abuse.

Substance use and the legal system

Criminal activity associated with substance abuse is certainly one of the primary concerns in terms of social problems, given that its costs are so far reaching. On the smallest scale, drug-related criminal acts have an effect on the victim. The costs of such effects can be either measurable (such as property damage or loss) or immeasurable ("intangible costs" such as pain or suffering). Ironically, research indicates that chronic drug users are not only likely to be perpetrators of drug-related crimes, but also are more likely than non-drug users to be victims of crime themselves (French, McCollister, Alexandre, Chitwood, & McCoy, 2004). These findings indicate that the relationship between drug use and crime is circular, affecting the substance using population in multiple ways.

Other costs of drug-related crime include related law enforcement and correctional expenditures. National statistics show that these costs add up quickly and sum to a staggering amount. Specifically, an estimated $107.8 billion was spent in 2002 on drug-related crime in the United States (ONDCP, 2004). This figure is almost 60% of the total economic cost of drug abuse in this country, which includes health care costs and productivity losses. Overburdened correctional facilities receive a notable impact of

drug-related costs. Incarceration of inmates charged with drug-related crimes was estimated to total $39 billion in 2002 (ONDCP, 2004). Whether on an individual or communal basis, drug-related crime is clearly problematic on a number of levels.

While the connection between substance abuse and crime is a robust and reliable one, the nature of this relationship has been construed in different ways by researchers. For example, Goldstein (1985) postulated that criminal activity is a result of drug use and its lifestyle. Implicit within this model is that the arrow of causality goes from drug use to criminal activity. Evidence for this model can be found by looking at statistics indicating that drugs are frequently implicated in crime. That is, research shows that those who are arrested for crimes often test positive for recent drug use. Data from the Arrestee Drug Abuse Monitoring (ADAM) Program indicated that the median percentage of male arrestees that tested positive for illicit drugs was 64.2 (National Institute of Justice, 2003). This percentage is 62.5 for female arrestees. Other data collected by U.S. Bureau of the Census had similar findings, corroborating the high rate drug use prior to arrests (Mumola, 1999). Specifically, a U.S. Bureau of the Census study involved the administration of surveys to prison inmates, asking whether they were under the influence of drugs at the time of the crime. Nearly 33% of state prison inmates and 22.4% of federal prison inmates endorsed being under the influence of drugs while committing their offenses. Other data in support of the idea that drug use is a causal factor for criminal activity is evidence that people who commit crimes often do so in order to support their drug habits. Convicted jail inmates surveyed in 2002 reported that 16% had committed their offense to obtain money to buy drugs (Karberg & James, 2005).

On the surface, these studies may suggest that the causal link between drugs and crime may be unidirectional. But other compelling evidence exists showing that crime may have a predictive relationship in terms of illegal drug use. The relationships between legal and illegal drug use, violence, and victimization are exemplified by Weiner, Sussman, Sun, and Dent (2005). These researchers conducted a 5-year prospective study with students attending continuation high schools; such institutions serve individuals who have transferred out of the regular high school system. They found that illegal drug use at baseline predicted both perpetration of violence and experiencing victimization at the 5-year follow-up. Furthermore, this study tested whether the pharmacological effects of the drugs mediated this relationship. To do this, the investigators created a "psychopharmacological" index made up of questions regarding how often participants had experienced consequences such as injury, committing a crime, or fighting while under the influence of drugs or alcohol. The researchers found that this index mediated the relationship between drug use and violence and victimization, such that the relationship between drug use and violence was no longer significant when the psychopharmacological index was added into the model. This was also the case for the relationship between drug use and victimization. The authors concluded that the psychopharmacological effects of drug use (i.e., irritability from withdrawal) lead to violent behavior. Other psychopharmacological effects (i.e., decreased vigilance) may lead to victimization.

While the abovementioned results may suggest that drug use precedes crime, other researchers have suggested different interpretations of the correlation. Chaiken and Chaiken (1990), for example, proposed that the arrow of causality points in the opposite

direction. That is, involvement in a criminal lifestyle may predict experimentation in drug use. One study substantiating this idea was carried out by Newcomb, Galaif, and Carmona (2001), who found that legal problems (such as theft charges and driving under the influence arrests) predicted later polydrug problems in a longitudinal study. Nonetheless, this same study found that drug problems were also a predictor of later criminal behavior, implying a bidirectional relationship.

In terms of defining the relationship between substance use and crime, the most salient explanations in the literature are ones that do not attempt to simplify it, and instead speak to its complex nature. This consideration is brought forward by many researchers, indicating that other variables may affect both crime and drug use, and that the pathway from one to the other is complicated by other factors still being fleshed out. For example, Keene (2005) conducted a study showing a relationship between drug use and multiple types of crime; further analyses indicated that social and psychological problems mediate this relationship, such that these types of problems affect both drug use and crime. This research highlights the idea that there could be underlying factors affecting both drug use and criminal activity. Poverty has been described as one of those factors. Ford and Beveridge (2006) found that "neighborhood disadvantage" was associated with increases in the crimes of burglary and assault; high rates of drug use were only associated with crimes of burglary. Here, a relationship between poverty, crime, and drug use is exemplified, but only for a specific type of crime. Zhang (1997) showed that an increase in welfare payments is related to a decrease in property crime, indicating that financial strain may drive crime. Zhang did not discuss drug use in his analysis directly; instead, he implied that crimes were being committed because of an

actual need for financial resources. Following this line of reasoning was Hunt (1991), who put forward the idea that the likelihood of a particular substance user engaging in criminal activity may depend on his or her socioeconomic status. In other words, people who cannot afford a substance relative to their income are more likely to engage in criminal behavior. Although a well-studied area, there still appears to be little consensus about the exact nature of the relationship between substance use and crime.

Finally, no distinction has been made thus far between illicit drugs and alcohol, in terms of their respective relationships to crime. Because simple possession or use of an illegal drug is inherently against the law, it might make sense to assume that illicit drug use is associated with more crime. Indeed, one study found that high school students' use of drugs legal for adults (i.e., alcohol and cigarettes) did not predict later violence or victimization, whereas as the use of illegal drugs did (Weiner et al., 2005). However, other researchers have found an unsettling association between alcohol and violent crime, such that alcohol is more strongly correlated with violent crime than cocaine (Martin, Maxwell, White, & Zhang, 2005). While all illicit drug use is criminal by definition, the type of drug used may be related to the type of crime committed, further complicating the relationship between substance use and crime. Regardless of how these two variables are related, drug use and crime are inextricably linked, and public policies that address one but not the other seem destined to fail.

Substance abuse treatment

Because the relationship between drug use and crime is uncertain, the way we as a society should handle both of these behaviors may also seem unclear. Should the crime be punished in order to deter future crime and associated drug use? Or, should the drug

problem be treated in order to reduce drug use and, therefore, associated criminal activity? These are empirical questions to which an almost resounding consensus emerges in the data: treatment works both to reduce drug use (e.g., Gossop, Marsden, Stewart, & Kidd, 2003; Prendergast, Podus, Chang, & Urada, 2002) and to reduce associated crime (e.g., Ettner et al., 2006; Godfrey, Stewart, & Gossop, 2004). Conversely, research indicates that enforcement efforts are only minimally successful in reducing drug use and related crime (Cunningham & Liu, 2003; Degenhart, Reuter, Collins, & Hall, 2005).

Although researchers have declared that "treatment works" overall, studies indicate that outcome results differ according to treatment modality. For example, a multisite outcome study conducted Hubbard et al. (1997) examined four different treatment modalities: long-term residential (LTR), outpatient methadone (OMT), outpatient drug-free (ODF), and short-term inpatient (STI). Results showed that clients generally reduced substance use in all groups at 1-year follow-up, although this result was not as strong for the STI group. Additionally, those in the LTR group showed reductions in crime and increases in full-time employment compared to other groups. Although these findings imply that longer, more intense treatment may yield better outcomes, such results are largely contradicted in reviews of existing literature, such as one conducted by Miller and Hester (1986), who examined 12 controlled studies looking the impact of treatment length on outcome. In general, brief interventions appear to work about as well as long-term inpatient treatment (Roth & Fonagy, 2005). Because inpatient treatment is so much more costly, this modality is no longer considered to be as cost effective as other formats to treat addictive behaviors; thus, spending on inpatient

treatment has been on the decline since the late 1980s (Meara & Frank, 2005). It is not entirely clear why few discernable differences in outcome have been found between in- and outpatient treatments. However, one could speculate that individuals attending outpatient treatment may learn to better generalize skills learned in treatment into their existing lives, whereas those in a controlled, inpatient setting may not. It is also possible that these different modalities serve different populations, with individuals enrolled in inpatient treatment evidencing greater severity of problems at the outset than those enrolled in less intensive treatment programs.

As mentioned above, family has been found to be an etiological factor in substance abuse (i.e., the "family disease" concept). From this perspective, it seems logical that treatment of the whole family is indicated. In fact, Saatcioglu et al. (2006) suggested that this family disease "requires joint treatment of the family members" (p. 125). Interestingly, these same authors did not discuss specific family treatments that encompassed the theoretical perspective they proposed. Furthermore, there appears to be a dearth of information about family approaches to substance abuse treatment that incorporate a family disease model. The closest modality outlined in the literature was the "companion" 12-step programs, which of course use the disease model as their orientation.

Groups such as Al-Anon, Nar-Anon, and Alateen are not family therapy *per se*. Instead, such groups were designed as support-based groups for families of individuals with substance use disorders. These informal groups merit a brief discussion primarily because they are some of the most widely used treatment services for families of substance abusers. Perhaps these groups have become and remain so highly utilized

because attendance in such groups has been shown to improve marital adjustment (Keinz, Schwartz, Trench, & Houlihan, 1995) and to reduce the level of reported personal problems (Barber & Glibertson, 1996). Although mutual self-help groups appear to be helpful to the family members who attend, such groups are not surprisingly ineffective at engaging the substance abuser in treatment. For example, Al-Anon has been shown to be unsuccessful as a way to engage drinkers into treatment (Barber & Glibertson, 1996). Similarly, Nar-Anon has shown to be ineffective at engaging drug users into treatment (Meyers, Miller, Smith, & Tonigan, 2002). Because these mutual self-help groups only seem to be successful as group support for family, but not for the substance abuser themselves, it is helpful to consider how else family members can be integrated into treatment, given that this factor may be a powerful one in increasing motivation for treatment.

Behavioral Couples Therapy (BCT) is one of the most researched treatments for substance use disorders that includes and emphasizes family, the partner or spouse in particular. This treatment works "directly to increase relationship factors conducive to abstinence" (Birchler, Fals-Stewart, & O'Farrell, 2005, p. 256). The empirical backing for BCT is quite strong. Although family interventions are largely absent from empirically supported treatment (EST) lists (Alexander, Sexton, & Robbins, 2002), there has been a great deal of efficacy research done with BCT and substance abuse. An abundance of BCT outcome studies have been done with alcohol users, many of which indicated the efficacy of this treatment over individual therapy, even up to 24 months post treatment (for a review, see O'Farrell & Fals-Stewart, 2000). Furthermore, research that compares the effects of BCT and individual therapy on domestic violence

in alcohol users has shown that the BCT group reports significantly less male-to-female aggression post follow-up (Fals-Stewart, Kashdan, O'Farrell, & Birchler, 2002).

Randomized studies on BCT for drug abuse date back to 1996 (Fals-Stewart, Birchler, & O'Farrell). This research showed that drug-abusing males who took part in BCT had significantly fewer relapses and days of drug use, as well as more positive relationship outcomes than participants who attended individual treatment only. Subsequently, other BCT outcome studies with drug abusers have shown favorable results for this treatment (O'Farrell & Fals-Stewart, 2000). Similar to research done with alcohol abusers, BCT for drug abusers also appears to have a lowering effect on partner domestic violence (O'Farrell & Fals-Stewart, 2000).

Finally, BCT has been shown to be cost effective for both alcohol and drug abusers compared with individual treatment. For example, BCT targeting drug abusing males has been shown to reduce social costs (e.g., drug-related health care, use of the criminal justice system, etc.), resulting in a higher average cost savings than individual therapy (Fals-Stewart, O'Farrell, & Birchler, 1997). The costs savings associated with BCT for alcohol abuse appear to be similar, such that significant reductions in hospital and jail stays are associated with BCT (O'Farrell et al., 1996).

One major limitation of BCT is that the treatment does not include children or other members of the family. Excluding children from treatment may have two specific negative impacts: 1) family issues related to substance abuse may go disregarded, and 2) parents have to find childcare for their children during treatment. Conners, Bradley, Whiteside-Mansell, and Crone (2001) discussed a treatment designed to target the latter of the aforementioned concerns. Specifically, these researchers examined an inpatient

treatment in which both crack cocaine abusing mothers and their children participated. Treatment consisted of both traditional substance abuse techniques (e.g., 12-step, relapse prevention, drug and alcohol psychoeducation), as well as aspects directed at family strengthening (e.g., parenting education and support, women in relationships, family dynamics in recovery). Additionally, services were provided for the children such as school programming and mental health treatment. The researchers compared the mothers and children who completed treatment to those families who dropped out. Follow-up assessment occurred at four different time points. Results indicated more positive outcomes for treatment completers, as measured by family interaction skills, substance use, negative consequences of substance use, and employment and self-efficacy. Although this study's findings indicate a need for more research on this treatment modality (namely, including a control group in the research design), the initial outcome implies that keeping families together during treatment may have a positive effect.

In addition to treatment modality, numerous specific treatment approaches have been tested for their efficacy in reducing substance use. Such trials typically focus on one substance of abuse for the major drugs of abuse (i.e., alcohol, cocaine, and opiates). Multiple effective treatment approaches have been identified. For those diagnosed with an alcohol use disorder, social skills training, relapse prevention, cue exposure, coping skills training, contingency management, and motivational interviewing have all been shown to be efficacious (Roth & Fonagy, 2005). Nevertheless, it is suggested that these individual treatments not be used on their own, but in combination or as part of a larger treatment package (Roth & Fonagy, 2005). Research looking at the differences between

various therapies has been inconclusive. However, efficacy and effectiveness studies provide support for the effectiveness of 12-Step oriented approaches (Donovan, 1999). Generally, these studies have found a positive relationship between 12-Step involvement and improvement on substance use outcomes for both alcohol and drug abusers, even over extended periods of time up to 16 years (Montgomery, Miller, & Tonigan, 1995; Kaskutas, Ammon et al. 2005; Moos & Moos 2005; Moos & Moos 2006). Weiss and colleagues found that active involvement in self-help activities (as opposed to meeting attendance) in a given month predicted fewer days of cocaine use in the next month (2005).

Also, Project MATCH (a group that examined outcomes of matching treatment type to client characteristics) found that people receiving twelve-step facilitation treatment had higher rates of abstinence than those in cognitive-behavioral or motivational enhancement therapies (Project MATCH Research Group, 1998). Also exemplified in these data was that attempts to match clients to treatment based on specific variables were unsuccessful.

One concept related to the idea of treatment matching is treatment choice. While there appear to be a wide variety of possible treatments available for those who abuse substances, it is unclear what types of treatment people prefer. Furthermore, research that looks at how treatment choice affects treatment retention or outcome is sparse, but not absent. Adamson, Sellman, and Dore (2005) found that alcohol dependent participants tended to prefer motivational enhancement therapy over non-directive reflective listening. However, there was not a significant association between treatment preference and treatment outcome (measured in client satisfaction with treatment, treatment attendance,

and rates of drinking at 6 month follow-up). Similar results indicating that treatment choice (compared to being randomly assigned to at treatment) has little bearing on treatment outcome have been exemplified elsewhere as well (Ojehagen & Berglund, 1992; Sterling et al., 1997). Although this research appears to nullify the importance of treatment choice, the results indicate that treatment – in whatever form – seems to have an appreciable effect on outcome.

Perhaps because existing data show results indicating that treatment is an effective option, many legal justice systems across the country have developed drug court treatment programs as an intervention aimed at substance abusing perpetrators of crime. While treatment received through drug court interventions may not differ from traditional in- and outpatient treatment modalities, the referral process is unique. Specifically, some jurisdictions give the option for people arrested with drug-related crimes to get treatment, as opposed to incarceration. This kind of combination of criminal justice and treatment intervention has promising outcomes.

Gottfredson, Najaka, Kearley, and Rocha (2006) compared people randomly assigned to either a drug court treatment group or control group, with results indicating lower rates of recidivism for the treatment group. This study indicates that reductions in crime can be achieved through drug court programming, and chalks up another "win" for treatment effectiveness. Other research indicates that individuals involved in programs such as drug court show reductions in future incarceration, associated legal costs, and utilization of mental health services compared to a control group not receiving drug court services (Logan et al., 2004). This same study showed that those attending Drug Court programs had increased rates of child support payments and overall earnings from legal

sources. Thus, the benefits experienced by the individual who attends a Drug Court program also translate into a cost-benefit for society.

For all the people who do find their way to treatment, either via the drug court system or by some other mechanism, a substantially larger proportion of people need treatment but do not receive it. The National Survey on Drug Use and Health (NSDUH; Substance Abuse and Mental Health Services Administration; SAMHSA, 2006) estimates that 23.2 million, or 9.5% of the U.S. population age 12 or older, needs drug treatment based on DSM-IV criteria. Within this group, only about 2.3 million individuals actually received treatment in the past year at a facility specializing in substance abuse. What this may mean is that the high percentage of substance abusers who do not receive treatment may continue to incur social costs, such as those related to crime or employment difficulties. Because a disparity exists between those who need treatment and those who actually receive it, there is a need to research how to channel these individuals into a treatment setting.

Motivation for treatment

The question of what motivates substance users to enter treatment (or what prevents them from entering treatment) is an important area to explore. Previous research points us in the direction of the factors that lead people to enter treatment: 1) external factors, or factors that are beyond the person's control, such as legal mandates; 2) internal factors, or motivation of the individual to seek treatment; and 3) diminished barriers to treatment, such as employing outreach methods in a community that help facilitate treatment seeking. Each of these factors can increase or decrease one's propensity to seek treatment and will be discussed below.

External factors. In terms of substance abuse treatment, drug court intervention programs are probably the most widely used tool for increasing treatment seeking and admission. As mentioned above, there is evidence that these programs work relatively well at lowering rates of recidivism and drug use. However, it is unclear how to tease apart the obvious external factors from internal motivation (when a person seeks out help or change) which may be operating simultaneously. The Baltimore City Drug Treatment Court program as described by Gottfredson et al. (2006), for example, only accepts clients who express interest in getting treatment, and the defendant must be assessed and recommended for the program based on the assessment. Here, the client must possess enough internal motivation in order to comply with the demands of the external motivator.

Other examples of external factors include additional social control tactics (besides legal mandates), such as coercion by family or friends to change substance using behavior in the form of informal mandates (e.g., ultimatums, threats; Gerdner & Holmberg, 2000; Polcin & Weisner, 1999). Therefore, examining interventions involving family members targeting substance abusing family members is a useful endeavor. There are several examples of formal intervention strategies (i.e. professionally guided) involving family members; existing research on the effectiveness these techniques is described here.

The Johnson Intervention (JI) was created in the 1960s as a reaction to the "loving detachment" approach accepted at the time, popularized by groups such as Al-Anon, Nar-Anon, and Alateen (Fernandez, Begley, & Marlatt, 2006). JI is a technique in which family members confront the alcohol or drug user about the harm his or her

substance abuse is having. Ideally, the family provides treatment options, after which the person undergoing the intervention would choose one of these options to attend. While the intervention itself is carried out by family members, the preparation and practice are overseen by a professional. Although JI became widely used by organizations such as the U.S. Navy and employee assistance programs (Johnson, 1986, as cited in Fernandez, Marlatt, & Begley, 2006), data do not support its effectiveness. For example, one study (Miller, Meyers, & Tonigan, 1999) found treatment engagement success rates for JI were around 23%. Furthermore, Liepman, Nirenberg, and Begin (1989) found that the majority (72%) of families who were given a choice between carrying out JI or not chose not to because it felt too controversial and coercive. Nonetheless, one research study has found JI to be effective, showing 90% success rate in treatment engagement (Logan, 1983, as cited in Fernandez et al., 2006). Although this study was questioned methodologically, this outlying result may indicate certain strengths inherent in the JI.

A Relational Intervention Sequences for Engagement (ARISE) is another intervention strategy that takes selected aspects of JI and combines them with other factors to produce a more comprehensive model of intervention. (The original intervention was called Albany-Rochester Interventional Sequence for Engagement; for a full description, see Garrett, Landau-Stanton, Stanton, Stellano-Kabat, and Stellano-Kabat, 1997). One of the factors that differentiates ARISE from JI is the inclusion (or invitation for inclusion) of the individual substance abuser in the intervention strategy. During Stage 1 of ARISE's three-stage approach, the concerned family member coordinates a meeting with the identified client and others concerned about the person's

substance use. The substance abuser can choose to take part in this meeting or not. Stage 2 consists of assessment of the person's problem and treatment planning. Again, the identified client can choose whether or not to attend this part. If the substance abuser has not chosen to participate in the intervention process during the first two stages, the group stages a JI-like, confrontational intervention (Stage 3). Although there appears to be only one study examining the effectiveness of a manualized version of ARISE, the data indicated positive results (Landau et al., 2004). Specifically, these researchers found an overall success rate of 82.7%, most of which (55%) were engaged in treatment by the end of Stage 1.

Mandates from employers and social service agencies can also be seen as external motivating factors. Finally, the desire to reduce drug tolerance may motivate people to seek treatment (this may be more of a factor for those who use opiates than for those who use other substances). Reducing drug tolerance is another example of the ambiguity between internal and external factors: a person wanting to reduce drug tolerance may appear to be motivated by a desire to change his or ways, when in fact the motivation is to avoid withdrawal symptoms and to ensure that later drug use will result in feeling the effects of the substance. Data about these last two examples of external motivators are less available, possibly because they are seldom assessed directly. Nonetheless, information about such motivators could shed light on some of the mechanisms by which people enter treatment.

Individuals addicted to drugs often contend with a variety of medical problems related to their substance use (i.e., abscesses, hypertension). Reduction in substance use could also help people reduce their health problems, thus physical problems (and the

amelioration of them through abstinence or harm reduction) could be seen as a motivator. Whether this is an external motivator from a client perspective is unclear. Deci and Ryan (1985) have defined this construct more narrowly, such that treatment is sought because of coercion from an outside body. Nonetheless, some medical problems are ones that may be outside the person's immediate control (e.g., chronic pain) and therefore could be viewed as external. Research findings indicating that transient medical problems are related to "transient" increases in motivation reinforce the idea that physical problems are indeed external forms of motivation. For example, O'Toole, Pollini, Ford, and Bigelow (2006) conducted a study at an acute medical setting at which substance abusers were interviewed. Results showed that medical problems were a motivator for seeking treatment. However, the researchers found that those citing physical complaints as their primary motivator had lower treatment completion rates. These results support the idea that external motivators do not work as well as intrinsic motivation in terms of keeping people engaged in treatment.

In a similar study, Pollini, O'Toole, Ford, and Bigelow (2006) found that health problems were associated with readiness to change in a population of active substance abusers admitted to an acute care hospital. Moreover, these researchers found that psychological symptoms were also related to motivation. Specifically, bipolar disorder and reported depression were related to higher levels of motivation for treatment seeking. Like medical problems, defining psychological disorders as an external motivator is not completely straightforward. Diagnosable conditions, like major depressive disorder, may be complicated by a person's feelings of remorse or worry about his or her use. These feelings may contribute more to a sense of internal motivation. A more comprehensive

discussion regarding comorbidity and motivation occurs in the section on internal factors below.

Internal factors. Internal motivation can be likened to *intrinsic motivation,* which has been defined by Ryan and Deci (2000) as "doing something because it is inherently interesting or enjoyable" (p. 55). When applied to changing substance abuse behaviors, internal motivation occurs when individuals seek out help and identify with the goals of treatment. As mentioned above, the distinction between internal and external motivators is not always entirely clear. Although internal motivation may seem like a distinct construct from external motivation, the two concepts are sometimes linked. For example, Ryan, Plan, and O'Malley examined alcohol abusers entering treatment and found that people who reported both internal and external motivators for treatment exemplified the best treatment outcome, indicating that the combination of these two motivators is greater than each one by itself. Furthermore, from a self-determination theory perspective (Deci & Ryan, 1985), increases in external motivators may undermine a person's internal motivation because of the perception that autonomy is being taken away. Wild, Cunningham, and Ryan (2006) found support for self-determination theory in their study, which gathered data on referral sources (objective measure of pressure for treatment), perceived coercion (subjective interpretation of pressure for treatment), motivation for treatment, and client engagement. Results indicated that the objective referral source was not found to be related to motivation and client engagement, whereas participants' *interpretation* of perceived coercion predicted both motivation and treatment outcome.

Although external and internal motivations appear to be related, internal motivation has been more strongly linked to positive treatment outcomes (Ryan & Deci,

2000; Ryan et al., 1995). This type of motivation might change a person's treatment seeking or desire to seek change. Lack of motivation for treatment has been cited as one of the main factors in treatment dropout (Miller, 1985; Ryan, Plant, & O'Malley, 1995). Motivation as a construct has been examined in the literature primarily using the transtheoretical model of change (TTM) or simply the stages of change model (Prochaska & DiClemente, 1986). This model puts forward the idea that there are five stages involved in changing a behavior, each requiring alterations in attitude in order to progress to the next stage. The authors depict change as a cycle, and they contend that it is quite normal for people to require several trips through the stages in order to make lasting change. The authors conceptualize that the initial stage of change is one in which a person is "precontemplative," or unaware that she or he has a need to change. Using this model, it is thought that people progress to a "contemplative" stage, aptly named for people in this group who are considering the possibility of change. Once an individual moves from contemplating to actively taking steps toward changing behavior, he or she is considered to be in the "active" stage. A relapse (return to the previously problematic level of behavior) or lapse (a "slip" back to using on one or more occasions) may or may not follow the active stage, in which people might make a foray back into the behavior being changed. Then, the person may enter back through the cycle at either at the precontemplation stage, or at another stage. For a substance abuser, it is important to understand where he or she is in terms of stage of change in order to gauge treatment seeking or change behavior.

Related to motivation (and helpful in considering factors associated with internal factors for change) is the idea of spontaneous remission, also called "natural recovery", in

which people change their substance use without treatment. *Cognitive evaluation*, or weighing the pros and cons of substance use (Miller & Rollnick, 2002), has been shown to be the primary reason for quitting substance use in individuals who undergo spontaneous remission (e.g. Toneatto, Sobell, Sobell & Rubel, 1999; Sobell et al., 2001). The cited research sheds light on factors that precipitate behavior change in cocaine and alcohol users, which might be a good model for other substance users.

Factors such as cognitive evaluation should also be considered in individuals for whom natural recovery does not seem possible, but may still be motivated to change. For these people, seeking professional help would be the behavioral manifestation of motivation. Factors related to available treatments may have an effect on a person's motivation for change. That is, if aspects of a certain treatment approach were more appealing than an alternative treatment, the person might be more motivated to try out the treatment of choice. As mentioned above, literature on treatment choice has shown virtually no relationship between treatment outcome and treatment choice, although these studies did not explore how motivation may have played a role.

Different treatment approaches seem to appeal to people at varying levels of motivation. For example, cognitive evaluation (described above) is one principle used in Motivational Interviewing (Miller & Rollnick, 2002), an intervention strategy designed to move people into a contemplative or preparation stage of behavior change. Thus, this model is not designed to require a commitment to complete abstinence from clients, even if that may be a longer term goal. Efficacy of this type of intervention has been demonstrated by a number of studies looking at alcohol, cocaine and non-substance use related behaviors such as weight loss (Miller & Rollnick, 2002). In practice, motivational

interviewing can be viewed as a harm-reduction approach, since individuals are not expected to be motivated to quit substance use completely. Conversely, other treatments require higher levels of motivation, or at least commitment, from the outset, like treatments expecting complete abstinence, such as the 12-Step approach. Although it seems intuitive that those individuals more motivated to change would choose an abstinence-based approach, which requires a more significant change in behavior in comparison to harm-reduction treatments, this notion has not been tested empirically.

Barriers to treatment. Even if an individual is highly motivated to change his or her behavior and seek treatment, there still may be obstacles present preventing him or her from obtaining treatment. Thus, factors related to systems within society – whether they be barriers or aids – may ultimately be related to motivation for treatment. Financial barriers represent one arena that prohibits a segment of substance abusers from entering treatment. Although public resources cover much of overall spending for treatment, 45.3% of individuals who received drug abuse treatment in 2005 reported paying for it via their "own savings or earnings" (SAMHSA, 2006). Furthermore, among the individuals who made an effort to receive treatment but did not do so, the most often cited reason for not receiving drug treatment was cost of insurance (44.4%), followed by other access barriers, such as lack of transportation, or few openings in treatment programs (21.2%; SAMHSA, 2006). Even for those who do depend on government funding to pay for treatment, these programs are vulnerable to changing state and federal budgets, potentially jeopardizing this group's chances at obtaining treatment.

An intermediary referral source is sometimes the mechanism by which people become affiliated with treatment. For example, needle exchange programs for opiate

addicted individuals have been shown to be an effective bridge to treatment (Heimer, 1998). However, geographic characteristics may undermine the use of those strategies. Needle exchanges tend to occur in urban areas with well-established outreach systems in place.

Rural states like Montana have outlawed needle exchanges, forcing them to operate underground. Therefore, Montana has no access to such services, even though there is arguably a potential need for them. Although opiate users typically comprise the majority of needle change consumers, methamphetamine users could also make use of needle exchanges, given the high rate of methamphetamine users who use intravenously (Wada, Greberman, Konuma, & Hirai, 1999). Methamphetamine is especially prevalent in rural areas like Montana; qualitative indicators have show that methamphetamine use is moving away from urban areas to more rural areas (Community Epidemiology Work Group [CEWG], 2008).

The presence of an intermediary referral source may be one strategy for assisting people in accessing treatment for their addiction problems. Conversely, the absence of these services necessarily means the community is lacking at least one means of facilitating treatment seeking behavior. Other barriers to substance abuse treatment are well-documented in the literature. For example, Appel, Ellison, Jansky and Oldak (2004) interviewed street IV drug users to determine what they thought were barriers to treatment. The top five cited barriers included family or personal issues, lack of motivation, lack of insurance or Medicaid coverage, aversion to treatment, and lack of personal identification. Other research showed that lack of health insurance prevented people from using a treatment referral (Riley, Safaeian, Strathdee, Beilenson, & Vlahov,

2002). Additionally, this study found that living too far away from the treatment facility, employment schedules, incarceration, lack of money, and fear of paperwork were other factors preventing individuals from following through on a referral. While both of these studies involved opiate addicted participants, it is possible that these same barriers apply to other types of substance users that are more commonly found in Montana.

Another factor that might affect people's treatment- or change-seeking behavior is exposure to a discussion about substance use. That is, having an opportunity simply to talk about his or her substance use patterns could promote a person to move in the direction of change. While the individual's movement from non-change-seeking to change-seeking is an internal factor, the mechanism by which that change is facilitated – exposure to the discussion – can be conceptualized as an outreach effort, or aid for people to bring about the process of change.

Motivation and comorbidity. It is common for those who have substance use disorders to also have another psychological disorder. Of the most commonly co-occurring disorders with substance abuse is major depressive disorder; it has been found that 24% of persons with major depression have substance abuse problems (Kessler et al., 2003). Conversely, individuals diagnosed with a substance use disorder tend to have higher rates of co-occurring psychiatric diagnosis. For example, one study indicated that a sample of adolescents reporting the misuse of prescription pain relievers were 1.8 times more likely to use mental health services than nonusers (Wu, Ringwalt, Mannelli, & Paktar, 2008). The presence of a disorder such as depression appears to complicate the course of a person's substance use disorder in several important ways. Specifically, outcome studies have shown that treatment seeking alcohol abusers with comorbid

depression had significantly lower rates of abstinence following treatment compared to a non-comorbid group (Driessen et al, 2001; Greenfield et al., 1998). Similar results have been found with abusers of drugs other than alcohol (Dodge, Sindelar, & Sinha, 2005). While such findings imply that depression symptoms may be a significant factor related to substance abuse treatment outcomes, there is also evidence to suggest that individuals experiencing depression might have better outcomes in the short term. For example, one study found better retention among depressed substance abusers (McKay et al. 2002). This result may be due in part to the nature of an individual's dysphoria, which may in fact motivate him or her to attend treatment to reduce such symptoms.

Although speculations can be made about the interaction between psychological distress and its influence on help seeking, little is known about the specific motivational mechanism of comorbid disorders and how they may affect motivation for treatment- or change-seeking behavior in substance abusers. The two studies that do examine the relationship between motivation to change drinking behavior and presence of a comorbid disorder (depression and anxiety) use samples of only alcohol users (Grothues et al., 2005; Velasquez, Carbonari, & DiClemente, 1999). In general, results of these studies indicate that increased psychiatric severity was related to higher levels of intention to change. While these results help to inform theories about how comorbid diagnoses relate to motivation for change, more research is needed to better understand how individuals using illicit or multiple substances may differ from those with an alcohol use disorder. Additionally, it is unclear how other comorbidities, such as antisocial personality disorder, may complicate the picture regarding motivation.

Hypotheses

The preceding literature review suggests a complex array of possible connections between substance abuse treatment seeking behavior, external and internal motivation, and barriers to treatment. The present study extends research on treatment seeking behavior by examining a population of non-treatment seeking inmates. A large amount of substance abuse research uses treatment-seeking samples, and one goal of this study was to gather information on individuals who have a substance abuse problem but have not sought out treatment. Thus, the first aim of this study was to describe a sample of substance abusing individuals who have recently been actively using.

Although there is a body of literature describing motivating factors among substance users, less is known about how motivated substance abusing inmates are to enter treatment. We wanted to find out: 1) how motivated incarcerated substance users are to change their behavior; 2) what factors are related to levels of motivation; and 3) if they are motivated, what are the factors prohibiting them from seeking treatment? Alternatively, what could be put in place as outreach to facilitate the transition from active user to treatment-seeker? Toward this aim, the factors that both inhibit and promote treatment seeking were explored. In this study, we tested the hypotheses related to the psychosocial factors we believed to be related to participants' motivation for treatment: psychological distress, physical problems, primary drug of abuse, duration of addiction, and family connectedness. Based on this notion, we hypothesized:

1. The aforementioned predictor variables will, as a group, predict level of motivation. We also wished to determine which factors have the greatest effect on

motivation. There was no specific prediction about which variable will have the strongest impact.

2. Psychological distress will serve as a motivator for seeking treatment: motivation for changing substance abuse behavior will be higher for those who demonstrate higher levels of psychological distress.
3. Physical problems will affect motivation to change substance abuse behavior. Medical issues may serve to increase motivation, but the hypothesis here is non-directional because there is evidence that the influence of physical problems on motivation exists, but is transient.
4. Motivation to change substance use behavior will differ based on participants' primary drug of abuse. The specific hypothesis is that those who primarily use drugs that are considered to have a more potential for physical dependency (e.g., opiates and alcohol) will have a higher motivation to change than those who use less addictive drugs (e.g., marijuana). This hypothesis is partially based on existing literature suggesting that cocaine users have higher motivation for treatment-seeking than do primary marijuana users (Levin et al., 2006).
5. Duration of addiction will be related to motivation for treatment seeking, such that the longer someone has been abusing substances, the more motivated that person will be for entering treatment. While this hypothesis has not been substantiated in the literature directly, there is evidence to suggest that older individuals (connoting more years of substance abuse) have more motivation for treatment than younger individuals (O'Toole et al., 2006).

6. Increased family discord will serve as a motivator to seek treatment. In other words, more problems within family relationships will be related to a higher level of motivation to change problematic substance abuse behavior.
7. Higher levels of motivation will be related to choosing an abstinence-based (versus harm reduction) model of treatment in a hypothetical treatment choice. Testing this hypothesis is important because if a person is able to choose one treatment over another, that individual may be more motivated to attend and complete the treatment of choice. Since there is virtually no empirical basis for knowing what types of substance abuse treatments people prefer, we also tested whether one treatment is chosen more often than another.

There were no *a priori* hypotheses regarding barriers to treatment, as this is an exploratory question among the population being investigated. Nonetheless, this information could prove invaluable for the Western Montana community. To best identify barriers, we explored the data in two ways. First, items on the Barriers Questionnaire (Center on Alcoholism, Substance Abuse and Addictions, 1995) were examined to determine the percentage of participants endorsing each item. Second, we divided the items into five categories representing groups of barriers. Using a previous study as a model for factors regarding barriers to treatment (Rockloff & Schofield, 2004), we constructed our own, similar set of factors including self-perception, stigma, cost, motivation, negative perception of treatment, and fear of outside consequences. Scores on these factors were correlated with the following variables: age, readiness to change substance use behavior, duration of addiction, psychological distress, family discord, and severity of medical problems.

Looking at etiological factors was another part of this study, even though this topic area is not directly related to the authors' main hypotheses. We chose to conduct exploratory analyses that allowed us to examine etiology of addiction in our sample. Specifically, we examined age of first use of substances, the age at which drug or alcohol use became problematic, and how individuals were introduced to various drugs.

Methods

In this study, the investigators recruited recently incarcerated substance abusers to assess this group in a number of areas. The variables of interest consisted of those relating to factors that influence a person's decision to seek treatment. Internal factors (motivation), external factors, and systemic barriers factors were examined.

Participants

Fifty-one substance abusers incarcerated at Missoula County Detention Facility in Missoula, Montana were recruited for participation in this study. This sample size was chosen on the basis of literature exemplifying similar studies (i.e., used an incarcerated population and examined substance use behavior) with similar sample sizes (e.g., Goodrum, Staton, Leukefeld, Webster, & Purvis, 2003; Seal et al., 2004; Staton-Tindall, Royse, & Leukefeld, 2007). Participants had to meet the following criteria in order to take part in the study: 1) 18 years of age or older, 2) have the ability to speak English, 3) have been incarcerated on a substance-related charge (e.g., DUI, possession of an illegal substance), and 4) have not been enrolled in substance abuse treatment or attending 12-Step meetings, such as Alcoholics Anonymous, at any time within the past year.

Setting

Recruitment and data collection occurred at the Missoula County Detention Facility. There were two main reasons for conducting research in this setting. First, data indicate that a large percentage of jail inmates test positive for drug use, as indicated by the ADAM data (National Institute of Justice, 2003). Therefore, we believed that a sample of current substance abusers would be relatively easy to obtain at this location. The second reason for collecting data in a jail setting relates to the difficulty of recruiting

people who are current substance abusers. This population is difficult to target for recruitment because their activities are largely underground, and consequently invisible to mainstream society. Controlled environments, such as jails, typically have a high percentage of individuals who currently suffer from substance abuse problems, but may not be in a treatment setting. It is this "pretreatment" group that the investigators targeted in order to better understand why they have not chosen to seek treatment. Ideally, targeted sampling in the community would be the preferred method of recruitment, as this has been shown to have better generalizability than sampling from institutions (Chitwood, Rivers, Comerford, & McBride, 1993). Plus, institutions such as jails may provide substance abusing individuals with a place to reflect on their current situation, thus altering their motivation for treatment. Nonetheless, this group was deemed more favorable than one already connected to treatment, where individuals who have previously made the decision to enter treatment may retrospectively view their motivation for treatment inaccurately.

Procedures

Participants were recruited from Missoula County Detention Facility in Missoula, Montana. The investigators kept track of individuals arrested and booked by checking the online roster of inmates. Inmates arrested on a drug- or alcohol-related charge were sent recruitment letters, explaining the study and asking them to mail back the accompanying return letter indicating interest in the study. Between June 2007 and March 2008, 369 individuals were identified who met the study criteria. Because many had been discharged before a letter could be sent, only 165 prisoners were sent recruitment letters. Of 165 letters sent, 38% were returned. Once the research team received a return letter,

an interviewer went to Missoula County Detention Facility to meet with the potential participant. Prior to participating in the study, participants were provided with a complete description of the study and written informed consent was obtained. In order to ensure confidentiality, the interviewers met with inmates in special rooms typically delegated for lawyer-inmate discussions. No jail personnel were present. All interviews occurred at Missoula County Detention Facility took approximately two hours and consisted of the measures described below.

Measures

Each participant recruited into the study underwent an assessment consisting of six measures: the Addiction Severity Index 5th edition (ASI: McLellan et al., 1992), the Beck Depression Inventory-II (BDI-II: Beck, Steer, & Brown, 1996), the Brief Symptom Inventory (BSI: Derogatis, 1992), the University of Rhode Island Change Assessment Scale (URICA: DiClemente & Hughes, 1990), the Barriers Questionnaire (Center on Alcoholism, Substance Abuse and Addictions, 1995), and two exploratory measures composed by the primary investigator, one of which is qualitative in nature and is designed to get a better picture of etiology of addiction; the other is a forced treatment choice questionnaire.

Overview of problems related to substance use: The ASI is a semi-structured clinical interview that gathers demographic information as well as data regarding seven domains of the individual's life that may or may not be affected by drugs and/or alcohol. These seven areas include medical history, employment functioning, drug and alcohol use, legal status, and family, social, and psychological functioning. For the purposes of the current study, we modified the ASI in two ways. First of all, we added a question that

asked participants to identify their sexual orientation. We believe this is an important demographic variable, and such data are seldom systematically collected in substance abuse research. The second way in which we altered the ASI was by omitting the questions in the psychiatric section that relate to suicidal thoughts or attempts. We excluded these questions at the request of the Missoula County Detention Facility; administrators were not comfortable with questions about suicidality, as interviewers would be unable to intervene if participants expressed any suicidal thoughts or intentions.

The baseline ASI inquires about two time frames of clients' lives: 1) entire lifetime and 2) the past 30 days. This instrument is not diagnostic in nature, but instead assesses how severely and in what areas drugs and/or alcohol have impacted the individual's life. The ASI has several variables of interest we used during analysis, including demographic information, substance abuse history, and recent drug use. Also, a composite score was determined for each client on every domain of the ASI. Composite scores are comprised of several questions from each domain, which are then placed into an algorithmic function, resulting in a number between zero and one (McGahan, et al., 1986). This score was used to measure the severity of problems in each domain; higher scores indicate higher level of impairment in a particular domain than lower scores.

According to McLellan and his colleagues (1992), the ASI 5th Edition showed test-retest reliability coefficients of .83 or higher. An analysis of thirty-seven studies of the psychometric performance of the ASI, however, showed that test-retest reliability on composite scores ranged from "excellent" (.97) to "unsatisfactory" (.03), depending on the ASI domain being investigated (Mäkelä, 2004). For more reliable results, the developers of the ASI suggest interviewers undergo a 2-day training and must have

reasonable rapport with the interviewee (McLellan et al., 1992). Studies looking at the validity of the ASI have found moderate to strong correlations (r = .50-.70) between ASI composite scores and other measures of drug/alcohol use (Mäkelä, 2004). Because studies have shown some variability in the reliability and validity of the ASI, the research team was extensively trained in the ASI prior to study commencement. Also, frequent reliability meetings were held to prevent interviewer drift and ensure that ASI interviewers coded consistently.

For this study, two interviewers completed all the interviews. The principal investigator has taken part in several two-day ASI trainings, and she has aided in training other researchers and clinicians in administration of this instrument. The second interviewer received ASI training from the principal investigator, which included one-on-one consultation, watching a series of ASI training videos, observing interviews, and being observed and evaluated on administration of the instrument.

Psychological symptoms. The ASI provided some psychologically relevant data including self-report of hallucinations, trouble controlling violent behavior, and the psychiatric status composite score. Other variables relating to psychological status came from the BDI-II and BSI. The BDI-II is typically a 21-item account of self-reported attitudes and symptoms characteristic of depression. The measure was shortened to 20 items for the purposes of our project, leaving off the item regarding suicidal ideation as requested by the Missoula County Detention Facility. Each question is scored from 0 to 3, relative to severity, yielding a total range between 0 and 63. BDI-II composite scores served as the variable of interest from this instrument. The reliability of the BDI, in terms of internal consistency, ranges from .73 to .92 (Devilly, 2004). The content of the BDI

was obtained by polling clinicians regarding symptoms of depressed patients (Beck et al., 1961). Thus, the current BDI items and clinician ratings for depression are relatively consistent, with correlations ranging from .62 to .66 (Devilly, 2004).

The BSI is a self-report inventory of 53 items related to psychological symptomatology, assessed with a five-point Likert scale (from 'not at all' = 0, to 'extremely often' = 4). Additionally, this instrument has nine scales representing nine symptom dimensions (Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism). Scores on each scale were the variables of interest from this instrument. The range for the scores depends on the scale. For the Interpersonal Sensitivity scale, the range is between 0 and 16. The Psychoticism, Paranoid Ideation, Phobic Anxiety, and Hostility scales have a range between 0 and 20. The Anxiety, Depression, and Obsession-Compulsion scales have a range between 0 and 24, and the Somatization scale has a range between 0 and 28. Derogatis and Melisaratos (1983) have reported that this instrument has coefficients of internal consistency ranging from 0.71 to 0.85 and test-retest reliability ranging from 0.68 to 0.91. A Global Severity Index measures the participant's overall level of psychological distress.

We scored the BSI by adding ratings for subscale items and dividing by the number of items. These mean raw scores were transformed into *T*-scores (mean of 50 and standard deviation of 10) separately for women and men, based on the adult non-patient norms tables. Derogatis (1992) established the following two criteria for designating an individual as being positive for diagnosable psychopathology based on adult, non-patient

norms: a) a *T*-score for GSI of 63 or greater, or b) *T*-scores of 63 or greater on two or more subscales.

Factors that influence change. Two instruments were used to assess how motivated individuals are in changing their substance use and what reasons prevent them from seeking treatment. The URICA is a 32-item instrument designed to assess readiness for change. Participants answered items on a 5-point Likert-type scale, through which participants rated agreement or disagreement with each statement. Items were grouped into four subscales, each with 8 items that correspond to Prochaska and DiClemente's (1986) stages of change: 1) Precontemplation, characterized by lack of desire to change substance use behavior, 2) Contemplation, characterized by an understanding that a substance abuse issue is present and by thinking about changing this behavior, 3) Action, characterized by actively working to change substance use behavior, and 4) Maintenance, characterized by consolidation of changes one has made to substance abuse behavior. Items in this instrument describe attitudes, intentions and behaviors associated with changing a target behavior (e.g., drug use). The following is an item from the Precontemplation subscale of the URICA: "As far as I'm concerned, I don't have a drinking/drug problem that needs changing". An example of an item on the Contemplation subscale is: "I've been thinking that I might want to change something about myself."

The relative merits and drawbacks of assigning individuals to a particular stage of change have been argued by researchers and clinicians alike (for a partial review, see DiClemente, Schlundt, & Gemmell, 2004). To address this, we used both a continuous variable, indicating change, and we categorized individuals into identifiable categories,

although only for descriptive purposes. The "Readiness score" (continuous variable ranging from − 2 to + 14) was calculated using the following URICA-subscale algorithm: summing the means for Contemplation, Action, and Maintenance subscales, then subtracting the Precontemplation subscale mean. This was the score used primarily in our analyses. Stage-of-change status was used to describe the sample, and we assigned to individuals using the following cutoff points: scores below 8 indicating Precontemplation, scores of 8 to 12 representing Contemplation, and scores above 12 designating Preparation/Action (see DiClemente et al., 2004, p. 111). We also used these group designations to examine differences in psychological distress between stage of change groups.

Psychometric analyses of the URICA reveal that the internal consistency has coefficient alphas from 0.79 to 0.89 for the four subscales (McConnaughy, DiClemente, Prochaska, and Velicer, 1989). Belding, Iguchi, and Lamb (1996) conducted research supporting the construct validity of the URICA through factor analysis. Furthermore, El-Bassel, Schilling, Ivanoff, Chen, Hanson, and Bidassie found that the URICA's stages of change subscales are associated with different behavioral profiles in drug-using incarcerated women.

Finally, the Barriers Questionnaire is a 50-item self-administered questionnaire developed for purposes of determining reasons for not seeking treatment. Participants were asked to rate how specific factors may inhibit them from seeking treatment at this time on a scale of 0 to 3, with 0 representing "not at all" influential and 3 representing "very important." According to the authors of this instrument (Miller & Tonigan, 2009),

the Barriers Questionnaire has not been scaled, and interpretation is therefore at the item level.

Pathways to addiction. The Etiology of Addiction Questionnaire (Appendix A) is an exploratory measure that was used to gather information from research participants about the development of their difficulties with substance use. For example, participants were asked who they were with the first time they used specific substances and how they perceived their environment and experiences with the substance. Some questions on this instrument are open-ended, thus providing the researcher with rich, qualitative information about the development of a person's addiction. The aim here was to understand how etiological factors may have influenced their substance use. In a preliminary study (Peavy & Cochran, in preparation), this questionnaire was administered to a sample 50 of treatment-seeking substance abusers. Since this prior study was examining differences between methamphetamine and non-methamphetamine using substance abusers, the sample had an almost equal number of participants in each category (28 and 22, respectively). Participants' responses to the questions were transcribed verbatim at the time of the interview. True to an inductive approach to qualitative analysis (Maxwell, 2005), we developed theoretical categories concurrent with data collection, solely based on interactions between interviewer and interviewee; no prior concepts were formulated. The principal investigator conducted all the interviews, and began developing ideas about the emerging themes early on in the data collection process. These themes were refined once all of the data were collected and the transcripts were read several times. After discussions with other researchers who read over the transcripts, the coding frame was finalized, which focused on factors related to drug use

initiation and development of problematic substance use. Three additional research assistants sorted each individual response into these theme categories. When at least two out of the three research assistants agreed on the categorization of an answer in a particular theme, the response was then counted as a response into that theme category. Results from this study indicate that there appear to be differences between methamphetamine users and non- methamphetamine users in terms of the development and maintenance of addiction. Familial influence, along with the properties of methamphetamine (namely its high addictive potential), seem to play a role in the escalation of its abuse and difficulties with quitting. Social factors play a larger role for individuals with a primary alcohol addiction in the reasons for why they use, as well as their reported difficulties in quitting. In the current study, responses were also coded into response categories similar to the initial study. Specifically, responses related family/social influences on first substance use were grouped; family and social influence was also a response category for participants' reported reasons for quitting. Other response categories included: biological (properties of the drug) and psychological factors (vulnerability to depression or other disorders) in influencing addictive behaviors.

Treatment choice. To assess which treatment philosophies people prefer, participants read a brief description of the treatment philosophies embodied in abstinence-based and harm reduction approaches (see Appendix B to view the measure in its entirety). Then, they were asked to choose a treatment philosophy. As an added question, participants were asked whether they would then opt out of treatment, or engage in the treatment of their choice. To get a sense of why individuals chose a particular treatment, participants were asked to provide a reason for their choice; this

qualitative piece of information was not analyzed formally, but is briefly discussed in the Discussion in order to supplement the quantitative findings.

Analyses

In order to examine the factors that predict motivation for change, a multiple linear regression was used. The regression equation involved five independent variables and the dependent variable to be used was the Readiness score on the URICA (described above). This analysis was employed to examine the relationships between motivation and the following five independent variables: 1) the BSI's overall index score of severity of psychiatric distress (General Severity Index [GSI]) to determine the impact of psychological distress on motivation, 2) the medical section ASI composite score was entered into the model in order to examine the impact of physical problems on motivation, 3) the ASI composite scores for alcohol, 4) the ASI composite scores for drug use (both the alcohol and drug composite scores are one measure of overall severity of substance use and include duration of addiction as a major part of the score), and 5) the ASI family/social section composite scores were added in to determine whether problems in this area predict motivation. The demographic variables of age, gender, and education were included as covariates, although these variables were found to be unrelated to the dependent variables.

Additionally, the five aforementioned independent variables (GSI, and the ASI composite scores for the following sections: medical, alcohol, drug, and family/social) were entered into five separate regression models to examine each variable separately. It was predicted that that each independent variable will be a significant predictor of motivation for treatment.

In order to examine psychological distress in more detail, we calculated the BSI subscale scores and compared them between three groups, based on a person's Readiness score: 1) Precontemplation indicated by scores below 8, 2) Contemplation indicated by scores between 8 and 12, and 3) Action/Preparation indicated by scores above 12.

Since we also predicted that motivation would differ based on primary drug of abuse, the sample was split into groups of primary problem substance, based on data from the ASI: 1) alcohol; 2) opiates; 3) methamphetamine; 4) marijuana; and 5) polysubstance abuser – no primary substance identified. Using the Readiness score on the URICA as the dependent variable, a one-way analysis of variance was run and planned comparisons were conducted to see how groups differ in terms of motivation.

Percentages of participants choosing their treatment approach (harm reduction or abstinence based) are reported. We conducted a Chi Square test to compare percentages of participants selecting "no treatment" (versus their treatment of choice), and whether the proportion was higher in a particular treatment choice category. To examine if higher rates of motivation were associated with choosing an abstinence-based approach, groups were separated into choice categories: abstinence-based and harm reduction, and we conducted an independent samples t-test, using the Readiness score on the URICA as the dependent variable. We predicted that the analysis would show that the group selecting abstinence-based treatment had a higher level of motivation than the group selecting harm reduction.

Barriers to treatment were investigated by noting the percentage of individuals endorsing each of the 50 items on the Barriers Questionnaire. The authors of this questionnaire indicated that the items have not been scaled, and they suggest that

interpretation should occur on an item level (Miller & Tonigan, 2009). However, in an effort to examine these data in the most comprehensive way, we opted to generate factors that represent six categories of barriers to treatment. The determined factors include: 1) self-perception not aligned with someone who needs treatment, 2) belief that others will stigmatize treatment attendees, 3) cost/availability of treatment, 4) lack of motivation to change substance use behavior, 5) negative perceptions about the treatment experience, and 6) fear of consequences (e.g., withdrawal symptoms related to stopping use or legal problems as a result of presenting to a treatment facility). We established these factors using the following methodology. First, we examined another study (Rockloff & Schofield, 2004) that used a measure similar to the Barriers Questionnaire, which the authors had altered to tap into attitudes toward gambling treatment. These authors used factor analysis to identify barriers, and we used three of their factors (stigma, cost, and availability, the two latter of which we collapsed into one category). The principal investigator designated items to each of these categories based on their content. We then developed three other theoretical categories based on the principal investigator's review of the remaining items. Two additional research assistants sorted each individual item into these theme categories. When at least two out of the three coders (including the principal investigator) agreed on the categorization of an item within a particular category, the item was included into that theme category. Factor scores were developed by adding together the scores on each item, and dividing by the total number of items in that category. After establishing these factor scores, they were correlated with other variables such as motivation for treatment (i.e., the Readiness scale on the URICA), age, psychological distress, as well as severity in the medical, drug, alcohol, and family/social

realms in order to determine whether certain factors have stronger associations with other variables.

Results

Demographic variables

Of the 51 individuals entering into this study, 41 (80.4%) were male, 10 (19.6%) were female, and 31 (60.8%) were Caucasian. Most participants (90.2%) reported their sexual orientation as heterosexual. The mean age of the participants was 32.3 years (range = 19– 57 years old, SD = 10.1). On average, participants reported completing 12.3 years (SD = 2.2) of education. These demographic variables are shown on Table 1.

Psychosocial stability

Findings on family relationships, family abuse history, employment, and legal history are shown in Table 2. One of the most notable results in this domain is the overall high rate of reported emotional, physical, and sexual abuse. For the total sample, 54.9% reported emotional abuse in their lifetimes, 33.3% reported past physical abuse, and 13.7% reported past sexual abuse. Also, the 35.5% of the sample had parents with a history of drug or alcohol use.

The sample exhibited little stability in terms of employment and financial status. Specifically, 16% of participants reported receiving money from illegal sources within the 30 days prior to the interview. Participants reported income received from various sources within the 30 days prior to an interview (or prior to incarceration if the participant had been incarcerated over one month). The mean monthly net income for participants was $960.00 ($SD$ = $1220). Forty-five percent of participants reported having full-time employment at some point during the last three years.

To compare whether the BSI scores obtained for the current sample differed from those of three normative samples (adult non-patients, psychiatric outpatients, and psychiatric inpatients) provided by Derogatis (1992), two-tailed *t*-tests were calculated.

Table 3 provides means and standard deviations and Table 4 provides *t*-test results. Significant differences ($p < .01$) were revealed between the current sample and the normative non-patients on all but one subscale (Hostility). On all comparisons, the current sample of individuals provided more pathological symptom ratings than the adult non-patient comparison group. The psychiatric samples (both out- and inpatient) had significantly higher ratings than the current sample, except for the Somatic subscale, on which there were no significant differences between groups. We also examined BSI GSI scale in terms of motivation for treatment in our analyses, and these results are presented below.

The total sample's mean score on the BDI-II was 17.6 ($SD = 11.5$); scores ranged from 1-57. Note that this score is only out of 20 possible questions, as we removed the question on this instrument addressing suicidal ideation. Therefore, we multiplied our scores by the factor of 21/20 (1.05) to scale the scores to the normative data. Using the scaled data, we obtained a mean score of 18.6 ($SD = 12.1$). Using standard BDI-II cut-off scores, 21.6% of participants fell into the non-depressed category (scores between 0 and 9), 45.0% were categorized as mild to moderately depressed (scores between 10 and 19), 15.9% fell in the moderate to severe range of depression (scores between 19 and 29), and 17.7% of the sample had scores in the severe depression range (scores between 30 and 63).

As was expected, participants reported extensive legal histories. On average, individuals in our study spent 22.5 months of their lives incarcerated ($SD = 25.9$) with an average of 7.6 ($SD = 12.3$) convictions in their lifetimes, ranging from zero to 79. In terms of types of charges participants had accrued in their lifetimes, there was an

unsurprisingly high percentage of alcohol- and drug-related charges (note that we recruited individuals that had been recently arrested on a drug or alcohol charge, so this was a unique subset of the individuals at Missoula County Detention Facility). Sixty percent of participants had had at least one DUI, while 68.6% of participants reported having at least one drug charge (e.g., criminal possession of dangerous drugs, criminal possession of drug paraphernalia, criminal possession with intent to distribute).

Motivation for treatment

Overall, the mean Readiness score for the sample was 9.48 (SD = 2.43). According to the definition of DiClemente et al. (2004), this score indicates that the group, as a whole, was in the Contemplation stage of change with respect to substance use behavior. In terms of categorizing participants into stage of change groups, 15.7% of the sample fell in the Precontemplation group, 74.5% in the Contemplation group, and 7.8% in the Preparation/Action stage of change.

We computed bivariate correlations with demographic variables (age, gender, race, and education), motivation variables (stage of change scales and Readiness score), and the predictor variables for the proposed regression analysis (BSI Global Severity Index, ASI composite scores in the medical, alcohol, drug, and family/social sections). Table 5 presents the correlation matrix of the aforementioned variables. The results of each specific hypothesis related to motivation are described below.

Hypothesis 1. We conducted a multiple regression analysis to determine whether the predictor variables (BSI Global Severity Index, ASI composite scores in the medical, alcohol, drug, and family/social sections) accounted for a significant proportion of the variance in the dependent variable (Readiness score). Demographic factors (age, gender, race, and years of education) were not significantly associated with the Readiness score

and therefore were not included in the model. After entering all independent variables into a multiple regression analysis, results indicated that the final model did not account for a significant amount of variance in the Readiness score (p= .067). Table 6 presents the results of the multivariate linear regression. Although the model itself was not significant, and Hypothesis 1 was not supported, individual variables appear to significantly predict motivation for change, substantiating other hypotheses proposed by the investigators.

Hypothesis 2. To obtain more detail about how psychological functioning and motivation for treatment are related, we explored the data in two ways. First, we examined the correlation between the Readiness score and the BSI GSI, and then we determined if BSI subscale scores differed between stage of change groups. We found a significant correlation between the Readiness scores and GSI scores (r = .327, p < .05). For the next set of analyses, we conducted a series of one-way ANOVAs, using each BSI subscale score as an independent variable; the dependent variable was stage of change group (Precontemplation, Contemplation, Preparation/Action). Table 7 presents the results from these findings. There were significant differences between groups on each of the following BSI subscales: Somatization (F(2, 47) = 4.12, p = 0.022), Obsessive-Compulsive (F(2, 47) = 4.32, p = 0.019), Psychoticism (F(2, 47) = 3.70, p = 0.032), and the GSI (F(2, 47) = 3.38, p = 0.043). Post hoc comparisons using the Tukey honestly significant difference (HSD) test indicated that the Precontemplation group had significantly lower scores than the Action/Preparation groups on the above mentioned scales. Those in the Precontemplation group also had significantly lower scores on the Obsessive-Compulsive scale than those in the Contemplation group. Taken together,

these results suggest that Hypothesis 2 was supported. That is, for our sample, level of motivation was related to psychological symptomatology, such that individuals in the Precontemplation stage of change exhibited less symptoms than those in the Action/Preparation group in the areas of somatization, obsessive compulsive tendencies, psychotism, as well the BSI's overall measure of distress.

Hypothesis 3. Results indicated no significant relationship between motivation to change (the Readiness score) and the variable representing physical problems (the ASI composite scores on the Medical section). Specifically, the correlation between these variables was non-significant (r =.026, p = .872), and Hypothesis 3 was not supported.

Hypothesis 4. Another variable we proposed as related to motivation was primary drug of abuse. We designated inclusion in each substance category based on data from the ASI into the following groups: no problem substance (self-reported; 7.8%), alcohol (41.2%), opiates (7.8%), methamphetamine (21.6%), marijuana/hallucinogens (7.8%), and polysubstance abuser (no primary substance identified; 13.7%). A one-way analysis of variance indicated a significant effect of drug of choice on participant motivation, as measured by the Readiness score (F (5, 44) = 7.047, p < 0.001). We hypothesized that individuals who primarily used drugs with a higher addiction potential (e.g., opiates and alcohol) would report higher levels of motivation to change, and even though the ANOVA was significant, our hypothesis was not supported. Specifically, Tukey's post-hoc comparisons demonstrated that only one group ("no problem") differed significantly from all other groups in terms of readiness to change. Specifically, the "no problem" group's mean Readiness score was much lower (4.31; SD = 4.70) than the other groups.

We wanted to examine whether the "no problem" subgroup had erroneously been recruited into the sample. We took a closer look at the make up of this group in terms of substance use history, as well as the charges for which they had been incarcerated at the time of recruitment. Of the four participants within this group, three reported at least two days of substance use the 30 days prior to the interview. One individual had consumed alcohol 12 days out of the past 30, and also reported an eleven year history of regular alcohol use, a one year history of using heroin, other opiates, and methamphetamine, a three year history of regular cocaine use, and a 14 year history of regular marijuana use. Another person reported using alcohol on one out of the past 30 days prior to the interview; this participant also reported a one year history of using both opiates and sedatives on a regular basis. A third member of this group reported using methamphetamine (four days) and marijuana (three days) out of the past 30. This person also reported a one year history of regular alcohol use, a three year history of methamphetamine use, and a four year history of marijuana use. The participant who reported no substance use in the past 30 days had a one year history of regular marijuana use.

Hypothesis 5. We used the ASI composite scores for the Alcohol and Drug sections as proxy variables representing duration of addiction, as years of substance use is one variable comprising these scores. We found that neither of the Alcohol and Drug composite scores were significantly related to motivation for treatment, as measured by the Readiness scores (r = 2.603, p = .113; r = .481, p = .491 respectively). Therefore, our prediction that duration of addiction would be positively correlated with motivation for treatment was not supported by the data.

Hypothesis 6. Consistent with our stated hypothesis, motivation for treatment and distress in family/social relationships were related in our sample. In fact, when we examined each individual variable's impact on the dependent variable, we found that the strongest predictor of motivation was the amount of family/social distress (measured by the ASI Family/Social composite score; $r = 9.121$, $p = .004$). Specifically, this relationship indicated that the higher degree of family/social distress, the more motivation for treatment participants reported. It should be noted that we discovered a positive correlation between GSI and the ASI family/social composite score, such that higher rates of psychological distress were related to higher rates of family/social discord ($r = .602$, $p < .001$).

Hypothesis 7. When we compared differences in level of motivation between individuals choosing abstinence-based versus harm reduction treatment, we found support for our hypothesis that individuals choosing abstinence-based treatments reported more motivation for treatment. An independent samples *t*-test showed that the group who preferred abstinence-based treatment had higher Readiness scores ($M = 10.35$, $SD = 1.62$) compared to those who chose harm reduction ($M = 8.47$, $SD = 2.83$; $t(48) = 2.93$, $p = .005$). Perhaps unsurprisingly, mean scores on the Readiness scale were significantly lower for the group that chose no treatment than for those who opted for their treatment of choice ($M = 7.97$, $SD = 2.90$ and $M = 9.82$, $SD = 2.22$ respectively; $t(48) = 2.14$, $p = .038$).

Overall, 47.1% of the sample indicated they would prefer a harm reduction based treatment, while 52.9% preferred an abstinence based treatment. Treatment preference did not differ significantly by age or gender. When asked to choose between attending

the treatment of their choice or no treatment at all, 80.4% indicated they would prefer to attend the treatment of their choice. A Pearson's chi-square was calculated to determine whether the proportion of those who chose no treatment was higher in one treatment choice group or another. This procedure demonstrated that choosing treatment versus no treatment was significantly related to treatment preference, such that a higher proportion of individuals who preferred harm reduction also chose no treatment ($\chi^2 = 9.207$, $p = .002$).

Exploratory analyses: Barriers to treatment

Barriers to treatment endorsed by more than half the sample on the Barriers Questionnaire included the following: "My drug/alcohol use seemed fairly normal to me" (56.9%), "I thought I could handle it on my own" (70.6%), "I didn't want to be told to stop using drugs/alcohol" (56.9%), "I didn't want somebody telling me what to do with my life" (56.9%), "I liked drugs/alcohol and didn't want to give them/it up" (60.8%) "I liked getting high/drunk" (68.6%), and "Using drugs/alcohol was a way of life for me" (56.9%). Barriers that were reported to have the least importance for participants are as follows (noted by the percentage of people who endorsed this item): "Someone important to me disapproved of my getting help" (9.8%), Somebody I know had a bad experience with treatment" (5.9%), "I was afraid of the people I might see" (7.8%), "Other people discouraged me from seeking help" (2.0%), and "I thought people would make fun of me" (5.9%).

Table 8 shows each item on the Barriers Questionnaire, the percentage of the sample positively endorsing each item, and the factor in which the item was categorized. When items from the Barriers Questionnaire were grouped into our predetermined

factors, the lack of motivation category showed the highest average score (M = 1.41, SD = 0.75), followed by self-perception (M = 1.30, SD = 0.78), then negative perception of treatment (M = 0.79, SD = 0.50), cost/availability (M = 0.75, SD = 0.62), fear of consequences (M = 0.67, SD = 0.60), and lastly, stigma (M = 0.59, SD = 0.57). These scores did not significantly differ by gender, and they did not correlate with age.

We examined correlations between the scores in each category scores and other variables including the Readiness score, the BSI GSI, as well as the ASI composite scores from the medical, alcohol, drug, and family/social sections. Interestingly, the Readiness score and the score within the lack of motivation category derived from the Barriers Questionnaire were not related (r = .109, p = .451). Intuitively, these two constructs should correlate, most likely in a negative way such that higher scores on the lack of motivation scale on the Barriers Questionnaire would predict lower Readiness scores on the URICA. We address reasons for this mismatch in our discussion. Significant positive correlations were found between the GSI and three of the Barriers Questionnaire categories: cost/availability (r = .304, p = .030), negative perceptions of the treatment experience (r = .400, p = .004), and fear of outside consequences (r = .373, p = .007). The drug composite score was positively correlated to the fear of negative consequences factor (r = .318, p = .023).

Exploratory analyses: Etiology of addiction

One focus of this study to examine the pathways through which individuals developed substance abuse or dependence problems. To this aim, people were asked to recall the age at which they began using substances. For the entire sample, the mean age of first use of any substance was 12.3 (SD = 3.8). Additionally, participants were asked

to discuss their primary problem substance and determine the age at which they felt their abuse of this substance became "problematic". The mean age at which problematic substance use began was reported to be 21.6 (*SD = 6.8).*

In terms of how people were introduced to the first substance they ever used, 43.5% indicated they were with a family member during the initial use of the first substance they ever used, and 30.4% of the sample reported that they were with a "close friend" the first time they used the problem substance. In response to this same item, about 13% reported being with a group of friends, 8.7% reported being alone , and 4.3% reported being with a "group of people whom I didn't know."

Discussion

This study contributes to the knowledge base regarding motivation for treatment among non-treatment seeking substance abusers. To accomplish this aim, the investigators examined the construct of motivation, several possible variables that relate to a person's readiness to change, as well as what might prohibit an individual's change process. One strength of this research study is that we captured this information in an authentic way, using a sample of individuals who had not voluntarily presented to treatment. As well, most participants met at least one criterion for a substance abuse disorder as dictated by the American Psychiatric Association's diagnostic guidelines (*DSM-IV-TR*; 2000*)*. Specifically, individuals in the current study had recurrent substance-related legal problems.

Motivation: Summary and interpretation

Our findings provide support for the idea that individuals suffering with substance abuse disorders show some degree of readiness for change, and this level of motivation differs according to various aspects of a person's psychosocial well being. Even though this sample was not seeking treatment, the results from the URICA indicate a relatively high level of readiness for change. Specifically, nearly three quarters of the sample reported being in a Contemplative stage of change in terms of substance use behaviors. These results suggest that study participants may have been contemplating behavior change, but did not do so because of certain barriers. An alternative interpretation would suggest that individuals in our sample were *not* motivated for treatment until incarcerated and subsequently recruited into the study, at which time they became more contemplative about change. Either way, our findings suggest that controlled settings represent a context

in which individuals may be open to the idea of treatment, or at least they may be willing to contemplate the consequences of substance use.

In addition to looking at the URICA's measure of intrinsic motivation, we also examined the variables that represent external motivators and how they affect readiness to change substance abuse behavior (i.e., the Readiness score). Although, as a whole, the suggested predictor variables did not predict readiness to change, several important individual relationships were present in the data. As predicted, psychological distress was related to motivation in our sample, such that increased levels of reported psychological symptomatology were found to be related to higher levels of motivation to change substance use behavior. This result might mean that psychological distress serves as motivating factor to change substance abuse behavior. Outreach and intervention, therefore, may look different for individuals suffering with more severe psychopathology. We talk about the practical application of this information below. Besides the apparent relationship between psychological distress and readiness to change, overall BSI and BDI scores demonstrate some degree of psychopathology in our sample. The prevalence of co-occurring psychological and substance abuse disorders is well documented in the literature, and consequently, this result is unsurprising.

In addition to psychological distress, problems in the family/social sphere were associated with higher Readiness Scale scores in our sample. This indicates that those experiencing greater interpersonal problems are more likely to be motivated to change substance abuse behavior. These results highlight the importance of family and social relationships in influencing behavior, and they also illustrate the idea that family members not only influence the development and maintenance of substance abuse, but

also play a role in successfully intervening and helping an individual achieve abstinence. This kind of recognition has implications for involving families in treatment (discussed in more detail below). As with our results, other data indicate that family discord can be a motivator for treatment, sometimes in the form of informal mandates (e.g., ultimatums, threats; Gerdner & Holmberg, 2000; Polcin & Weisner, 1999).

Interestingly, the other variables we hypothesized as being related to readiness to change (i.e., medical problems, duration of alcohol and drug use, and drug of choice) were not correlated to readiness to change in our sample. These variables were unrelated to motivation for change in our sample, and this may be one reason our overall regression model was not significant (another major reason for this finding may have been the small sample size resulting in lack of power). However, it is useful to consider why these individual variables were unrelated to the dependent variable in the first place. We will consider each of these nonsignificant relationships individually. Why would increased medical problems be unrelated to motivation for behavior change? This result is counter to one study (O'Toole, Pollini, Ford, & Bigelow, 2008), which found that 80% of substance abusers reported physical problems as a motivator for treatment. One possible reason for our finding could be directly related to the participant pool, a group of individuals with a mean age of 32.4 who are physically healthy enough to engage in criminal activity. Perhaps the current sample is more able bodied and therefore less responsive to the external motivator of health concerns. This logic would be in line with other research conducted by Marshall and Hser (2002). These researchers found that a group of substance abusers mandated to treatment from the criminal justice system had

better physical health status than the group who presented to treatment without legal mandates.

Duration of addiction is another variable that was found to be unrelated to motivation for substance use behavior change, which is counter to the original hypothesis. The investigators hypothesized that the longer a person had been abusing substances, the more negative effects the person may have experienced from drug use, corresponding to more urgency to change. There could be several reasons why a statistically significant correlation between motivation and duration of addiction was not obtained, and we discuss one possibility here. One correlate of duration of addiction is number of treatment episodes, implying at least the same number of relapses. The individuals in our sample with lengthy substance abuse histories may have had low levels of self-efficacy around behavior change because of their many treatment or quit attempts, followed by a relapse. Several studies have linked self-efficacy and outcome expectations to the prediction of relapse for clients who present for treatment for both drinking behavior (McKay, Maisto, & O'Farrell, 1993; Rist & Watzl, 1983, Rychtarik, Prue, Rapp, & King, 1992; Sitharthan & Kavanagh, 1991), and drug use behaviors (Burling, Reilly, Moltzen, & Ziff, 1989). Using this logic, we might not have detected a relationship between motivation and duration of addiction because individuals in our sample with long-term addiction may have had low self-efficacy due to multiple treatment attempts, as well as low motivation for behavior change.

The final variable that we erroneously predicted would be related to readiness to change was that of drug of choice. We hypothesized incorrectly that individuals who abused drugs with a higher addiction potential (e.g., opiates) would show higher levels of

motivation to change than those who used, say, marijuana, a drug on which individuals typically do not experience severe physical withdrawal symptoms. It is possible that our results were influenced by the inherent difficulties in designating a "drug of choice." We based the variable representing primary drug of choice on the ASI question, which states: "Which substance is the major problem?" (referring to a list of drugs that the interviewer inquires about, both in terms of frequency as well as duration of use).

Identifying a primary substance of abuse may be difficult, given that polysubstance abuse is so common among substance abuse treatment seekers; estimates indicate that prevalence of polysubstance abuse is around 50% (SAMHSA, 2006; Kedia, Sell, & Relyea, 2007). Deciding on one particular substance of abuse may be problematic because this process is highly subjective and may not reflect more objective measures such as frequency or length of addiction. Although the current participants could choose the option "more than one drug," this category is named as such and does not specify particular substances or combinations of drugs. Thus, this category treats all polysubstance abuse as equal, and potentially important information may be lost. In the process of the analyses examining drug of choice and motivation, we found that individuals who chose "no substance" had the lowest level of readiness to change. This finding seems intuitive, as individuals not perceiving the substance use as being problematic will not see any need to change drug use behavior.

Treatment Choice

Two main findings from the treatment choice questionnaire provide important and applicable information for the field of substance abuse treatment. First, a higher percentage of participants chose an abstinence-based treatment rather than a harm-

reduction philosophy of treatment. Second, individuals who chose the abstinence-based treatment option had higher levels of motivation than the harm reduction group. We consider these findings in order below.

The current study's script describing an abstinence-based philosophy of treatment was adopted from the language of traditional 12-Step oriented mutual support programs. These groups include Alcoholics Anonymous (AA), Narcotics Anonymous (NA), Cocaine Anonymous (CA), Crystal Meth Anonymous (CMA) and a number of others. Because of the similarity in language between our script and 12-Step programs, we could extrapolate that the current participants who preferred the abstinence-based treatment would be open to attending 12-Step meetings. Additionally, the group preferring the abstinence-based treatment would presumably be open to formal treatment programs that emphasize the 12 Steps. An alternative interpretation is that more participants preferred the abstinence-based treatment option because it sounded comparable to treatments they had already experienced, and therefore they felt the most comfortable with this option. In either case, the result is a positive one for the treatment community. This choice (i.e., treatment focusing on the12-Steps) represents an important, readily available, and pervasive resource in recovery from substance use disorders, whether associated with formal treatment or not (Humphreys 1999; Kelly 2003). Furthermore, these mutual support programs are highly accessible and are available at no cost in communities throughout the world. For some individuals with substance use disorders, 12-Step programs are the only resource ever used to recover from an alcohol or drug problem (Hasin & Grant 1995; Kaskutas, Weisner, & Caetano, 1997). With uncertainty about state and federal budgets in the years to come, no-cost accessible support may be the best

alternative for many individuals in need of substance abuse treatment. Our data indicated that a higher percentage of the sample preferred this type of treatment, which assures that this population has at least one option for support and/or aftercare following a formal treatment episode.

In line with our hypothesis, individuals who chose a 12-Step philosophy of treatment (as opposed to one along the lines of harm reduction) had higher levels of readiness to change substance use behavior. In fact, when asked the question of why the preferred treatment was chosen, individuals who chose 12-Step described the harm reduction treatment as one reserved for individuals with low levels of motivation. For example, one participant stated that "[harm reduction] sounds like a cop-out," (39-year-old male). Another participant indicated, "I'd rather go to [harm reduction treatment] because it was fun, but [abstinence-only] is the only way to get better" (35-year-old male). While the criticisms of harm reduction put forth by these participants may seem harsh, our results indicated that the group preferring harm reduction exemplified lower levels of motivation. According to the qualitative comments, the harm reduction group indicated their preference based on a genuine desire to experience a different type of treatment than 12-Step, something many people who chose harm reduction had already tried. One participant who preferred harm reduction stated, "[Abstinence-based treatment] is like ones I've done before and it hasn't worked" (47-year-old male). Another participant referred to the eighth step in the 12-Steps, which directs recovering addicts/alcoholics to make a list of all persons harmed over the course of an individual's addiction, and make amends to them (Alcoholics Anonymous, 1981). This 52-year-old

male participant stated: “I don't want to apologize to nobody. It would put me in a situation where I'd want to go use.”

Participants in both groups had strong feelings about the disease model of addiction. Those who chose the abstinence-based model tended to agree with the disease model concept, epitomized by a 21-year-old male who explained why he preferred this model by stating: “Because I believe that my addiction is definitely a disease. Someone telling me where to get clean needles isn’t going to help me. Once I start, I can’t stop. There’s no in between for me.” Alternatively, a different participant with the same identifying information (21-year-old male) preferred harm reduction and did not accept the disease model, he stated: “I don’t think it’s a disease. I think a lot of it is influenced by your environment.” Another participant explained: “I don’t consider drug addiction to be a disease. I’ve seen several people to go NA and AA and it hasn’t worked for them” (35-year-old male). This comment also demonstrates the participant’s opinions about the ineffectiveness of 12-Step programs, though in this case his outlook was gained vicariously.

Barriers to treatment

Consistent with the findings of Miller, Sovereign and Krege (1988) who examined problem drinkers, the barriers endorsed by more than half of the current sample had to do primarily with motivation and self-perception of drug use. Although motivation was cited as a barrier to treatment, the majority of the sample reported contemplating change according to the URICA, indicating some level of motivation. The results may seem opposing; however, one can interpret these findings as the sample’s exhibition of

ambivalence about change, a common characteristic of many people contemplating behavior change.

Interestingly, the barriers that participants tended to select were self-imposed in nature, as opposed to systemic. This means that the sample's perception is that substance abuse treatment is available, as long as the individual is ready enough to change. In many ways, the systemic barriers (e.g., lack of transportation or funding for treatment) seem easier to break down, given that jurisdictions have appropriate funding. But how do we address this other type of barrier, one that is marked by a person's ambivalence about change or self-identified role as a substance abuser? Because we know that motivational interventions (i.e., motivational interviewing, motivational enhancement therapy) help individuals resolve ambivalence about problematic behavior, this direction would seem appropriate for the population of non-treatment seeking substance abusers. Next we consider implementation issues of such an intervention and other implications of our research findings.

Future directions for researchers and clinicians

Researchers, clinicians, and policy makers alike can utilize, as well as build upon, our findings. We suggest that the aforementioned professionals reflect on the finding that the majority of our participants reported contemplating behavior change. It would be easy to assume that substance abusing inmates or other non-treatment seeking chronic substance abusers are not interested in treatment, but our results suggest differently. Instead, our findings imply that non-treatment seekers are contemplating behavior change, which illustrates a need to develop programs that would be directed toward this group and capitalize on their existing motivation. Such programs could take

the form of brief motivation enhancing interventions implemented in detention facilities and prisons, targeting a population similar to the one used in the current sample. Additionally, these efforts could take place in other controlled environments where non-treatment seeking substance abusers may gather, including detoxification facilities and medical settings.

We also have information about how interventions and outreach could be catered to certain substance abusing groups. Based on our results, for example, we might recommend that an emphasis on physical problems as a motivational factor be used in health care settings, but not in detention facilities. Our result showing a seeming lack of connection between duration of addiction and readiness to change may be useful for providers implementing brief motivational techniques, as this information indicates that all individuals may benefit from such interventions, not just ones who have exemplified long-term addictions.

Going a step further, we can use our data to help funnel individuals into an appropriate type of treatment, one that might fit with their particular preference. Although past treatment matching studies have not shown favorable outcomes when assigning particular patients characteristics with specific treatments, our results indicate that more motivated individuals may be better suited for 12-Step oriented treatments. Conversely, people exemplifying lower levels of motivation would appear to be well matched to a treatment emphasizing harm reduction. At the very least, it seems logical to match individuals who prefer 12-Step treatment to a treatment focusing on "working the steps" and attending meetings. A different approach to treatment could be suggested for those opposed to the 12-Step philosophy, perhaps one that focused on a biopsychosocial model

of addiction (as opposed to a disease model). Also, an alternative to 12-Step based treatment might use interventions targeting all stages of change rather than just Contemplation or Action.

Our finding indicating a positive correlation between readiness to change and psychological distress has implications for developing intervention and outreach programs that target groups struggling with psychological problems. One such program is described by Magura, Cleland, Vogel, Knight, and Laudel (2007): the Double Trouble in Recovery (DTR), a specialized 12-Step program for individuals suffering with comorbid psychiatric and substance abuse problems. These researchers found that this program was successful. Specifically, attendance and involvement with this treatment was significantly associated with Self-efficacy for Recovery and three quality of life measures: Leisure Time Activities, Feelings of Well-Being, and Social Relationships. DTR appears to be a promising example of available treatment that could be integrated into a comprehensive treatment for individuals with comorbid disorders.

Another connection we made through our results is that between the importance of family discord and motivation for treatment, underscoring the need to integrate family into treatment or treatment referral for substance abusers. Although certain family therapies have been tested empirically, Whittinghill (2002) pointed out that many substance abuse treatment providers are woefully undertrained in family therapy techniques.

While the issue of practicing within one's competency is applicable to professionals treating any population, it may be especially relevant for the area of substance abuse. Whittinghill cited research that indicated 40-55% of substance abuse

services, including family therapy, "are provided by paraprofessional counselors who lack formal counselor preparation" (p. 76). It is clear from these statistics that we have training needs in the substance abuse treatment field that have not been met. This has implications for providers who are using family therapy techniques with their substance abusing clients. For example, clinicians using family therapy who adhere to the family disease model of addiction (which is more common among paraprofessionals), may place family members in a victim role, focus on how families *enable* the user, and ignore other important familial issues. We are unsure about whether this kind of approach could be helpful (there is no empirical evidence suggesting that it is), but more worrisome is the idea that such treatment could actually be harmful to clients. It seems that such as approach would have to employed with a great deal of care, lest family members blame themselves for the addiction of their loved one, increasing their overall level of distress.

Researchers should consider further investigation and development on treatments that include the entire family. Although there are examples of intervention strategies involving family members, there is really only one treatment supported by empirical evidence that directly involves family: Behavioral Couples Therapy (BCT; O'Farrell & Fals-Stewart, 2000). Nonetheless, this treatment just focuses on the couple, excluding other family members that may be affected.

Perhaps even before a discussion of the development of new treatments that incorporate families, we might further the field of substance abuse treatment by figuring out how to integrate treatments into practice before developing new ones. According to research, the inclusion of family members in substance abuse treatment

can be beneficial. Ironically, what is occurring in current clinical practice does not mirror our empirical data. For example, there is a plethora of evidence supporting the efficacy of BCT; however, Fals-Stewart and Birchler (2000) found that a very small percentage of community-based outpatient treatment programs in the United States actually use BCT. On the other hand, we know that the use of mutual self-help groups enjoy widespread popularity. According to a national survey conducted by Room and Greenfield (1993), approximately 4.6% of the population has attended Al-Anon at some time in their lives. These same researchers estimated that 1.7% of the population has attended similar groups such as Adult Children of Alcoholics (ACA or ACOA). To summarize, we need to promote the use of evidenced-based family therapies in existing community-based treatment programs. Such programs serve the lion's share of substance abusers, yet few of the family treatments are widely used in these settings.

Study limitations and strengths

This study has a number of methodological limitations. First, the sample was small, and this limits the power to detect significant differences or association between the key variables. Data collection for this study relied on self-report; a direct measure of substance use (such as urine screens) was not available for our sample. Even so, research on self-report data with substance using populations has shown high reliability with biological markers of use (e.g. Sherman & Bigelow, 1992; Zanis, McLellan & Randall, 1994). On a related note, participants were asked to respond to items on the ASI regarding events in the past, for example the number of times they had been arrested. Such information may be subject to memory biases, and the accuracy of endorsement may be obscured by past or recent substance use.

As mentioned before, the primary strength of this study was its sample: non-treatment seeking individuals who struggle with substance abuse issues. This study of non-treatment seeking users as they exist in rural areas, such as Montana, has served to widen the scope of available data on rural substance abuse and increase awareness about motivation within this group. Another strength of this study is that we included an abundance of measures used for the purposes of understanding the sample on multiple levels. In particular, looking at treatment choice is a unique variable to examine with this population. Our hope is to begin giving the treatment-receiving population a platform for stating their preference on issues that apply directly to them. Although many individuals receiving substance abuse treatment are in positions where choice has been eliminated, we feel strongly that the success of treatment might be informed by its consumers.

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Appendix A. Etiology of addiction questionnaire.

Etiology of Addiction Questionnaire

Instructions:

The following questions will ask you some questions about your past drug and alcohol use. Please answer them to the best of your ability.

First substance ever used		
Code	Question text	Answers
id	ID	
f_sub	What was the first substance you used? (You can check more than one.) *Note*: *Please do not include prescription drugs taken as prescribed.*	☐1 = Tobacco (cigarettes or chewing tobacco) ☐2 = Alcohol ☐3 = Marijuana ☐4 = Inhalants (gas huffing, glue sniffing, etc.) ☐5 = Hallucinogens ☐6 = Methamphetamine ☐7 = Cocaine ☐8 = Opiates (heroin, oxycontin, etc.) ☐9 = Other _____ ☐-8 = N/A ☐-9 = Don't know/no answer
f_age	How old were you at the time of your first [*first substance*] use?	☐-8 = N/A ☐-9 = Don't know/no answer
f_person	Who were you with the first time you used [*first substance*]? *Check all that apply.*	☐1 = A close friend ☐2 = A group of close friends ☐3 = An acquaintance whom I didn't know well ☐4 = A group of people whom I didn't know well ☐5 = Family members ☐6 = Other ☐7 = Alone ☐-8 = N/A ☐-9 = Don't know/no answer
f_obtain	Who obtained the substance the first time you used it?	☐1 = A close friend ☐2 = A group of close friends ☐3 = An acquaintance whom I didn't know well ☐4 = A group of people whom I didn't know well ☐5 = Family members ☐6 = Other ☐7 = Alone ☐-8 = N/A

		☐-9 = Don't know/no answer
f_rate	How would you rate your first experience with [*first substance*]?	☐1 = Very positive ☐2 = Somewhat positive ☐3 = Fair ☐4 = Somewhat negative ☐5 = Very negative ☐-8 = N/A ☐-9 = Don't know/no answer
f_expect	What did you expect to happen, and how did you expect to feel?	☐-8 = N/A ☐-9 = Don't know/no answer
Second substance ever used		
s_sub	What was the second substance you used? *Note*: *Please do not include prescription drugs taken as prescribed.*	☐1 = Tobacco (cigarettes or chewing tobacco) ☐2 = Alcohol ☐3 = Marijuana ☐4 = Inhalants (gas huffing, glue sniffing, etc.) ☐5 = Hallucinogens ☐6 = Methamphetamine ☐7 = Cocaine ☐8 = Opiates (heroin, oxycontin, etc.) ☐9 = Other _____ ☐-8 = N/A ☐-9 = Don't know/no answer
s_age	How old were you at the time of your first [*second substance*] use?	☐-8 = N/A ☐-9 = Don't know/no answer
s_person	Who were you with the first time you used [*second substance*]?	☐1 = A close friend ☐2 = A group of close friends ☐3 = An acquaintance whom I didn't know well ☐4 = A group of people whom I didn't know well ☐5 = Family members brother ☐6 = Other ☐7 = Alone ☐-8 = N/A ☐-9 = Don't know/no answer
s_obtain	Who obtained the substance the first time you used it?	☐1 = A close friend ☐2 = A group of close friends ☐3 = An acquaintance whom I didn't know well ☐4 = A group of people whom I didn't know well ☐5 = Family members ☐6 = Other

		☐ 7 = Alone ☐ -8 = N/A ☐ -9 = Don't know/no answer
s_other	Were you using other substances at the time you tried [*second substance*]? (Yes/No)	☐ 0 = No ☐ 1 = Yes ☐ -8 = N/A ☐ -9 = Don't know/no answer
s_othsub	*If yes, please list other substances.*	☐ 1 = Tobacco (cigarettes or chewing tobacco) ☐ 2 = Alcohol ☐ 3 = Marijuana ☐ 4 = Inhalants (gas huffing, glue sniffing, etc.) ☐ 5 = Hallucinogens ☐ 6 = Methamphetamine ☐ 7 = Cocaine ☐ 8 = Opiates (heroin, oxycontin, etc.) ☐ 9 = Other _____ ☐ -8 = N/A ☐ -9 = Don't know/no answer
s_rate	How would you rate your first experience with [*second substance*]?	☐ 1 = Very positive ☐ 2 = Somewhat positive ☐ 3 = Fair ☐ 4 = Somewhat negative ☐ 5 = Very negative ☐ -8 = N/A ☐ -9 = Don't know/no answer
s_expect	What did you expect to happen, and how did you expect to feel?	☐ -8 = N/A ☐ -9 = Don't know/no answer
Third substance ever used		
t_sub	What was the third substance you used? *Note*: *Please do not include prescription drugs taken as prescribed.*	☐ 1 = Tobacco (cigarettes or chewing tobacco) ☐ 2 = Alcohol ☐ 3 = Marijuana ☐ 4 = Inhalants (gas huffing, glue sniffing, etc.) ☐ 5 = Hallucinogens ☐ 6 = Methamphetamine ☐ 7 = Cocaine ☐ 8 = Opiates (heroin, oxycontin, etc.) ☐ 9 = Other _____ ☐ -8 = N/A ☐ -9 = Don't know/no answer
t_age	How old were you at the time of your first [*third substance*] use?	☐ -8 = N/A ☐ -9 = Don't know/no answer
t_person	Who were you with the first time you used [*third substance*]?	☐ 1 = A close friend ☐ 2 = A group of close friends ☐ 3 = An acquaintance whom I didn't know

		well ☐4 = A group of people whom I didn't know well ☐5 = Family members ☐6 = Other ☐7 = Alone ☐-8 = N/A ☐-9 = Don't know/no answer
t_obtain	Who obtained the substance the first time you used it?	☐1 = A close friend ☐2 = A group of close friends ☐3 = An acquaintance whom I didn't know well ☐4 = A group of people whom I didn't know well ☐5 = Family members ☐6 = Other ☐7 = Alone ☐-8 = N/A ☐-9 = Don't know/no answer
t_other	Were you using other substances at the time you tried [*third substance*]?	☐0 = No ☐1 = Yes ☐-8 = N/A ☐-9 = Don't know/no answer
t_othsub	*If yes, please list other substances.*	☐1 = Tobacco (cigarettes or chewing tobacco) ☐2 = Alcohol ☐3 = Marijuana ☐4 = Inhalants (gas huffing, glue sniffing, etc.) ☐5 = Hallucinogens ☐6 = Methamphetamine ☐7 = Cocaine ☐8 = Opiates (heroin, oxycontin, etc.) ☐9 = Other _____ ☐-8 = N/A ☐-9 = Don't know/no answer
t_rate	How would you rate your first experience with [*third substance*]?	☐1 = Very positive ☐2 = Somewhat positive ☐3 = Fair ☐4 = Somewhat negative ☐5 = Very negative ☐-8 = N/A ☐-9 = Don't know/no answer
t_expect	What did you expect to happen, and how did you expect to feel?	☐-8 = N/A ☐-9 = Don't know/no answer
Primary problem substance(s)		
p_sub	What do you consider to be your	☐1 = Tobacco (cigarettes or chewing tobacco)

	primary problem substance(s)?	☐2 = Alcohol ☐3 = Marijuana ☐4 = Inhalants (gas huffing, glue sniffing, etc.) ☐5 = Hallucinogens ☐6 = Methamphetamine ☐7 = Cocaine ☐8 = Opiates (heroin, oxycontin, etc.) ☐9 = Other _____ ☐-8 = N/A ☐-9 = Don't know/no answer
p_age	*If you have not discussed this substance in the First, Second, or Third substance ever used, please answer the following question.* How old were you at the time of your first [*problem substance*] use?	☐-8 = N/A ☐-9 = Don't know/no answer
age_prob	At what age did you feel your use of [*problem substance*] became "problematic"?	☐-8 = N/A ☐-9 = Don't know/no answer
why_prob	Describe in your own words why you think your substance use escalated to a problematic level.	☐-8 = N/A ☐-9 = Don't know/no answer
p_person	*If you have not discussed this substance in the First, Second, or Third substance ever used, please answer the following questions.* Who were you with the first time you used [*problem substance*]?	☐1 = A close friend ☐2 = A group of close friends ☐3 = An acquaintance whom I didn't know well ☐4 = A group of people whom I didn't know well ☐5 = Family members ☐6 = Other ☐7 = Alone ☐-8 = N/A ☐-9 = Don't know/no answer
p_other	Were you using other substances at the time you tried [*problem substance*]? (Yes/No)	☐0 = No ☐1 = Yes ☐-8 = N/A ☐-9 = Don't know/no answer
p_othsub	*If yes, please list other substances.*	☐1 = Tobacco (cigarettes or chewing tobacco) ☐2 = Alcohol ☐3 = Marijuana ☐4 = Inhalants (gas huffing, glue sniffing, etc.) ☐5 = Hallucinogens ☐6 = Methamphetamine ☐7 = Cocaine ☐8 = Opiates (heroin, oxycontin, etc.) ☐9 = Other _____

		☐ -8 = N/A ☐ -9 = Don't know/no answer
p_rate	How would you rate your first experience with [*problem substance*]?	☐ 1 = Very positive ☐ 2 = Somewhat positive ☐ 3 = Fair ☐ 4 = Somewhat negative ☐ 5 = Very negative ☐ -8 = N/A ☐ -9 = Don't know/no answer
why_use	In your own words, why do you use drugs/alcohol?	☐ -8 = N/A ☐ -9 = Don't know/no answer
quit_pri	Before now, have you ever tried to quit [*problem substance*]? (Yes/No)	☐ 0 = No ☐ 1 = Yes ☐ -8 = N/A ☐ -9 = Don't know/no answer
	If "Yes", please answer the following 2 questions. If "No", please skip to the next question.	
quit_num	How many times have you tried to quit?	☐ -8 = N/A ☐ -9 = Don't know/no answer
quittime	What is the longest period of time you have been clean?	☐ -8 = N/A ☐ -9 = Don't know/no answer
quit_mot	What was your motivation for quitting?	☐ -8 = N/A ☐ -9 = Don't know/no answer
quit_dif	In your own words, what was the most difficult aspect of quitting?	☐ -8 = N/A ☐ -9 = Don't know/no answer
Psychological Health History The following questions have to do with your psychological health *before* you started using any drugs or alcohol.		
psyhltpr	How would you describe your psychological health before you started using drugs or alcohol?	☐ 1 = Very good ☐ 2 = Somewhat good ☐ 3 = Fair ☐ 4 = Somewhat poor ☐ 5 = Very poor ☐ -8 = N/A ☐ -9 = Don't know/no answer
psy_dxp	Were you diagnosed with any psychological disorders before you began using substances (depression, ADHD, etc.)? (Yes/No)	☐ 0 = No ☐ 1 = Yes ☐ -8 = N/A ☐ -9 = Don't know/no answer

psydxtyp	*If "Yes", list diagnosis.*	☐-8 = N/A ☐-9 = Don't know/no answer
psy_undx	Before you began using substances, do you believe you suffered from undiagnosed psychological disorders such as depression or ADHD? (Yes/No)	☐0 = No ☐1 = Yes ☐-8 = N/A ☐-9 = Don't know/no answer
psyundxt	*If "Yes", list diagnosis.*	☐-8 = N/A ☐-9 = Don't know/no answer
psy_trau	Did you suffer from a traumatic event before you began using substances?	☐0 = No ☐1 = Yes ☐-8 = N/A ☐-9 = Don't know/no answer
psyhltcu	How would you describe your psychological health now?	☐1 = Very good ☐2 = Somewhat good ☐3 = Fair ☐4 = Somewhat poor ☐5 = Very poor ☐-8 = N/A ☐-9 = Don't know/no answer
psy_chng	How do you feel your psychological health has changed since you started using substances?	☐-8 = N/A ☐-9 = Don't know/no answer

Appendix B. Treatment choice rationales

The following are descriptions of two types of substance abuse treatment: Treatment A and Treatment B. Please read each of them. Imagine that you are given a choice between these two treatments to help you with an addiction problem. You have to choose one of them. Please mark an "X" by the treatment you would rather have. Once you have finished, please go on to the next page for further instruction. Thank you!

Treatment A _____

With Treatment A, your counselor is a person who believes that addiction is a disease from which people can never be cured, but can work on recovery. In Treatment A, you will meet individually with a counselor to focus on staying 100% clean from all drugs and alcohol. You will also meet in a group setting in order to get support for being clean. In such groups, you might work through the 12-steps outlined by an Alcoholics Anonymous (AA) or Narcotics Anonymous (NA) program. Such steps include apologizing to people in your life that you may have hurt through your substance use. Individual and group sessions will occur once per week.

Treatment A has a strict policy around drug use, and you will be randomly drug tested to determine if you have been using drugs. The purpose of this is to encourage you to stay clean. Positive urine screens will result in you getting kicked out of Treatment A.

*Treatment B*_____

With Treatment B, your counselor is a person who believes that addiction is not a disease, but is a process that is influenced by a person's genetics, mindset, and environment. In Treatment B, you will meet individually with a counselor to help you reduce the harmful consequences of your drug or alcohol use. For example, you might identify problems are related to drug or alcohol use (like getting in a car accident because of drunk driving or getting a disease because of sharing needles). Then, you and your counselor would talk about a plan to (like finding a sober driver or where you would get clean needles) as a way to avoid the problems associated with drug and alcohol use. As a part of Treatment B, you will meet in a group setting as well. Here, you can talk to and get support from other people who are attempting to reduce the negative consequences related to drug and alcohol use. Individual and group sessions will occur once per week.

Treatment B sees relapse as a learning experience, and if you use while in this treatment, you will work with your counselor to determine what can be learned from this experience. You will *not* get kicked out of treatment for using in Treatment B.

Please continue on to the next page.

Final Choice

Now, imagine that you have the choice between attending the treatment that you choose above, and no treatment at all. Please indicate what you would choose to do in this situation. Mark an "X" next to your choice.

_____ *I would choose to attend my treatment of choice.*

_____ *I would choose not to attend treatment at all.*

Table 1

Sample characteristics.

	Total Sample (N = 51)
Race	
Caucasian	31 (60.8%)
African American	3 (5.9%)
Native American	12 (23.5%)
Hispanic	5 (9.8%)
Gender	
Male	41 (80.4%)
Female	10 (19.6%)
Mean age (SD)	32.4 (10.1)
Reported Sexual Orientation	
Heterosexual	46 (90.2%)
Gay	2 (3.9%)
Lesbian	0
Bisexual	2 (3.9%)
Prefer not to answer	1 (2.0%)

Table 2

Psychosocial stability

	Total Sample (*N*=51)
Emotionally abused in lifetime, %	54.9
Physically abused in lifetime, %	33.3
Sexually abused in lifetime, %	13.7
Participants reported that one or both parents had an alcohol or drug problem, %	35.5
Monthly net income, past 30 days (*SD*)	$960 (1220)
Reported receiving illegal income, past 30 days, %	16
Reported having full-time employment, past 3 years, %	45

Table 3

Means and standard deviations of BSI subscale scores for current and normative samples

	Current sample						Normative samples					
	Overall (*N*=51)		Female (*N*=10)		Male (*N*=40)		Adult non-patient (*N*=719)		Psychiatric outpatient (*N*=1002)		Psychiatric inpatient (*N*=310)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Somatization	.74	.95	.93	1.05	.69	.93	.29	.40	.83	.79	1.02	.91
Obsessive-Compulsive	1.05	.96	1.01	1.16	1.04	.93	.43	.48	1.57	1.00	1.61	1.07
Interpersonal Sensitivity	.74	.90	.75	.75	.74	.94	.32	.48	1.58	1.05	1.48	1.11
Depression	1.14	.97	1.30	.62	1.10	1.04	.28	.46	1.80	1.08	1.87	1.21
Anxiety	.80	.88	.67	.83	.84	.90	.35	.45	1.70	1.00	1.70	1.16
Hostility	.51	.69	.50	.59	.51	.71	.35	.42	1.16	.93	1.00	.97
Phobic Anxiety	.41	.62	.30	.46	.43	.65	.17	.36	.86	.88	1.07	1.00
Paranoid Ideation	.90	.79	1.02	.78	.87	.80	.34	.45	1.14	.95	1.26	1.23
Psychoticism	.84	.78	1.00	.81	.80	.78	.15	.30	1.19	.87	1.27	.98
GSI	.81	.71	.85	.56	.80	.75	.30	.31	1.32	.72	1.37	.86

Table 4

t-test values for comparison between the current sample and normative samples for BSI subscales

	Adult non-patient (*N*=719)	Psychiatric outpatient (*N*=1002)	Psychiatric inpatient (*N*=310)
Somatization	3.376**	-.688	-2.118
Obsessive-Compulsive	4.557**	-3.880**	-4.176**
Interpersonal Sensitivity	3.345*	-6.685**	-5.889**
Depression	6.301**	-4.871**	-5.385**
Anxiety	3.671**	-7.247**	-7.247**
Hostility	1.625	-6.181**	-5.151**
Phobic Anxiety	2.747*	-5.22**	-7.648**
Paranoid Ideation	5.059**	-2.143	-3.223*
Psychoticism	6.304**	-3.208*	-3.940**
GSI	5.105**	-5.167**	-5.671**

*$p \leq .01$
**$p \leq .001$

Table 5

Correlations among predictor and outcome variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	-														
2. Gender	-.288*	-													
3. Race	-.265	.432**	-												
4. Education	-.001	.001	-.136	-											
5. Precontemplation	.061	-.120	-.046	-.283*	-										
6. Contemplation	.058	.171	.059	.233	-.626*	-									
7. Action	-.084	.267	.174	-.116	-.457*	.606**	-								
8. Maintenance	.065	.122	.107	.180	-.413*	.685**	.625**	-							
9. Readiness score	-.004	.200	.114	.192	-.775*	.885**	.798**	.830**	-						
10. BSI GSI	-.018	.031	-.051	.036	-.294*	.241	.246	.285*	.327*	-					
11. Medical composite score	.292*	.034	.039	-.273	-.016	-.101	.024	-.018	-.023	.071	-				
12. Alcohol composite score	.008	-.094	-.034	.299*	-.213	.278*	.035	.199	.227	.097	.312**	-			
13. Drug composite score	-.090	.105	.127	-.007	.079	.146	.155	.133	.100	.009	.294**	.307**	-		
14. Total years substance use	.619*	-.143	-.179	-.118	-.008	.167	-.052	.116	.075	-.008	.243	.178	-.037	-	
15. Family/social composite score	-.023	.052	.008	.321*	-.359*	.333*	.274	.335*	.400**	.603**	.019	.318**	.187*	-.082	-

*$p < .05$ **$p < .01$

Table 6

Linear regression model predicting readiness to change.

Predictors	Regression coefficient	SE	*t*-Value	*p*-value	β
Family/Social distress	3.171	2.076	1.528	.134	.270
Alcohol severity	.498	.585	1.173	.399	.164
Drug severity	.124	.972	.765	.899	.103
BSI Global Severity Index	1.786	1.523	.851	.247	.147
Medical severity	2.053	2.717	.127	.454	.018

Table 7

Comparison of BSI scores for stage of change groups.

BSI Subscales	Group	Mean score	*SD*
Somatization			
	Total (N =51)	0.63[a]	0.82
	Precontemplation (*n*=8)	0.09	0.13
	Contemplation (*n*=38)	0.76[a]	0.12
	Preparation/Action (*n*=4)	1.42[a]	0.71
Obsessive-compulsive			
	Total (N =51)	1.06[a]	0.97
	Precontemplation (*n*=8)	0.23	0.08
	Contemplation (*n*=38)	0.95[a]	0.15
	Preparation/Action (*n*=4)	1.34[a]	0.67
Interpersonal sensitivity			
	Total (N =51)	0.76[a]	0.90
	Precontemplation (*n*=8)	0.22[a]	0.08
	Contemplation (*n*=38)	0.94[a]	0.15
	Preparation/Action (*n*=4)	0.97[a]	0.48
Depression			
	Total (N =51)	1.14[a]	0.98
	Precontemplation (*n*=8)	0.56[a]	0.65
	Contemplation (*n*=38)	1.18[a]	0.95
	Preparation/Action (*n*=4)	1.91[a]	1.34
Anxiety			
	Total (N =51)	0.81[a]	0.89
	Precontemplation (*n*=8)	0.46[a]	1.63
	Contemplation (*n*=38)	0.81[a]	0.86
	Preparation/Action (*n*=4)	1.40[a]	0.73
Hostility			
	Total (N =51)	0.52[a]	0.69
	Precontemplation (*n*=8)	0.38[a]	0.49
	Contemplation (*n*=38)	0.55[a]	0.74
	Preparation/Action (*n*=4)	0.45[a]	0.64

Phobic anxiety			
	Total (N =51)	0.41[a]	0.62
	Precontemplation (*n*=8)	0.08[a]	0.10
	Contemplation (*n*=38)	0.46[a]	0.67
	Preparation/Action (*n*=4)	0.65[a]	0.60
Paranoid ideation			
	Total (N =51)	0.91[a]	0.80
	Precontemplation (*n*=8)	0.50[a]	0.43
	Contemplation (*n*=38)	0.98[a]	0.87
	Preparation/Action (*n*=4)	1.0[a]	0.33
Psychoticism			
	Total (N =51)	0.84[a]	0.90
	Precontemplation (*n*=8)	0.30[a]	0.26
	Contemplation (*n*=38)	0.88[a]	0.76
	Preparation/Action (*n*=4)	1.5	1.18
Global severity index			
	Total (N =51)	0.81[a]	0.72
	Precontemplation (*n*=8)	0.32	0.25
	Contemplation (*n*=38)	0.86[a]	0.71
	Preparation/Action (*n*=4)	0.99[a]	0.50

Note. Any two means of the same BSI subscale score that share a common superscript are not significantly different. All other differences are significant at $p < 0.05$ by Tukey's *post-hoc* test.

Table 8
Percentage endorsing items on the Barriers Questionnaire and corresponding factors

Question	% indicating "Important" or "Very Important"	Factor
1. My drinking/drug use seemed fairly normal to me.	56.9	Self-perception
2. No one told me I had a problem with drugs/alcohol or encouraged me to seek help.	25.5	Stigma
3. I didn't think I had a serious problem with drugs/alcohol.	39.2	Self-perception
4. I thought I could handle it on my own.	70.6	Self-perception
5. I didn't think of myself as an addict/alcoholic.	45.1	Self-perception
6. I was concerned about what other people would think if me if I went for help.	31.4	Stigma
7. I was too embarrassed or ashamed.	37.3	Stigma
8. I thought that my family would be embarrassed.	27.5	Stigma
9. I thought my job might be in danger if I went for help.	27.5	Fear
10. I didn't know where to go for help.	23.5	Cost/Availability
11. I didn't want to be told to stop using drugs/alcohol.	56.9	Motivation
12. I didn't think it would do any good.	40.0	Negative perceptions
13. I couldn't afford to pay for help.	43.1	Cost/Availability
14. I had no transportation, no way to get there.	19.6	Cost/Availability
15. I needed someone to take care of my children while I was getting help.	15.7	Cost/Availability
16. I didn't have the time.	35.3	Cost/Availability
17. I was afraid I'd be put into a hospital.	15.7	Fear
18. I didn't think I needed any help.	41.2	Self-perception
19. Someone important to me disapproved of my getting help.	9.8	Stigma

20. I hate being asked personal question.	23.5	Negative perceptions
21. I was afraid that I would fail, or that it wouldn't help me.	31.4	Fear
22. I thought I was too young to be getting help or treatment.	17.6	Self-perception
23. I didn't want somebody telling me what to do with my life.	56.9	Negative perceptions
24. I've had a bad experience with treatment before.	15.7	Negative perceptions
25. Somebody I know had a bad experience with treatment.	5.9	Negative perceptions
26. I was afraid of what might happen in treatment.	19.6	Negative perceptions
27. My drug/alcohol use wasn't causing any problems as far as I could see.	49.0	Self-perception
28. I don't like to talk in groups.	37.3	Negative perceptions
29. I liked drugs/alcohol and didn't want to give them up.	60.8	Motivation
30. I thought I'd lose my friends if I went for help.	13.7	Fear
31. I was worried about the bad feelings of going through withdrawal from drugs/alcohol.	13.7	Fear
32. I didn't know how I could live without drugs/alcohol.	27.5	Self-perception
33. I thought that going for help might get me in legal trouble.	33.3	Fear
34. It just seemed like too much trouble to go for help.	31.4	Motivation
35. I liked getting high/drunk.	68.6	Motivation
36. I couldn't get time off from work.	17.6	Cost/Availability
37. Using drugs/alcohol was a way of life for me.	56.9	Motivation
38. Drugs/alcohol really had not caused much trouble or problems for me.	37.3	Motivation
39. I was afraid of the people I might see.	7.8	Negative perceptions
40. Drugs/alcohol were/was not my main problem.	37.3	Self-perception
41. I didn't feel safe going where I'd have to go for help.	13.7	Negative perceptions

42. There seemed to be more good than bad about drugs/alcohol for me.	35.3	Motivation
43. Other people discouraged me from seeking help.	2.0	Stigma
44. I don't like to talk about my personal life with other people.	25.5	Negative perceptions
45. I thought people would make fun of me.	5.9	Stigma
46. I didn't know what would happen to me.	19.6	Negative perceptions
47. I didn't want to go to AA, CA, NA, or other twelve-step groups.	43.1	Negative perceptions
48. I thought that "help" was for people who had worse problems than mine.	43.1	Self-perception
49. I had no insurance to pay for it.	23.5	Cost/Availability
50. I thought my troubles would just go away without any help.	41.2	Motivation