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**Using Motivational Interviewing to Enhance Treatment Readiness
in Offenders with Symptoms of Alcohol Dependence**

by

Joel Isser David Ginsburg, M.A.

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of

Doctor of Philosophy

Carleton University

Ottawa, Ontario

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Chair
External Examiner
Thesis Supervisor

**Carleton University
March 27, 2000**

Abstract

Inadequate treatment motivation frequently results in failure to comply with treatment and increased dropout and relapse (Annis, Schober, & Kelly, 1996). Motivational interviewing (MI; Miller & Rollnick, 1991) increases problem recognition and personal responsibility for drinking; elicits concern about drinking; resolves ambivalence about changing drinking behavior; and, establishes commitment to change drinking behavior (Miller, 1996). This study aimed to enhance treatment readiness and commitment to change drinking behavior by using MI with 83 male federal inmates with symptoms of alcohol dependence. This study is possibly the first systematic examination of MI in a correctional setting. It is unique in its use of stage of change as an outcome measure. Volunteers were randomly assigned to a MI (intervention) or control group. Stage of change was measured pre and postintervention using a preliminary version of the Readiness to Change Questionnaire - Treatment Version (RCQ (TV); Heather, Luce, Peck, Dunbar, & James, 1999), the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES; Miller & Tonigan, 1996), and the University of Rhode Island Change Assessment (URICA; DiClemente & Hughes, 1990; McConaughy, DiClemente, Prochaska, & Velicer, 1989). Despite the small sample, a Principal Components Analysis replicated the structure of the SOCRATES. This supports using the SOCRATES in correctional settings. Further SOCRATES findings indicate that the MI group participants had significantly greater posttest recognition scale scores than their control group counterparts. Similar findings were observed for MI group participants with significant problems related to drinking. These findings support using MI to enhance problem recognition. Findings from the preliminary version of the RCQ (TV) indicate

that the MI group participants who were in the precontemplation stage of change at pretest had significantly greater posttest contemplation scale scores than their control group counterparts. This indicates that MI increased thinking about changing drinking behavior. There was an absence of significant findings from the URICA. Its use in its present form in future corrections research is questionable. Methodological, statistical, and measurement issues are discussed in the context of future MI research in corrections.

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Introduction

The proverbial “War on Drugs” and its spotlight in the North American media, governmental debates, and criminal justice system policy, has shifted focus away from alcohol problems among offenders. Symptoms of alcohol dependence are frequently observed in many offenders. This poses an important challenge for treatment program developers and program delivery staff because of the reintegration initiative in the Canadian federal correctional system.¹ The aim is to release inmates back to the community as soon as it is safe to do so. Acting in concert with the reintegration plan is continued work towards increasing the effectiveness of existing correctional treatment programs and developing new programs to address under-serviced inmate populations.

The majority of inmates eventually return to the community when they have served a portion or the entirety of their sentence. Before this eventual release, many are strongly encouraged to participate in correctional treatment programs to address their treatment needs and increase the probability that their reintegration will be successful. Despite the best efforts of correctional staff to encourage inmates to follow their Correctional Plan, a significant number of inmates are reluctant or refuse to participate in treatment programs. A significant challenge that faces the scientist-practitioners in correctional psychology is to address the reintegration goal in a milieu where a significant proportion of inmates with considerable treatment needs present as being treatment resistant.

¹ The views expressed in this dissertation are those of the author and do not represent the official position of the Correctional Service of Canada.

This paper will focus on inmates who could benefit from behavior change by examining a promising approach in the treatment of addictive behaviors: motivational interviewing (MI; Miller & Rollnick, 1991), and its applications to corrections. Specifically, focus will be restricted to inmates who present at intake assessment with symptoms of alcohol dependence. Despite the numerous ways of defining alcohol dependence (Babor, 1990), it will be operationalized based on the work of Edwards and Gross (1976). This definition shares common elements with the definition found in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994). The following are the essential elements of the Alcohol Dependence Syndrome:

...a narrowing in the repertoire of drinking behaviour; salience of drink-seeking behaviour; increased tolerance to alcohol; repeated withdrawal symptoms; repeated relief or avoidance of withdrawal symptoms by further drinking; subjective awareness of a compulsion to drink; reinstatement of the syndrome after abstinence. (Edwards & Gross, 1976, p. 1058)

One can think of other features that could be highlighted in a definition of alcohol dependence. Skinner (1990) discussed alcohol-related disabilities that were sampled from the following domains: physical (e.g., liver disease), psychological (e.g., anxiety), and social (e.g., criminal behavior). He noted that alcohol dependence is no longer viewed as a unitary disorder. Indeed, there is a heterogeneous population of individuals who are dependent on alcohol and who suffer from its effects in various domains in their lives (Miller & Sovereign, 1989; Soden & Murray, 1997). Alcohol dependence can be confused with alcohol abuse, another term that is frequently encountered in the literature.

The latter can be conceived as problem use of alcohol that has not reached the proportions of dependence (Nathan, 1997).

After a brief discussion of the prevalence of alcohol dependence among inmates, the literature review will examine the link between alcohol use and criminal behavior. An introduction to the stages of change and treatment matching will follow. An overview of motivational interventions will precede a critical review of recent research and seminal papers pertaining to MI as it is used with alcohol users. Then, the use of MI in correctional settings will be explored. The literature review will conclude with a presentation of the research problem, the rationale for the present study, and the experimental hypotheses.²

Literature Review

Prevalence of Alcohol Dependence in Incarcerated Offenders

The reported prevalence of alcohol dependence can vary widely depending on various factors including the diagnostic criteria used in the assessment of the disorder. This variability in reports of the prevalence of alcohol dependence is evident upon examination of the findings from studies of Canadian federal inmates. Rates vary from 19% of inmates ($N = 503$) meeting the diagnostic criteria for moderate to severe levels of alcohol dependence (Robinson, Porporino, & Millson, 1991) to 47% of inmates

² Given that the majority of offenders under the supervision of the Correctional Service of Canada (CSC) are male and that this paper reports findings from a sample of men, gender neutral language will not be used in these contexts. This decision was made not because of insensitivity; but, because the focus of this dissertation and the generalizability of its findings pertain to a male population.

($N = 275$) when the same diagnostic criteria have been utilized (Lightfoot & Hodgins, 1988). One possible explanation for the disparity between these rates is that the latter study used volunteers and the former study used file information. Hodgins and Côté (1990) reported a 33% lifetime prevalence of alcohol dependence among a sample of inmates ($N = 495$); however, this figure should be viewed cautiously because the reliability of the translated (French) version of their assessment instrument was not discussed. Motiuk and Porporino (1991) reported a 47% lifetime prevalence of DSM-III alcohol abuse/dependence in a stratified national sample of inmates ($N = 2\,185$).

For comparative purposes, data from the United States will be discussed. Teplin (1994) studied a sample of urban Chicago jail detainees ($N = 728$). She reported a 51% lifetime prevalence and a 19% current prevalence of DSM-III alcohol abuse/dependence. Given these findings, Teplin (1994) issued a warning which stated that as jail populations continue to rise, the number of detainees who will require treatment for alcohol abuse will be staggering. Furthermore, treatment will be complicated by the frequent presence of comorbid disorders in many detainees (Abram, 1990; Regier et al., 1990). These findings provide additional support for the high rates of alcohol abuse/dependence that have been reported in inmate samples.

Examining the foregoing findings in the context of community data provides an interesting comparison. A national longitudinal alcohol epidemiologic survey ($N = 42\,862$) of the prevalence of alcohol dependence in the United States reported a 19% lifetime prevalence and a 6% current prevalence in men residing in the community (Grant, 1997).

Reporting further on the sample studied by Teplin (1994), Abram (1990) noted a 16% rate of comorbidity between antisocial personality disorder (APD) and alcohol dependence. This finding was of particular concern because APD is a poor prognostic indicator of the course of alcohol dependence and of treatment outcome. It is associated with increased drinking severity, chronicity and social consequences of drinking (Abram, 1990; Holdcraft, Iacono, & McGue, 1998). Thus, Abram (1990) concluded that substance abuse treatment programs that do not address accompanying personality pathology might have minimal impact.

When discussing the comorbidity between APD and alcohol dependence, it is important to note that there was a problem with overlapping diagnostic criteria between the two disorders in the DSM-III-R (Widiger & Shea, 1991). At worst, this resulted in diagnosing the disorders as being interdependent. Fortunately, this is not a problem with the DSM-IV diagnostic criteria for the two disorders. Abram (1990) addressed the weakness in the categorical measurement of the Axis I and Axis II disorders of the DSM-III-R and reported that her findings remained unchanged after controlling for item overlap.

Finally, findings from a sample of rural jail and prison inmates in Vermont ($N = 213$) indicated a 79% lifetime prevalence of alcohol dependence (Powell, Holt, & Fondacaro, 1997). Given the prevalence data for alcohol dependence among offenders, it should not be surprising that further attention has been focused on the occurrence of this disorder in this population. The next section examines the relationship between alcohol use and criminal behavior.

Alcohol Use and Criminal Behavior

Perhaps among the most obvious examples of the link between alcohol use and criminal behavior is the act of driving while intoxicated (DWI). Sadly, DWI offenses and examples of the association between alcohol use and criminal behavior are plentiful; however, explaining the relationship between alcohol use and criminal behavior is a complex task.

An interesting model that has been used to explain the relationship between alcohol use and behavior that is potentially criminal comes from Graham et al. (1998). They discuss the interaction of several factors (societal, individual, pharmacological, contextual and interpersonal) that contribute to intoxicated aggression.

At the societal level of examination there are norms regarding the use of alcohol, attitudes pertaining to its use and its users, and expectations of its effects on behavior. With respect to the latter, many individuals believe that aggressive behavior naturally follows from intoxication and that the aggressor is less culpable due to his/her state of intoxication.

At the individual level there are individual differences in behavior while intoxicated. Again, expectations play a role in the expression of an intoxicated individual's behavior.

Pharmacologically, alcohol use impacts on the brain's neurochemistry, cognitive processes and other behavior. A well-known effect of alcohol is its role in reducing the inhibitory effects of anxiety and fear. Relative to sober individuals, intoxicated individuals are more likely to respond aggressively when they are provoked (Graham et al., 1998).

The context in which alcohol is consumed plays an integral role in the genesis of intoxicated aggression. The outcome of a young male's intoxication at his family's celebration of the festive Jewish holiday Purim could be markedly different from the outcome of his intoxication at the Grey Cup when the odds-on favorite and the object of his betting behavior loses the game.

Finally, most intoxicated aggression occurs in a social context that is the result of an interpersonal interaction between two or more individuals. Parker and Auerhahn (1998) cite social context as the most powerful factor in the etiology of alcohol-induced violent behavior. The rate at which alcohol is consumed is another factor that can be added to the Graham et al. (1998) model of intoxicated aggression (Malmquist, 1996).

The complexity of the Graham et al. (1998) model provides a wealth of information and informs the reader of fruitful avenues for research. The challenges posed by testing the entire model empirically in one experiment would likely be insurmountable; although, research could target single factors or small combinations of them.

Moving from the realm of theory to the domain of applied research, McMurrin (1996) believes that the empirical literature supports the conclusion that offenders are heavy drinkers but she cautions that the data are typically based on self-report. She notes that the validity of these data could be contaminated by the offenders' concerns about the impact of this information on important decisions related to further charges, privileges, parole, etc. If this is true, then one might expect that offenders would underreport their alcohol use. Thus, even with the possibility that alcohol use is underreported, the data are still ample to support the association between alcohol use and criminal behavior. One should also remain cognizant of the other end of the continuum that is occupied by the

group of offenders who might overreport their alcohol use in an effort to minimize their culpability (Wright, 1993).

Regardless of the possibility that some offenders might purposely provide false reports of their alcohol use, McMurren (1996) cautions that one should not distort the association between alcohol use and criminal behavior by erroneously implying causality. She comments further that an offender might have symptoms of alcohol dependence but that does not necessarily mean that alcohol use is a criminogenic need. Care must be taken during assessment to determine whether alcohol use is merely a secondary problem for the offender or whether it is a risk factor that increases the probability of recidivism. An important question that should be asked is: "For whom and under what circumstances will what kind of substance use lead to which kinds of criminal behaviour?" (McMurren, 1996, p. 215).

Attention must also be given to the generalizability of research findings. McMurren (1996) notes that most research is based on data provided by incarcerated offenders, a population of individuals who have been convicted of criminal behavior of sufficient severity to warrant detention. Baldwin (1989) adds that alcohol abusing offenders are more likely to be apprehended than their nondrinking counterparts.

In the previously cited study that examined patterns of alcohol use among male federal offenders (Robinson et al., 1991), 44% of the respondents reported being under the influence of alcohol during the commission of at least one of their index offenses. By comparison, 26% of the offenders surveyed by Lightfoot and Hodgins (1988) reported using alcohol on the day of their index offense(s). Referring again to Robinson et al. (1991), 23% of the violent offenses were committed by offenders who were under the

influence of alcohol whereas only 11% of these offenses were committed by offenders who were under the influence of other substances.

Given the link between alcohol use and criminal behavior (Abram, 1990; Goodwin, Crane, & Guze, 1971; Lightfoot & Hodgins, 1988; Robinson et al., 1991), an important outcome of correctional treatment programs for alcohol dependence would be reduced rates of recidivism. Some studies indicate that this posttreatment outcome is realistic and attainable (Millson, Weekes, & Lightfoot, 1995; Ross & Lightfoot, 1985).

Why Treat Alcohol Dependence in Offenders?

To review briefly, alcohol dependence is frequently observed in offender samples. The prevalence data alone provide a compelling argument to treat this disorder. The salience of alcohol problems in offenders is highlighted by the recommendation of Lightfoot and Hodgins (1988) in which they state that priority status should be given to implementing effective substance abuse programs by correctional services agencies. Effective treatment of alcohol dependence can decrease postincarceration rates of recidivism and it might also deliver short-term benefits such as improving institutional adjustment (Lightfoot & Hodgins, 1988).

Offender rehabilitation is a challenge, especially when the individual has one or more co-occurring disorders such as APD. In its review of the treatment of alcohol problems, the Institute of Medicine (1989) discusses alcoholics with a co-occurring diagnosis of APD as a segment of the population requiring the development of innovative treatment interventions.

The Canadian Code of Ethics for Psychologists (Canadian Psychological Association, 1992) provides another compelling reason for treating alcohol dependence in offenders. The code informs the reader that clients have the right to receive the best care

that is available. For the population under consideration, this includes the most effective treatments for alcohol dependence that are supported by empirical research. Furthermore, given the link between alcohol use and crime, and the mission of the CSC to assist in the protection of Canadian citizens by making every effort to rehabilitate incarcerated offenders, there is a professional and a moral obligation to treat alcohol dependence in offenders.

Before treatment can be implemented successfully, the recipient should be adequately motivated to receive it otherwise the probability of a successful outcome will be reduced. Ryan, Plant, and O'Malley (1995; Annis, Schober, & Kelly, 1996) note the importance of motivation as an area of research because inadequate motivation is frequently cited as a reason for client failure to comply with treatment, dropout from treatment, and relapse.

In Canadian federal corrections, an offender's treatment readiness or treatment motivation is given consideration when treatment decisions are made; however, more formal assessment of treatment readiness occurs less frequently. There is a need for consistent use of an approach or program to enhance treatment readiness among potential treatment candidates who demonstrate inadequate motivation to change. Recently there has been great interest in and activity directed towards correcting these deficiencies in the management of offenders. For example, MI is being incorporated into existing correctional treatment programs and there is a national MI training initiative that is targeting correctional personnel.

Effective correctional treatment programs exist for treating offenders with alcohol dependence but their quality can be improved. Motivational interviewing is a relatively recent approach that has been used to increase readiness to change among community

clients presenting with drinking problems to outpatient clinics. Its use has not been exploited in correctional settings even though it has been used widely in the community and despite the promise that it holds for use with offenders. This dissertation presents and discusses findings from an empirical study of the use of MI to enhance readiness to change symptoms of alcohol dependence in incarcerated offenders.

Before the rationale and method for this research are presented, the literature review will continue with an introduction to the stages of change. These stages provide a valuable description of the natural sequence of behavior change and allow a better understanding of the potential of MI for facilitating behavior change.

Stages of Change

A topic that is of great interest to psychologists is how people change their behavior. Prochaska and DiClemente have devoted much of their careers to studying smokers, including those who have stopped smoking successfully without the aid of treatment. They observed that all of the smokers progressed through a sequence of stages during the course of behavior change (Prochaska & DiClemente, 1982). Research supports the presence of the stages of change in nonclinical (McConaughy, Prochaska, & Velicer, 1983) and clinical (McConaughy, DiClemente, Prochaska, & Velicer, 1989) populations. Other research has shown the generalizability of the stages of change to other behaviors like problem drinking, adolescent delinquency, and cocaine use (DiClemente, 1993; DiClemente & Hughes, 1990; Prochaska et al., 1994). This paper discusses the stages of change as they pertain to drinking behavior.

The stages of change represent attitudes, intentions and/or behaviors that are related to the individual's status in the behavior change process (Prochaska & DiClemente, 1992a). The stages of change are part of the transtheoretical model (TTM)

of change that provides an integrative perspective on behavior change (Prochaska & DiClemente, 1992a; Prochaska, DiClemente, & Norcross, 1992a). The model is transtheoretical because it addresses the principles of change that are present in the existing theories of behavior change and psychotherapy (DiClemente, 1993). The stages of change facilitate our understanding of change by giving it a temporal dimension because change occurs over time. Moreover, the stages represent the motivational aspects of change (Prochaska & DiClemente, 1992b). It is noteworthy that the stages of change focus on intentional change involving the individual's intrinsic motivation and participation. This can be contrasted with change imposed upon the individual by external agents. For example, in correctional settings, it is common to see individuals who are extrinsically motivated to change their behavior.

Prochaska (1995) describes the stages of change as being dynamic, enduring for relatively long periods of time, and open to change. Movement through the stages is dynamic therefore individuals can progress through the stages; although, some individuals are static in the change process and remain in a particular stage (Prochaska & DiClemente, 1982). Most individuals cycle through the stages several times before achieving successful recovery such as abstinence from drinking. Given this observation, it is important to determine whether an individual has tried to stop his/her addictive behavior in the past so that his/her needs can be accurately addressed (DiClemente, Carbonari, & Velasquez, 1992).

According to the TTM, behavior change progresses through the following stages: precontemplation, contemplation, preparation, action, and maintenance. Having introduced the TTM, the focus will now shift to describing the stages of change as they

have been defined in literature (Prochaska & DiClemente, 1982; 1984; Prochaska, DiClemente, & Norcross, 1992a).

Precontemplation is a stage that precedes behavior change. Even though precontemplation is a stage of change, the precontemplator is not considered to be in the change process until s/he has enough awareness and motivation to contemplate changing his/her addictive behavior (Prochaska & DiClemente, 1984). Precontemplation is the stage in which the individual is unaware of having a problem behavior (Prochaska & DiClemente, 1984) and/or the individual is not intending to change the target behavior within the next 6 months. Six months is about as far into the future as most people plan to change a behavior (Velicer, Hughes, Fava, Prochaska, & DiClemente, 1995). Instead of the individual recognizing that s/he has a problem, it is someone else who is aware of the problem (Miller & Sanchez, 1994). A precontemplator can wish to change but this is different from considering or intending to change in the foreseeable future. Many precontemplators are uninformed about the long-term consequences of their behavior (Velicer et al., 1995) and they are not convinced that the costs of the problem behavior outweigh the benefits (Prochaska & DiClemente, 1992a).

Precontemplators often enter treatment because of external pressure. For example, some individuals are mandated by the courts for treatment under the threat of punishment. Some clients who enter treatment under external pressure might demonstrate behavior change yet once the external pressure is removed they often resume the problem behavior. Thus, one of the goals of treatment is to shift the individual's extrinsic motivation to intrinsic motivation. This will probably increase the likelihood that behavior change will be successful over the long-term.

DiClemente (1991) cited several reasons to explain why an individual might be in the precontemplation stage: reluctance, rebellion, resignation and rationalization.

Reluctant precontemplators do not want to consider change. Some might say that they are not ready for treatment; although, Prochaska, Johnson, and Lee (1998) disagree by noting that many treatment programs are unprepared to meet the needs of this population. Rebellious precontemplators appear hostile and resistant to recognizing or modifying their problem behavior (Prochaska, 1995; Prochaska & DiClemente, 1992a). Resigned precontemplators have given up on the possibility of change. Rationalizing precontemplators are informed about change and they have decided that there is no reason to change. This latter descriptor smacks of the Freudian defense mechanism and could be perceived as disrespectful to the individual. Some individuals make an informed decision to maintain their behavior despite strong evidence that change is advisable.

Continuing with the discussion of defense mechanisms and the precontemplation stage, it is important to discuss denial. The word “denial” is frequently overheard in discussions about precontemplators. Using the parlance of the TTM and MI, denial can be understood differently from its traditional use as a defense mechanism. Denial can be conceptualized as the state in which the individual is unaware or under-aware of his/her problem. Denial can also be understood as the product of client “resistance,” which, for example, can be observed when the therapist's treatment goals are incompatible with the client's level of readiness to change (Miller, 1995a; Miller & Rollnick, 1991; Prochaska, 1995; Rollnick & Morgan, 1995). For example, endeavoring to teach controlled drinking skills to a precontemplator would likely breed client resistance in the form of a statement that denies the presence of a problem: “I don’t have a drinking problem, so why are you teaching me these silly skills?”

The contemplation stage of change is occupied by individuals who are aware that a problem exists. They are seriously thinking about stopping the problem behavior in the next 6 months, but there is no commitment to take action (Velicer et al., 1995).

Individuals seek information and evaluate the effects of the problem behavior on themselves. Although action is not undertaken, the individual examines the costs and benefits of behavior change. People can remain in this stage for years (Prochaska, 1995). In essence, the individual knows what s/he would like to do but s/he is not yet ready to do it.

The preparation (determination) stage of change combines intention to change and an attempt at changing the target behavior. A decision, a commitment, and a plan to act are made by the individual (DiClemente, 1993; Prochaska & DiClemente, 1992a).

Recently the stage has been defined as the intention to take action in the next 30 days and there must be an indicator of behavioral commitment to take action such as obtaining a prescription for Antabuse (DiClemente & Prochaska, 1998). Individuals in this stage have been unsuccessful in taking action in the past year but they intend to take effective action in the near future, usually in the next month (Grimley, Prochaska, Velicer, Blais, & DiClemente, 1994). In their current attempt they may have made small changes in the target behavior such as reducing their daily intake of alcohol by 1 standard drink, but an adequate criterion for effective action has not been reached (Prochaska, 1995).

In the action stage of change, individuals overtly modify their problem behavior, environment and/or experiences (Prochaska, 1995; Prochaska & DiClemente, 1992a). Successfully changing the target behavior by reaching a criterion that places the individual at low risk for re-engaging in the behavior for a period of 1 day to 6 months in duration classifies that individual in the action stage (Prochaska et al., 1992a).

Consolidating the gains made during the action stage and working to prevent relapse are characteristics of the maintenance stage of change. An individual qualifies as being in this stage by not engaging in the target behavior and/or engaging in a new and incompatible behavior for at least 3 months (DiClemente & Prochaska, 1998).

Maintenance is a continuation of change that can extend for an indeterminate period (Prochaska, 1995); although, it ends when the target behavior is terminated as a problem (Prochaska et al., 1994).

Many people who take action to modify addictive behaviors are unsuccessful in maintaining their gains. The result is relapse which is characterized by engaging in the problem behavior and regressing to an earlier stage of change. Relapse and recycling through the stages of change occur frequently as individuals attempt to change addictive behaviors (Prochaska, 1995). Relapse is so common that it is the rule rather than the exception in most behavior change attempts (Prochaska, DiClemente, & Norcross, 1992b).

The frequent movements toward change and back toward the addictive behavior are noteworthy because they aid in the selection of realistic goals in the quest for successful behavior change. Behavior change or even decision-making about behavior change are not the only worthwhile goals of an intervention (Rollnick, Heather, & Bell, 1992; Rollnick et al., 1993). For example, assisting a client to consider change could be a goal for an intervention with a precontemplator. When achieved, this gain could lead to future behavior change (Rollnick et al., 1993).

Termination follows the successful change of the target behavior. It is the point at which the individual no longer has a desire to engage in the target behavior. The risk of relapse is negligible because of the absence of urges to engage in the problem behavior

(Prochaska, 1995). Therefore, efforts are not required to avoid relapse (Prochaska & DiClemente, 1984). Individuals have full confidence or an adequate sense of self-efficacy that they will not relapse in any of the previous risk situations (Prochaska, 1995). A 5-year period of an absence of symptoms is the criterion used to denote termination. At this point, the target behavior has been extinguished (Grimley et al., 1994).

The stages of change indicate when the individual makes particular changes in his/her behavior. They are accompanied by tasks and activities called "processes of change." These processes promote change and differ across the stages. As the individual engages in these processes, s/he will progress through the stages of change (Prochaska & DiClemente, 1982; 1992). The processes indicate how the individual makes changes as s/he progresses through the stages (Prochaska & DiClemente, 1986). Processes are activities that alter thinking, affect, behavior, and relationships related to the problem behavior (Prochaska, 1995). For example, in the precontemplation stage, the accompanying process of change involves consciousness raising or problem recognition. The individual must acknowledge that s/he has a problem and s/he must be aware of its negative consequences or costs. Education and feedback about the target behavior are provided to the individual as a means of achieving this process goal (Bell & Rollnick, 1996; Miller, 1995a; Miller & Sanchez, 1994; Miller et al., 1992; Prochaska, 1995).

Contemplators engage in a process of value assessment called self-reevaluation. Choices are made regarding which values the individual will strive to actualize and which will be abandoned. Besides thinking about themselves, contemplators think of the significant others around them, their environment, and the effects that the problem behavior has on these individuals and the environment (Prochaska, 1995). Another process of change involves the individual "taking stock" or evaluating the costs and

benefits of the target behavior. Later this process is repeated for the alternative or new behavior (Miller, 1995a; Morgan, 1996; Sobell et al., 1996; Sobell, Sobell, & Toneatto, 1993).

“Cognitive” processes like consciousness raising and self-reevaluation are used in the early or precontemplation and contemplation stages of change. “Behavioral” processes like contingency management and stimulus control are used in the later or action and maintenance stages of change (Perz, Diclemente, & Carbonari, 1996; Prochaska & DiClemente, 1984).

Levels of change comprise another element of the TTM. Levels represent areas of functioning that may be influenced by the individual's problem behavior and/or they may be a source of other problem behavior(s). The levels include symptom/situational problems, maladaptive cognitions, intrapersonal conflicts such as APD, and interpersonal and family/systems conflicts. During psychotherapy the therapist initiates treatment at whichever level s/he thinks is appropriate for the client (DiClemente et al., 1992; Prochaska, 1995).

To mark the completion of this introduction to the TTM, attention will be given to readiness to change in the treatment context. The research conducted by Prochaska et al. (1992a) led them to conclude that it is important to assess a client's readiness to change by examining his/her stage of change. Miller (1994a) views readiness to change as the extent to which the individual has contemplated the need to change and the costs and benefits of change. Rollnick, Kinnerley, and Stott (1992) note that the concept of readiness to change highlights that the decision to change behavior is a process rather than a static event. For example, precontemplators do not contemplate change so they are the least ready to change. Contemplators are ambivalent about their readiness to change

and thus they have not taken action. They are unsure about change. Individuals in the preparation stage, are by definition, ready to change (Rollnick et al., 1993; Rollnick & Morgan, 1995).

Having determined the client's readiness to change, the clinician should choose an intervention that is matched to the client's stage of change. An important implication of the TTM is that the stages of change suggest that the therapist should use different treatment strategies depending on the client's readiness to change (Annis et al., 1996).

Before concluding this section, it is noteworthy that there is critical debate over the TTM. For example, Davidson (1992) questions whether accurate measurement and duplication of the stages of change are possible by citing unsatisfactory factor analytic findings by researchers situated in locales east of the Atlantic Ocean. Although, Heather (1992) noted an absence of these difficulties during the development of the Readiness to Change Questionnaire, an instrument that was designed to measure the stages of change (Rollnick, Heather, Gold, & Hall, 1992).

Davidson (1998; Bandura, 1998) is also critical of the operationalization of the stages of change. For example, he notes that the action and maintenance stages are arbitrarily divided on a behavioral continuum, with the only difference being that action denotes a period of abstinence of less than 6 months and maintenance denotes a period of abstinence of more than 6 months. Thus, an individual can progress from action to maintenance simply due to the passage of time and not because of any change in psychological state.

Further criticism of the stages of change comes from Sutton (1996a). He questions the operationalization and predictive validity of the preparation stage of change in the smoking cessation field. Interestingly, this stage is not measured by the University

of Rhode Island Change Assessment (URICA; DiClemente & Hughes, 1990; McConnaughey et al., 1989).

Furthermore, Sutton (1996b) questions the applicability of the stages of change model due to data which indicate that individuals can exhibit stages of change profiles that show score elevations on two or more of the stages of change, thus giving the impression that individuals can be in two different stages of change simultaneously. This is a reasonable criticism; although, it might pertain more to the challenges of measuring the stages of change rather than the validity of the TTM.

Finally, Sutton (1996b) states that the stages of change might be better understood as being on a continuum instead of being comprised of discrete categories. This statement has not gone unnoticed by Miller and Tonigan (1996) and McConnaughey et al. (1989). They recommend measuring the stages of change using a continuous scale of measurement. Bandura (1998) is more blunt in his criticism of the theory by stating that it uses a categorical approach toward human change which is better understood as a process model.

More general criticism of the stages of change model comes from Bandura (1998). He argues that human behavior is far too complex to be shrunk to several categories. Specific criticism is directed toward the model's failure to adhere to basic assumptions of genuine stage theory. First, there is an absence of qualitative transformations across the discrete stages. For example, precontemplators and contemplators differ only in the degree to which they intend to change their behavior. Second, the sequence of change is not invariant because many individuals cycle through the stages differently. Third, and finally, the stages are reversible. Individuals can recycle through one or more stages.

The TTM is enormously popular and it also has its share of critics. It is composed of stages, processes, and levels of change that generalize across many behaviors. The stages of change are particularly useful in determining an individual's readiness to change. Furthermore, the stages aid in selecting an intervention and goals that are appropriate for the client's readiness to change. With this basic understanding of the stages of change, the review will now focus on treatment matching because of its promise to enhance behavior change by providing informed treatment selection.

Client-Treatment Matching

There are numerous interventions for treating alcoholism or alcohol dependence. While some have proven to be effective with certain individuals, there is no single treatment that is effective with every alcoholic (Institute of Medicine, 1989). This finding refutes the treatment homogeneity myth (Donovan & Mattson, 1994) which assumes that one proven treatment is appropriate for every type of client. A treatment strategy called client-treatment matching, differential treatment (Annis & Chan, 1983) or triaging (Mattson, 1998) has been proposed to improve treatment. "Matching" capitalizes on treatment assignment based on client needs and characteristics or "responder" profiles (Heather, 1996; Miller, 1990a; Project MATCH Research Group, 1993). Treatment matching can be defined as a method of treatment selection among available interventions based on client characteristics that interact differentially with treatments to produce better outcomes (Mattson et al., 1994).

Client-treatment matching is the referent in discussions of matching hypotheses. Hypotheses of this type predict that individuals who are appropriately matched to treatment will show superior outcome compared to unmatched or mismatched individuals (Miller & Hester, 1986b). Related benefits of matching include decreased use of

ineffective treatment, increased treatment efficacy (Donovan & Mattson, 1994), and improved morale among program delivery staff (Miller & Hester, 1995).

DiClemente and Prochaska (1998) discuss the optimal matching scenario in which the necessary programs are available to meet the needs of the clients. This is contrasted with the current challenge of making a professional shift from expecting that clients will match the needs of existing treatment programs.

Shifting from clinical practice to research of clinical practice, one observes that alcoholism treatment has focused on evaluations of main effects such as the relative effectiveness of one treatment versus another. Now the focus is more refined. Researchers and clinicians wish to know which individuals benefit most from existing treatments and under which circumstances (Heather, 1995a; Miller, 1992a). Treatment matching capitalizes on the heterogeneity of clients and treatments which has resulted in differential assessment and treatment (Donovan & Mattson, 1994).

Other types of matching exist besides client-treatment matching (Mattson et al., 1994). Client-therapist matching examines the interaction of client and therapist characteristics. Self-matching involves treatment selection according to client preference. Another example of matching comes from the earlier discussion of the TTM and the use of processes of change that are suited to the individual's stage of change. Finally, most discussions of the principles of classification for effective correctional rehabilitation (Andrews, Bonta, & Hoge, 1990) entail examples of treatment matching. For instance, high risk individuals are generally best matched with high intensity intervention.

Miller (1995a) asserts that it is preferable to match individuals with optimal treatments to increase treatment effectiveness and efficiency. It is inappropriate to use the same treatment with all clients and it is equally inappropriate to assign clients arbitrarily

or by using intuition to different treatments. By matching clients to treatments using clear criteria such as stage of change, unnecessary and ineffective treatment will be avoided and treatment efficacy will increase.

The ultimate goal of treatment matching research is to develop practical and valid rules for assigning clients to suitable treatment interventions. There are several ways in which clients can be matched to treatments, they include availability or convenience, client self-selection, clinical judgement, and algorithm or formal rule (Mattson & Allen, 1991).

In his guidelines for matching, Miller (1989) suggests beginning with a comprehensive assessment. Assessment is followed by negotiating treatment goals and deciding on the optimum intensity of intervention. Following these tasks the type or content of treatment is chosen. Maintenance arrangements and systematic follow-up assessments should also be discussed with the client to ensure that treatment gains are likely to be maintained.

Four categories of client characteristics have shown matching effects. These categories include demographic factors such as sex. Alcohol-specific characteristics include severity of alcohol dependence (Orford, Oppenheimer, & Edwards, 1976; Project MATCH Research Group, 1993). Intrapersonal characteristics include motivation to change (McKay & Maisto, 1993) and personality characteristics such as APD (Project MATCH Research Group, 1993). Finally, interpersonal functioning such as social support has also shown matching effects (Annis, 1990; Mattson et al., 1994)..

Aside from client characteristics, treatment dimensions provide other variables that can be used in matching studies. These include setting, context, modality, intensity, duration, therapist, and objective (Annis, 1990; Miller & Cooney, 1994).

Research pertaining to intrapersonal and alcohol-specific characteristics has revealed that individuals receiving high ratings on measures of Sociopathy have benefited more from cognitive-behavioral coping skills training than interaction therapy that focused on enhancing interpersonal interactions (Cooney, Kadden, Litt, & Getter, 1991; Kadden, Cooney, Getter, & Litt, 1989). Similar findings have been reported for individuals diagnosed with APD (Longabaugh, Wirtz, DiClemente, & Litt, 1994) and individuals with severe alcohol dependence (Litt, Babor, Del Boca, Kadden, & Cooney, 1992). These individuals may exhibit a low conceptual level. Individuals with a low conceptual level are characterized by a concrete cognitive style and dependence on authority. Low conceptual level is predictive of a more favorable response to the structure and direction of cognitive-behavioral skills training programs. These findings coupled with the aforementioned observations of Abram (1990) should influence correctional treatment practice by underscoring the importance of assessing personality disorders such as APD and Psychopathy prior to treating alcohol problems. It is important to assess both APD and Psychopathy because even though they are somewhat similar, they also differ significantly. Psychopathy and APD both refer to criminal behavior but the former also addresses interpersonal and affective features of personality.

Another intrapersonal characteristic that has proven to be fruitful in matching research is readiness to change. The TTM permits matching by allowing one to match a particular treatment with the individual's stage of change. The rationale for this practice is that if individuals vary in their readiness to change, then interventions should vary in the amount of action that is demanded of individuals. If this reasoning is followed, then a full spectrum of individuals with alcohol problems can be provided with treatment instead of the minority of individuals who are prepared for action (Prochaska &

DiClemente, 1992a). DiClemente and Prochaska (1998) add that treatments properly matched to client readiness to change will help motivate clients to engage and remain in treatment. Rollnick (1998) addresses readiness to change and matching at the microskills level. He argues that instead of focusing on matching client readiness with discrete types of treatment, the clinician should engage in matching on an ongoing basis during therapy. Therefore, as the client's level of readiness shifts during a session, the therapist can respond appropriately by "shifting gears."

Prochaska (1995) notes that many individuals in the precontemplation stage of change are labeled "resistant." Moreover, Prochaska and DiClemente (1992a; Heather et al., 1996) note that because precontemplators and contemplators are not considering change in the foreseeable future, they would be least responsive to behavior change interventions such as cognitive-behavioral skills training. These individuals are more likely to respond to MI than to skills training which is better suited to individuals in the action stage of change. This hypothesis has been supported empirically (DiClemente et al., 1992; Heather et al., 1993; 1996; Rollnick & Morgan, 1995) and findings will be discussed which suggest that MI should be most effective with individuals who are in the precontemplation or contemplation stages of change.

An example taken from the clinical practice of matching treatment to a client's stage of change was provided by Annis et al. (1996). They described a cognitive-behavioral counseling program that matches the client's readiness to change with various treatment components. For example, clients in the precontemplation stage are given a comprehensive assessment. Clients in the contemplation stage are given feedback from their assessment in the context of a MI. Clients in the preparation stage are given an individually tailored treatment plan. Others (McKay & Maisto, 1993) similarly endorse

the use of the TTM to investigate readiness to change problem behavior and to aid in the selection of a model of care.

Failure to match client readiness to change with appropriate treatment can result in poor response to treatment and other undesirable effects. For example, failing to match the therapist's treatment session objectives with the client's level of readiness can jeopardize the client-therapist relationship by creating resistance (Prochaska, 1995) or counter-motivational behavior (W. R. Miller, personal communication, January 12, 1999).

No matter which stage of change a client occupies, a practical consideration is that assessment should be continuous instead of occurring at a single point in time. Pretreatment evaluation does not allow the therapist to assess the client's movement through the stages of change during the course of treatment. Effective treatment is sensitive to shifts in stage of change yet this is impossible without frequent assessment of the stages, processes, and levels of change (DiClemente et al., 1992).

The focus of the discussion about the TTM has been on the stages of change; however, matching considerations also apply to the processes and levels of change. For example, a serious error can result from failing to match treatment with the client's preferred level of change. For instance, clients often select a therapist based on whether the therapist works on the level that the client believes is most relevant to his/her problem. For example, some clients seek psychodynamic therapists, others seek behavior therapists or family therapists, etc. (Prochaska, 1995).

So far the discussion has focused on matching treatment to the intrapersonal characteristics of the client. Another area of focus in the matching literature is the use of alcohol-specific characteristics such as drinking intensity. A simple matching principle

discussed by Hser (1995) and which is supported empirically (Miller & Hester, 1986b; Orford et al., 1976) states that clients requiring little help with less severe problems should be directed to less intense treatment programs. Clients with more severe problems requiring intense treatment should be directed to programs that are more intense. This principle is congruent with the risk principle of classification for effective correctional rehabilitation (Andrews et al., 1990).

Much interest has been focused on matching sufficiently intensive treatment with varying levels of alcohol dependence. Correct matching can reduce costs by avoiding the use of unnecessarily expensive treatments and reducing relapse. This goal can be achieved by practicing the principle of expending the least sufficient effort or by using a graded-intensity (Marlatt, 1988; Miller, 1991), stepped care (Drummond, 1999) or level of care (Mattson, 1998) approach to treatment. These similar approaches recommend selecting the least intensive intervention that is likely to meet the client's needs and goals. If that fails, then the next level of treatment intensity is selected until the desired outcome is achieved. As a point of reference, outpatient treatment occupies a position near the middle of the treatment intensity continuum. Below this point lies self-help groups and brief interventions (Miller, 1989).

As a means of integrating various matching methods, Gastfriend and McLellan (1997) propose a research model that matches client characteristics with treatment modality and level of care. In a similar manner, Marlatt, Larimer, Baer, and Quigley (1993) recommend using brief interventions such as MI with individuals who have mild to moderate alcohol problems. They add that these interventions might also be effective with individuals who have substantial or severe alcohol problems.

Interestingly, client characteristics that predict success with one particular treatment may predict failure with another treatment (Miller & Hester, 1986b). This finding has important implications. It is inappropriate to offer the same treatment to all clients. Treatment that is beneficial to some clients is detrimental to others. Treatment should be individualized to the needs of the client. This means that a menu of effective treatment alternatives must be available to allow for proper matching (Miller, 1990a).

Before concluding this section, an example of a matching study will be taken from the literature. Project MATCH or Matching Alcoholism Treatment to Client Heterogeneity (Project MATCH Research Group, 1993) was a study that tested some of the alcoholism treatment menu alternatives in a matching paradigm. Project MATCH was a large ($N = 1\,726$) and truly impressive multisite, randomized, clinical trial of alcoholism treatments. As described by its authors: "Project MATCH is the largest, statistically most powerful, psychotherapy trial ever conducted." (Project MATCH Research Group, 1997a, p. 25.) The aim was to determine if different types of alcohol-abusing and alcohol-dependent patients respond differently to alternative treatments. The sample was composed of outpatients and aftercare patients who had received inpatient treatment. The treatment modalities were Twelve-Step Facilitation Therapy (TSF), Cognitive Behavioral Coping Skills Therapy (CBT), and Motivational Enhancement Therapy (MET).

Motivational Enhancement Therapy differs from MI (which will be described later in the literature review) because it was developed specifically for Project MATCH (Miller, Zweben, DiClemente, & Rychtarik, 1992). This offshoot of MI utilized an extensive assessment battery followed by four individualized treatment sessions. The first two sessions aimed to include the client's spouse or a "significant other." The first

session focused on providing assessment feedback and building motivation to change. The second session continued with building motivation to change and aimed to consolidate client commitment to change. The remaining two sessions were follow-through and allowed the therapist to encourage and monitor client progress. Motivational Enhancement Therapy was hypothesized to be most effective with individuals low in readiness to change and high in conceptual level. Individuals who possess a high conceptual level are characterized by an abstract cognitive style and a sense of independence. The four-session MET intervention can be contrasted with the TSF and CBT interventions which each consisted of 12 individual sessions. Therefore the latter two interventions were three times longer in duration than the MET.

In anticipation of the results from Project MATCH, Heather (1996) believed that an absence of a main effect for treatment would provide support for the use of brief interventions such as MET. Moreover, this would also provide support for the cost-effectiveness of brief interventions given that the other treatments are more intensive and longer in duration. Heather (1996) went further by suggesting that equal effects across treatment modalities would suggest that recovery from alcohol problems is related to motivational issues rather than behavioral skills acquisition, cognitive reappraisals or spiritual insights that are the features of the TSF and CBT. None of these comments were addressed by the Project MATCH Research Group (1997a), perhaps because their data were insufficient to warrant such conclusions.

Findings from a 1-year follow-up (Project MATCH Research Group, 1997a) indicated significant and sustained improvements in drinking outcomes (percent days abstinent and number of standard drinks per drinking day) during the follow-up period for participants across all of the treatment conditions. There was little difference in outcome

for the main effect of treatment type. This suggests that there is not a “dose effect” whereby more intensive TSF and CBT treatments produce larger treatment effects than the less intensive MET. This supports the use of brief interventions such as MET in the treatment of alcohol dependence (Peele, 1998; Project MATCH Research Group, 1997a). Moreover, Heather’s (1996) prediction that MET would prove to be cost-effective relative to CBT and TSF was supported. DiClemente, Carbonari, Zweben, Morrel, and Lee (in press) noted that after taking all of the project’s follow-up periods into account, MET was equally effective as the more established and intensive treatments (CBT and TSF).

Psychiatric severity was the only client characteristic that had a significant interaction with type of treatment. Outpatients who exhibited low psychiatric severity had more abstinent days following TSF than after CBT. Outpatients’ motivation had a time-dependent matching effect. Greater levels of Sociopathy (measured by the California Psychological Inventory - Socialization Scale; Gough, 1975) were associated with worse outcome early in the follow-up period but not later.

Other findings included the observation that higher alcohol involvement, defined as social support for drinking, was associated with poorer outcome, as defined by the number of standard drinks per drinking day. Clients who were more motivated at intake showed better outcomes during the last month of follow-up than the individuals who were less motivated at intake.

It was concluded that the study’s results provided limited support for the hypothesis that client attributes interact with treatment modality to affect drinking outcomes. Matching specific client attributes to various treatment modalities did not enhance treatment effectiveness on the outcome measures. With the exception of

psychiatric severity, the lack of robust matching effects suggests that therapists are not required to take client characteristics into account when assigning clients to individual treatment using TSF, CBT or MET (Project MATCH Research Group, 1997a).

Several explanations were given to explain the absence of significant matching effects. One explanation cited the large scale of this study that focused on individual treatment. Previous research has been conducted with limited samples using group treatment. These differences and/or idiosyncratic or site-dependent effects could have contributed to previous reports of significant matching findings (Project MATCH Research Group, 1997a).

Further results indicated that outpatients who received high anger ratings had better posttreatment drinking outcomes following MET (Project MATCH Research Group, 1997b). This finding remained robust at a 3-year follow-up. Participants rated low in anger fared better following CBT and TSF (Project MATCH Research Group, 1998a). Mattson (1998) cited the nonconfrontive nature of MET as the basis for its success with angry individuals. Aftercare clients who were rated high in alcohol dependence had better posttreatment drinking outcomes following TSF. It was concluded that anger and level of alcohol dependence are viable matching variables. This is especially encouraging when one contemplates using MI in correctional settings because of the availability of inmates with anger problems. One explanation for the absence of any further findings suggested that among the client variables and therapies tested, matching may provide little advantage in predicting treatment outcome.

Other follow-up data from the 3-year posttreatment research (Project MATCH Research Group, 1998a) indicated that there were few differences across treatments. Psychiatric severity no longer showed a significant treatment effect. Participants with

social networks that are supportive of drinking showed better outcome following TSF (Longabaugh, Wirtz, Zweben, & Stout, 1998; Project MATCH Research Group, 1998a). This finding could bolster the use of TSF with offenders because many of their social networks support drinking. Moreover, TSF showed what might be a slight advantage over the other treatments, especially with more severely dependent drinkers. This advantage could be due to the TSF focus on abstinence, which is recommended for severely dependent drinkers, and because of the provision of a posttreatment social support network (Project MATCH Research Group, 1999). Readiness to change and self-efficacy were the strongest client attributes in the prediction of long-term drinking outcome. It was emphasized that because motivation is dynamic, there is hope that treatment which focuses on motivation can change drinking behavior. Both MET and MI address these client attributes. Recommendations for future research included using these client attributes in a priori hypotheses and examining other populations such as those with comorbid drug dependence. These recommendations could be followed in correctional research.

Results from analyses of drinking behavior during the course of treatment showed a small advantage of CBT and TSF over MET in the rate of reduction of heavy drinking and alcohol-related consequences (Project MATCH Research Group, 1998b). These differences faded following treatment. One explanation for this finding was that there were far fewer MI sessions relative to the other interventions toward the end of the study, when the effect became apparent. Another explanation was that abstinence was stressed as a treatment goal in the TSF and CBT approaches whereas the client was encouraged to take personal responsibility for a treatment goal in the MET approach. Therefore, it is

possible that it took longer for this personal responsibility to take effect (Heather, 1999; Project MATCH Research Group, 1998b).

Commenting on the findings from Project MATCH, W. R. Miller (personal communication, January 13, 1999) suggested that therapist use of accurate empathy might be a variable which exerts a profound influence on treatment outcome. Indeed, the Project MATCH therapists were all equally well trained and skilled. Furthermore, the internal validity of the treatments was closely controlled and therapeutic alliance was comparable across treatments (Carroll et al., 1998). The use of empathy is compatible with all of the treatment conditions and it could explain the absence of a main effect for treatment. It may be that any effects of the actual interventions were secondary or overridden by the skillfulness of the therapists in the use of accurate empathy to create a strong, collaborative, client-therapist relationship. A successful client-therapist working alliance may exert a stronger effect on treatment outcome than the actual content of the intervention (Peele; 1998; Stockwell, 1999). Miller (1992b; Stockwell, 1999) recommends that future matching studies address therapist effects or personal styles and their interaction with client personal styles. Lindström (1992) adds that the therapist's primary responsibility is to facilitate self-healing in the client. Thus, therapist factors might be important matching variables.

A stimulating and entertaining group of commentaries was assembled following Project MATCH. Among them, Heather (1999; Project MATCH Research Group, 1999) addresses the methodological criticisms that have been launched at Project MATCH. Briefly, some of these include participant selection from a narrow spectrum of alcoholics; excessive assessment and follow-up which could have exerted treatment effects; relatively short duration treatment; an absence of group treatment; proportionally greater

attendance in the TSF condition which included participants from the CBT and MET conditions; and, the absence of an untreated control group.

To conclude, client-treatment matching offers the opportunity to avoid unnecessary treatment failures by readily identifying the appropriate treatment. This instills confidence in the client by indicating that his/her case is treatable and it reinforces the therapist's confidence by reinforcing the fact that alcoholism treatment is effective (Miller, 1989). The correctness of a client-treatment match can be judged in several ways including the extent to which the individual complies with and shows lasting benefits from the particular treatment (Miller, 1991).

Miller (1995a) underscores the importance of careful utilization of treatment matching by noting that when it is done inappropriately it results in wasted treatment, time, and money. Mismatching can also result in client harm. DiClemente et al. (1992) cited an example of a client-treatment mismatch where the therapist prescribed bibliotherapy for an illiterate client. Effective treatment matching can spare clients of needless suffering, impairment and embarrassment.

Client-treatment matching is very attractive to the clinician because of the substantial benefit that it promises for the client. In this atmosphere that begs the use of matching, McLellan (1986, cited in Mattson & Allen, 1991) issued a caveat about treatment matching. He noted that the current optimism and enthusiasm of treatment matching must be tempered by the knowledge that it is not a panacea.

Another warning pertaining to matching was issued by Allen and Mattson (1993). They said that despite the promise created in the literature pertaining to the use of the approach, the research consumer must be cautious. Experimental replication of findings is required and this will be a complex task because of the variability across research

studies. For example, differences exist across studies in participant selection, assessment strategies, intervention description, outcome measures, follow-up period, etc.

With all of the requisite knowledge on how to optimize the matching process, and with the best intentions, factors remain beyond the clinician's control that are barriers to effective client-treatment matching (Allen & Kadden, 1995; Miller, 1995a). Examples of these barriers include the absence of clear criteria for matching, the absence of alternative treatments, court mandate for a specific type of treatment, and the health-care economy. This latter barrier has created numerous other barriers including limited resources, third-party reimbursement, health maintenance organizations, and professional loyalties to certain treatments at the expense of more effective interventions (Miller & Hester, 1995).

Barriers aside, even after a client has been matched to a treatment that is deemed optimal for his/her subtype, there is no guarantee that treatment will be any more effective than if the client was mismatched. All clients with a particular characteristic do not benefit equally from a particular treatment. Given these facts, Allen and Kadden (1995) believe that further research will identify the factors that will strengthen or weaken the matching potential of client characteristics.

The emergence of treatment matching as an important area of research provides a sense of optimism for Miller (1992a). His optimism comes from the fact that even if matching studies are unsuccessful, the implication is that there is a menu of promising alternative treatments that may be more effective. This is the best alternative to having one outstandingly effective treatment for alcoholism, which at present is not a true reflection of the treatment literature.

Given that there is no single superior treatment for alcoholism, and given the surprising findings from Project MATCH, there remains many unanswered questions in determining which of the existing treatments are most suitable for subgroups of the heterogeneous population of alcohol dependent individuals. Client-treatment matching has matched client characteristics such as APD, severity of alcohol dependence, and readiness to change, with different treatments to determine the best match. Skinner (1979) showed vision and insight when he noted that matching will help various players in the psychotherapeutic domain. For example, matching helps the clinician with treatment planning and delivery. It helps the researcher with theory development, and it helps the administrator with resource allocation.

Regarding the choice of whether to match, Mattson (1998) opines that matching is not vital to effective treatment. For example, the findings from Project MATCH indicate that matching does not result in dramatic increases in treatment efficacy; although, Miller and Hester (1995) provide a dissenting view. They believe that matching is one of the clinician's most important tasks because improper matching wastes funds, resources and time, and it can result in harmful negative effects (Lightfoot & Hodgins, 1988).

Mattson (1998; Del Boca & Mattson, 1994) recommends that clinicians assess each case individually, comprehensively, and reliably, and consider treatment matching if it is feasible by using standardized and manual-guided treatments. Mattson (1998) adds that finding the right treatment is a process that is effectively resolved by an informal partnership between the client and therapist. Being positive and supportive with clients and helping them choose from the variety of available and effective treatments are among the best services that clinicians can offer. Del Boca and Mattson (1994) note that baseline and posttreatment assessment, preferably by an independent assessor, will

facilitate empirical investigations of matching. They add that collecting data on client characteristics, treatment costs and outcomes is also preferable. These recommendations are fully compatible with the MI approach that will be described in the following sections.

Motivational Interventions

Before describing MI, a brief overview of some early motivational interventions is provided. Miller (1985, p. 88) defines a motivational intervention as "...an operation that increases the probability of entering, continuing, and complying with an active change strategy." An account of early research of treatment motivation focused on enhancing the therapeutic relationship with alcoholics (Chafetz, 1961). Over 1200 individuals received a diagnosis of alcoholism at a hospital emergency ward, yet less than 1% of them sought treatment in the hospital's alcohol clinic. Chafetz (1961) hypothesized that this situation might have been partially attributable to contemptuous and punitive ward staff who were focused on getting alcoholics off of the hospital premises. In response to this climate, Chafetz proposed the establishment of a ward service with a psychiatrist to care for the alcoholics' needs and a psychiatric social worker to care for their families' community.

Alcoholics ($N = 80$) were assigned alternately to an intervention group that was exposed to the special service for establishing therapeutic contact or a control group that received routine hospital care. Forty-two percent of the intervention group completed a follow-up visit compared to 1% of the control group. A further 20% of the intervention group that attended the follow-up continued for 4 more follow-up appointments. None of the control group members continued treatment for a comparable duration. Despite the absence of random assignment, the results suggest that the intervention enhanced client

motivation to seek further medical care. An additional positive finding was the favorable response from the ward staff following the implementation of this novel service.

Chafetz (1961) showed insight by noting that failure to seek or remain in treatment should not rest solely with the patient. Instead, the caretaking community should recognize its responsibility in establishing therapeutic relationships with this population. Thus, caregiver attitudes can have a significant impact on client utilization of treatment services. Other equally significant research on the impact of therapist style and the client-therapist relationship on client compliance and treatment outcome has been conducted since this early work (Gerstley et al., 1989; Luborsky, McLellan, Woody, O'Brien, & Auerbach, 1985; Miller, Benefield, & Tonigan, 1993; Miller, Taylor, & West, 1980; Patterson & Forgatch, 1985; Thom et al., 1992; Valle, 1981).

Aside from research on therapist qualities, the nature of the client-therapist relationship, and their impact on client compliance, treatment utilization and outcome, other early research in the field of alcoholism investigated the use of personal correspondence as a means of increasing treatment motivation. Koumans and Muller (1965) highlighted the absence of inpatient facilities at alcohol clinics as an obstacle in treating acutely intoxicated individuals. The result was temporary institutionalization in custodial hospitals before formal outpatient treatment was initiated. It was believed that personal letters expressing concern for a client's well-being and a desire to have her/him return for further assistance would increase the probability of return for treatment.

One hundred patients referred to a custodial hospital for alcoholics were randomly selected to receive a letter (intervention) or no letter (control condition). The letter expressed concern for the client and included an invitation for further consultation. Two months later, significantly more (50%) of the intervention group returned for outpatient

alcoholism treatment compared to 31% of the control group. Among the participants in the intervention group who returned for outpatient treatment, 76% of them returned for treatment on the day of their release from the custodial hospital compared to 13% of the control group. Finally, 80% of individuals returning for treatment from the intervention group were sober compared to 31% of the control group. It was concluded that a letter expressing interest in an individual's welfare had a significant positive effect on his/her motivation for treatment as measured by the rate and rapidity of return to treatment, and sobriety on arrival for treatment.

Today, the use of handwritten letters is advocated as a means of increasing client motivation to attend treatment appointments. Research on the use of telephone calls yielded similar findings for rate of return (Koumans, Muller, & Miller, 1967). This work shows that even minimal therapist effort can produce significant positive changes in client treatment motivation.

Perhaps borrowing from the collective experience of Koumans and Muller (1965) and Koumans et al. (1967), Mallams, Godley, Hall, and Meyers (1982) reported positively on the combined use of letters, telephone calls and other encouragement procedures for ameliorating attendance among alcoholics ($N = 35$) referred to a self-governed social club. This finding supports continued research on the use of procedures that facilitate client compliance with appointments and referrals.

From this brief description of examples of motivational interventions, one can see that even modest efforts toward increasing attention on alcohol abusing clients can increase service utilization. Next, focus will be devoted to the examination of MI, another specific motivational intervention.

Motivational Interviewing: A Brief History and Description

Motivational interviewing is a brief intervention that was developed in response to a trend in alcoholism treatment that advocated therapist use of confrontation (DiCicco, Unterberger, & Mack, 1978; Miller, Benefield, & Tonigan, 1993). Confrontation was recommended because of the belief that alcoholics relied upon dishonesty and defense mechanisms such as denial and rationalization to allow them to maintain their problem behavior. Many counselors believed that a hard-hitting, directive and confrontational style of "therapy" was required to tackle robust client defense mechanisms (DiCicco et al., 1978; Miller, 1985; Miller & Brown, 1997; Murphy & Baxter, 1997). These defense mechanisms were viewed as personality traits that constituted a lack of motivation for change. So, alcohol abusing clients were viewed as inherently unmotivated and resistant to change (Miller, 1991). These characteristics were ascribed to an "alcoholic personality."

Contrary to the belief in the existence of an "alcoholic personality," Miller and Sovereign (1989) found no consistent cluster of traits or characteristics that support this belief. Individuals seeking treatment for alcohol problems form a heterogeneous group (Soden & Murray, 1997) that cannot be typified by a generic personality type.

Understandably, confrontational counseling approaches are met with client resistance resulting in a "confrontation-denial trap" which creates an impasse in therapy (Rollnick & Morgan, 1995, p. 182). Experience with the pitfalls of a confrontational therapist style has given way to the more reasoned and respectful counseling style of MI (Miller, 1991; Miller et al., 1993).

Motivation is no longer thought of as something that is absent in the alcohol abusing client but instead as a fluid state that is influenced by interpersonal and

environmental processes (Miller, 1991). Motivation can be conceived as the recognition of a problem; the fluid state of readiness to consider change; seeking a way to change; and, initiating and maintaining a change strategy (Miller, 1985; Miller & Rollnick, 1991; Rollnick & Morgan, 1995). Motivational interviewing operates from the premise that individuals are motivated; although, this motivation may not be focused on changing undesirable behavior (Bell & Rollnick, 1996). Miller et al. (1993) acknowledge that inadequate motivation for change is a commonly encountered problem in the addictive behaviors. Insufficient motivation is manifested as a failure to seek or remain in treatment, poor compliance with advice, and poor treatment outcome.

Motivational interviewing is dissimilar to the direct confrontational style described earlier; however, confrontation is a goal of MI. The aim is for the client to become more aware of and responsible for his/her drinking through self-examination and self-confrontation, and then to commit him/herself to change. In this sense, confrontation is essential for change because it allows the client to see his/her situation clearly, and this constitutes an initial step toward change (Bell & Rollnick, 1996; Miller, 1995a, 1996; Miller & Rollnick, 1991).

Motivational interviewing is a method of helping clients recognize and act on present or potential problems (Miller & Rollnick, 1991) that was developed using findings from the field of experimental social psychology (Miller, 1983). It is a counseling approach that is client-centered and directive (Bell & Rollnick, 1996; Miller, 1996). It is "...designed to increase problem recognition and the probability of treatment entry, continuation, and compliance." (Miller, 1993, p. 211).

Motivational interviewing aims to assist the client in the decision-making process of behavior change and to strengthen his/her commitment to change (Bell & Rollnick, 1996). The therapist works with the client to explore and resolve ambivalence about his/her problem behavior and the possibility of behavior change because ambivalence is the primary obstacle to overcome in initiating behavior change (Rollnick & Miller, 1995a). Ambivalence is the condition in which one feels two different ways about something. For example, a client realizes that his/her drinking behavior is a problem but s/he wishes to continue using alcohol.

Behavior change is achieved by using the client's motivation, natural change processes and other resources in his/her possession (Bell & Rollnick, 1996; Miller et al., 1992; Project MATCH Research Group, 1993; Sobell et al., 1996). Thus, it is incumbent upon the therapist using MI to provide the necessary conditions to enhance the client's motivation and commitment to change because these are regarded as being the key elements for lasting behavior change. By reinforcing and strengthening motivation, the client will initiate, comply with, and persevere in efforts aimed at behavior change (Miller et al., 1992; Project MATCH Research Group, 1993).

Motivational interviewing can be described as combining an interpersonal style that is warm, empathic and eliciting, with a set of strategies and techniques that are used to achieve specific goals (Miller, 1996; Miller et al., 1992). While MI is a combination of style and technique, the emphasis is on the therapist's style of interacting with the client (Rollnick & Miller, 1995a; Rollnick & Morgan, 1995).

Six common elements of effective brief interventions for enhancing motivation for change influence the style and technique of MI. These elements are represented by the acronym "FRAMES" which represents feedback, responsibility, advice, menu,

empathy, and self-efficacy (Miller & Sanchez, 1994). These elements are described as follows:

The purpose of feedback is to increase the client's awareness of his/her situation and the ways in which alcohol is harming her/him (Miller & Rollnick, 1991). The provision of meaningful, objective and personalized feedback of alcohol-related problems and health-relevant findings from a structured assessment is communicated to the client in an objective, neutral and nonjudgmental manner. After receiving feedback, the client can accurately appraise the course that s/he is taking and determine how his/her alcohol use fits with his/her goals and values (Miller, Jackson, & Karr, 1994). Feedback is essential to the change process because it is difficult to plan for change without knowledge of one's current status (Miller & Rollnick, 1991). Brown and Miller (1993) cite the importance of providing assessment feedback because clients are often assessed thoroughly prior to treatment yet the assessment results are infrequently discussed systematically with the client in a motivational manner. Brown and Miller (1993) comment further that this is a valuable contribution of psychology to a multidisciplinary treatment program.

It is the client's responsibility to decide whether s/he wishes to change. This is a free choice that no one else can exercise for the client. The client is also free to use the feedback provided to her/him in any manner that s/he wishes. If the client decides to change his/her drinking, then s/he is also responsible for the action of change. No one can change the client. Investing the client with responsibility for the decision and action of change discourages a sense of helplessness and reliance on external agents (Miller & Sovereign, 1989), both of which are undesirable outcomes that can occur in correctional settings. When using MI with clients coerced into treatment (e.g., court mandate), Miller

and Rollnick (1991) suggest that the therapist try to dissociate him/herself from the coercion process and that s/he emphasize the client's responsibility and freedom of choice.

Clear and direct advice is given to the client by identifying the problem or risk, explaining the necessity for making a change and advocating change (Miller & Rollnick, 1991). The risks associated with the client's drinking are discussed and the therapist gently offers encouragement in a manner that is supportive and conveys concern about the need to change (Miller et al., 1994). A shared purpose of advice and feedback is to increase the client's perception of risk associated with his/her drinking (Miller & Sanchez, 1994). Giving advice does not negate the client's responsibility for change because s/he is free to do whatever s/he wishes with the advice (Bell & Rollnick, 1996; Miller et al., 1994; Rollnick et al., 1992).

A menu providing alternative strategies for accomplishing change is often given to clients (Miller & Rollnick, 1991). This can include self-directed efforts such as self-help books/groups and even doing nothing at all! Using a menu reinforces the client's responsibility and freedom of choice by allowing her/him to choose an appealing change strategy. Hester and Bien (1995) note that choosing a treatment option from a menu does not deprive the client of receiving the most effective treatment because there is no single superior treatment for alcoholism (Institute of Medicine, 1989; Miller et al., 1995). Instead, there are many varied and promising approaches for treating alcoholism (Miller & Rollnick, 1991; Miller et al., 1994). The implication of this finding is that if treatment failure occurs, it may not be due to client noncompliance. Instead, the treatment choice might have been incorrect (Miller, 1987a). In this case, the menu permits the selection of another treatment that might provide a better outcome.

Having the client choose his/her treatment is important because s/he is the one who will be participating in the treatment (Bell & Rollnick, 1996). The treatment menu is advantageous for other reasons: First, the therapist does not have to "sell" a particular approach thus s/he is unlikely to evoke client resistance. Second, the client will be more motivated to comply with treatment if s/he has chosen the treatment (Miller, 1995a; Miller et al., 1994; Morgan, 1996; Sobell et al., 1996). Third, the client knows best about the acceptability of different approaches as they apply to him/herself (Miller, 1995a). All of these advantages increase the probability of a favorable treatment outcome (Miller, 1987a). Van Bilsen (1991) raised an interesting point by noting that often the treatment alternatives from which the client may choose are a reflection of the therapist's beliefs and preferences instead of being tailored to the client's needs and preferences. Another use of the menu is to offer the client a variety of treatment goals (Miller & Sanchez, 1994).

Therapeutic empathy is a skill that is integral to the motivational interviewer's style. The therapist expresses empathy to the client by using the Rogerian skill of reflective listening (Rogers, 1959). The therapist's goal is to express an acceptance and understanding of the client's position (Bell & Rollnick, 1996; Miller & Rollnick, 1991). This is done by listening attentively to the client's experiences, feelings, and concerns, while remaining nonjudgmental and communicating a desire to help the client (Morgan, 1996). The therapist listens to the client and accurately reflects back the meaning of the client's statements and feelings (Miller et al., 1994). The therapeutic skill of reflection is also referred to as active listening or accurate empathy. It allows the therapist and the client to reach a clear understanding of the client's thoughts, feelings and behaviors. The use of reflection has other advantages including its role in maintaining client disclosure,

its reinforcement of ideas expressed by the client, and its communication of therapist respect and caring.

The therapist's approach can be a key influence on the client's willingness to change (Bell & Rollnick, 1996). Thus, the therapist's style or the “spirit” of the MI approach is an important component of the client-therapist interaction. In MI the therapist's approach is client-centered. The therapeutic relationship in MI can be described as a partnership (Rollnick & Miller, 1995a) in which the client is a managing partner in the change process (DiClemente, 1991). This relationship is akin to the collaborative nature of cognitive therapy.

During counseling, the therapist creates a warm, supportive atmosphere, in a safe environment that is free of coercion and criticism (Miller, 1995a). These conditions are conducive to change and allow the client and therapist to explore the former's feelings of ambivalence (Miller & Rollnick, 1991). Reflection is useful for clarifying ambivalence without engendering resistance (Miller, 1995a). By responding to client statements with empathic reflection, the therapist encourages client disclosure (Miller, 1995a). During the exploration of ambivalence, the therapist elicits and selectively reinforces reasons for concern and change from the client (Miller, 1996). Besides being an attentive listener, the empathic therapist is warm, supportive, sympathetic and respectful of the client (Miller, 1995a).

Self-efficacy refers to the client's perception that s/he can implement a change strategy that is acceptable, accessible, effective and realistic (Miller, 1995a; Miller & Sanchez, 1994; Miller, Sovereign, & Kregge, 1988; Pfeiffer, Feuerlein, & Brenk-Schulte, 1991; Prochaska & DiClemente, 1992a). Effective brief motivational interventions include elements that instill optimism and reinforce the client's belief in his/her ability to

succeed at change (Miller et al., 1994). Supporting self-efficacy is crucial because ultimately it is the client's responsibility for choosing to change and following through with the change process. The client's perception of his/her ability to execute the plan of action and achieve his/her goals will influence the probability that change will be attempted. In the absence of optimism regarding the probability of change, there will be no motivation for change (Miller, 1995a).

The six elements of effective brief motivational interventions overlap slightly with five principles that are used to guide the practice of MI. These principles have been described by Miller and Rollnick (1991; Bell & Rollnick, 1996) and are described where necessary below.

1. Express Empathy.

2. Develop Discrepancy: The aim of developing discrepancy is to have the client confront him/herself and generate reasons for change (Bell & Rollnick, 1996). The therapist develops and amplifies a motivational discrepancy or dissonance between the consequences of the client's current behavior and his/her desired goals, personal beliefs and values (Bell & Rollnick, 1996; Miller, 1983; 1995, 1996; Miller & Rollnick, 1991; Morgan, 1996; Prochaska, 1995). It is believed that behavior change is triggered by discomfort arising from this type of discrepancy (Bell & Rollnick, 1996; Miller, 1995a; Miller & Rollnick, 1991; Rollnick et al., 1992). The discomfort is developed by the therapist to the point where it overcomes the client's desire to maintain his/her current drinking behavior and results in her/him exhibiting increased willingness to present and discuss reasons for change (Miller et al., 1992; Miller & Rollnick, 1991; Rollnick & Morgan, 1995). The aim is to use the client as the force for fueling the process of

deciding upon the need for change rather than using external motivators like court-imposed contingencies to force change (Miller & Rollnick, 1991).

3. **Avoid Argumentation:** Arguments take different forms and can result from many different therapist actions including the use of direct confrontation, persuading the client with logic or evidence of physical harm, and using labels such as "alcoholic" or "problem." All arguments increase client resistance and are thus counterproductive (Bell & Rollnick, 1996; Miller, 1995a). Instead of arguing, the therapist should use other strategies to help the client perceive the costs of his/her drinking and to devalue the perceived benefits of his/her alcohol consumption (Miller et al., 1992).

4. **Roll with Resistance:** Resistance is observable client behavior that includes arguing or at the other extreme, "shutting down in silence" (Miller & Rollnick, 1991). Clients may express hostility or opposition for different reasons including being coerced into treatment (e.g., offenders). Therapists can elicit client resistance (Miller et al., 1992) so it follows that resistance can be studied in the context of an interpersonal interaction between the therapist and the client (Miller & Rollnick, 1991). For example, resistance can indicate an incongruity between the therapist's focus of therapy and the client's stage of change (Miller, 1996; Morgan, 1996; Prochaska & DiClemente, 1982).

5. **Support Self-Efficacy.**

Further discussion of the techniques used in MI is beyond the scope of this paper. Motivational interviewing was developed in response to a trend in alcoholism counseling that was confrontational and adversarial. The elements of this gentler and more respectful approach reflect its humanistic and client-centered underpinnings. The review will now link the use of MI with the stages of change.

Motivational Interviewing and The Stages of Change

Motivational interviewing and its focus on the client's responsibility for change integrates well with the TTM and its focus on voluntary, intentional change (DiClemente, 1991; Miller et al., 1992; Prochaska & DiClemente, 1992a). It is not surprising that DiClemente (1991) wrote that the purpose of MI is to activate the process of change.

The stages of change are useful in the context of MI because as Rollnick and MacEwan (1991) note, they allow the therapist to determine the extent of a client's understanding of his/her drinking-related problems. Early in therapy, the therapist should determine the client's stage of change. The stages of change orient the therapist toward using specific strategies for the client's degree of awareness and readiness to change (DiClemente, 1991; Rollnick & MacEwan, 1991). Bell and Rollnick (1996) developed a menu of strategies that therapists can consult when selecting the best strategy to use with a particular client.

Rollnick and Morgan (1995) describe the first phase of MI or building motivation for change as being directed toward clients in the precontemplation and contemplation stages of change. Motivation is enhanced through the exploration of ambivalence and the elicitation of self-motivational statements. These are statements from the client that reflect the necessity of change. The second phase of MI or strengthening commitment to change is directed toward clients in the preparation and even the action and maintenance stages of change. Viable goals for change and strategies for achieving them are elicited from the client.

Of particular importance to this paper, Miller (1995; Brown & Miller, 1993; Miller & Rollnick, 1991; Rollnick & Bell, 1991) uses the terminology of the TTM to explain the function of MI as moving the individual from a state of precontemplation or

contemplation to a point of decision and commitment to change (preparation) or action. DiClemente (1991; Rollnick et al., 1992; Rollnick & Morgan, 1995) noted that the early stages of change are influenced significantly by motivational considerations hence MI should be most effective with individuals in the precontemplation or contemplation stages. It would be wasteful to provide these individuals with skills training because they are not ready to change, therefore resources may be used more effectively by using MI with these individuals to increase their motivation to change. Despite these strong recommendations for the use of MI with individuals who are not committed to change, the approach is suitable for use with individuals in any of the stages of change because difficulties with ambivalence about change and commitment to change can surface in any of the stages.

Motivational interviewing integrates well with the TTM. This intervention provides the therapist with strategies and techniques that can be used with clients in any of the stages of change. The approach shows particular promise for use with individuals who are not yet practicing a behavior change plan. Before examining the empirical literature pertaining to MI, the effectiveness of the approach will be discussed.

The Effectiveness of Brief Motivational Interventions and Motivational Interviewing

Rollnick and Miller (1995) comment on the confusion created by the usage of the terms "brief intervention" and "brief motivational counseling," both of which refer to interventions of 1-3 sessions in duration (Bien, Miller, & Tonigan, 1993b; Holder, Longabaugh, Miller & Rubonis, 1991). They believe that by ensuring that the word "motivational" is used only when there is a focus on increasing readiness to change, MI will not be confused with brief interventions. Moreover, the term "motivational interviewing" should only be applied to interventions that follow the spirit and techniques

of MI. Thus, while MI is an example of a brief intervention, it is a special case that should not be viewed as interchangeable with other brief interventions.

Aside from studying effectiveness from a treatment effect viewpoint, one can also study cost effectiveness. Both of these perspectives will be considered in this section. In a review focusing on a methodological analysis of the alcohol treatment outcome literature, Miller et. al. (1995) found that among numerous treatment modalities, motivational interventions received the highest ratings for methodological rigor and they frequently demonstrated positive treatment effects. Furthermore, these interventions were among the least expensive to deliver at \$46 U.S. per person. In an updated report, Miller et al. (1998) reported overwhelming support for the efficacy of brief interventions and MI in the treatment of alcohol problems. Educational lectures/films and mandated treatment by Alcoholics Anonymous were two of the treatment modalities that received minimal support of their efficacy.

In their review of the cost effectiveness of alcoholism treatment, Holder et al. (1991) had similar conclusions to those of Miller et al. (1995) regarding the methodological rigor of brief motivational counseling research studies, their positive treatment effects, and minimal cost. Moreover, the time required to deliver these interventions ranged from 25 minutes to 2 hours. A further advantage of brief motivational counseling is that it can be delivered in most treatment settings by trained professionals and nonprofessionals. Interestingly, there was an inverse relationship between cost and effectiveness such that the more expensive treatments were among the least effective interventions (Holder et al., 1991).

Adding to these findings, Bien et al. (1993b) found that brief interventions have been consistently effective in reducing alcohol consumption in problem drinkers. Brief interventions are usually significantly more effective than no treatment and they are often as effective as more extensive treatment (Miller, 1990b). Brief interventions can also increase the effectiveness of subsequent treatment (Brown & Miller, 1993). Bien et al. (1993b) believe that the mechanism of action that explains the effectiveness of brief interventions is their impact on motivation to change. Once this effect is observed, individuals may require minimal additional assistance to change their behavior because brief interventions probably owe their effectiveness to assisting natural change processes in the client.

Using the findings from Project MATCH, Cisler, Holder, Longabaugh, Stout, & Zweben (1998) estimated the costs to replicate the interventions in clinical settings. They discovered that the cost to replicate MET would be one third less expensive than the replication costs for TSF and CBT. These cost data support the adage that more is not always better. Moreover, Miller (1990; 1996; Miller & Hester, 1986a; 1986c) suggests that in a similar manner treatment duration, intensity and setting do not appear to exert substantial influence in determining absolute effectiveness. Generally speaking and with few exceptions, more intense treatment for longer duration in inpatient settings does not yield better results than less intense, briefer interventions with outpatients. Among the more than 30 different treatment modalities scrutinized by Holder et al. (1991), brief motivational counseling was among the most effective for the least cost. This finding supports the continued use of MI for treating problem drinkers, particularly in large institutions where budget restraint is commonplace.

A criticism of the conclusions of Holder et al. (1991) has focused on client heterogeneity among the treatment modalities that were compared with the brief interventions. Heather (1995a) noted that the clients in these interventions differed in the severity of their problems, their prognoses and the goals of their treatment. It was argued that interventions with similar treatment goals should be compared with individuals who have similar problem severity and prognosis. Research of this kind would inform us of the target group(s) most likely to benefit from brief interventions (Drummond, 1997).

In a study that built on the work of Holder et al (1991), brief motivational counseling was rated as minimal for cost and it placed 10th out of 24 treatment modalities for effectiveness (Finney & Monahan, 1996). Other modalities that received higher ratings included social skills training, stress management training and pharmacotherapy. Motivational interviewing can be used adjunctively with any of these treatments. Moreover, combining brief motivational counseling with one of these treatments could have a additive effect on treatment outcome.

While these treatment and cost-effectiveness findings are encouraging, they have not been fully integrated into alcoholism treatment practice in the United States. This situation was discussed by Hester (1993) when he noted that the interventions that are supported by controlled research are not widely used. Equally discouraging is the finding that the common elements of frequently used treatment programs have not been subjected to experimental evaluation.

Comprehensive reviews of alcoholism treatment effectiveness reveal that investigations of brief motivational interventions (including MI) are among the most methodologically sound. There is strong evidence of positive treatment effects exerted by this intervention. Motivational interviewing is brief and inexpensive to implement.

Continued research of this promising approach is warranted. The review of MI literature continues with coverage of empirical research.

Empirical Investigations of Motivational Interviewing

There is an abundance of studies in the brief interventions literature that have successfully used elements that are associated with MI such as providing assessment feedback in a motivational manner, giving timely advice, etc. The studies reviewed in this section are identified in the literature as using MI. The first study, by Miller et al. (1988) describes The Drinker's Check-up, an application of MI with drinkers in the community. The purpose of the check-up is preventive and depends on the "...early identification of emerging alcohol-related problems." (Miller et al., 1988, p. 255). It is used with drinkers in the community who self-refer for a health check-up to determine whether they are experiencing any deleterious health-related drinking effects (Miller, 1987b). The check-up is a comprehensive assessment of the health and behavioral effects of alcohol use that comprises a feedback component to increase risk awareness in the drinker. Following feedback, behavior change alternatives are discussed with the client and s/he is reminded of his/her responsibility regarding the manner in which s/he chooses to use the information provided during the check-up.

Miller et al. (1988) report results from an initial evaluation of the check-up. Participants were randomly assigned to one of three conditions: the check-up ($n = 14$), the check-up and additional feedback of treatment sources within the geographical region ($n = 14$) or a waiting list ($n = 14$). At a follow-up 6 weeks later, all groups showed a significant reduction in alcohol consumption, which remained present at a follow-up 18 months later. The control group showed similar results to the treatment groups so it was

concluded that the check-up alone was insufficient as an intervention; however, it may provide a "motivational nudge" and a head start on behavior change.

Using the check-up in the early stages of treatment, clients can be monitored and those requiring further treatment can receive it. Clients showing sufficient improvement would not receive further treatment. This reduces unnecessary treatment and costs thus improving the cost-effectiveness of the treatment delivery system. Miller et al. (1988) concluded that further attention to the potential merits of the check-up as an effective minimal intervention that can be delivered inexpensively to large numbers of individuals in community prevention is warranted.

Perhaps encouraged by the interest in research of brief interventions in medical settings, Bien, Miller, and Boroughs (1993a) used a MI with hospital outpatients randomly assigned to 2 conditions: standard assessment plus 2 additional hours of assessment followed by a 1-hour MI and standard outpatient treatment (treatment group; $n = 16$) or standard assessment followed by an attention-placebo interview and standard outpatient treatment (control group; $n = 16$).

At follow-up 3 months later, the treatment group showed superior outcome on a composite variable measuring the number of standard drinks consumed, peak blood alcohol level and percent days abstinent. These findings were absent at a 6-month follow-up. The authors concluded that MI is useful for enhancing the impact of treatment for alcohol problems on a time-limited basis in populations with clinically severe alcohol use.

Studies that suggest or show short-term effects (Bien et al., 1993a; Miller et al., 1988) might appear to be of limited value; however, Miller (1992a) disagrees. He believes that even if treatment benefits are short-term, utility remains in the continued

exploration and use of the particular intervention. The practical utility lies in the potential that MI can accelerate the natural change processes that are experienced by some alcoholics. Furthermore, these treatment gains could show significant value by decreasing the individual's short-term risk level. This short-term protection could prevent the individual from engaging in behaviors that endanger him/herself and others such as the commission of criminal offenses like DWI. Sanchez-Craig and Wilkinson (1989) note the unreasonable expectations that many individuals place on the duration of treatment effects by deeming treatments inadequate if their effects diminish over time. Any gains, even short-term, are worthwhile. Only treatment procedures that are extraordinarily powerful and which produce irreversible changes will withstand the effects of random error during long-term follow-up. Currently there are no such treatments in the brief interventions literature.

Again focusing on the use of MI early in the course of assessment and treatment, Brown and Miller (1993) believed that this application of MI would improve subsequent treatment participation and outcome in their participants who received alcoholism treatment in a psychiatric hospital. Following pretreatment assessment, participants were alternately assigned to receive a MI plus standard hospital evaluation and treatment ($n = 14$) or standard evaluation and treatment only ($n = 14$). Participants who received the MI received higher therapist ratings of the degree to which they participated in treatment. They also showed significantly lower alcohol consumption at a follow-up 3 months later. These results are consistent with those of Bien et al. (1993a) and provide evidence of the success of MI in improving short-term treatment outcome. It was concluded that using a MI that incorporates pretreatment assessment results can provide

useful preparation for alcoholism treatment. This “priming effect” might be similar to the “motivational nudge” that Miller et al. (1988) discussed as a possible benefit of MI.

In another study examining brief interventions in medical settings, Heather, Rollnick, Bell, and Richmond (1996) evaluated brief counseling with male heavy drinkers ($N = 123$) identified from the wards of a general hospital. The brief counseling intervention was divided into two levels: skills-based or brief MI, each being 30-40 minutes in duration. A nonintervention control group that received routine hospital care was also included in the experimental design. Participants were not randomly assigned to conditions. Blind follow-up was conducted approximately 6 months following discharge and self-reported alcohol consumption was compared with collateral information.

Both types of counseling resulted in similar significant reductions in the quantity and frequency of weekly alcohol consumption relative to the control condition. It is noteworthy that greater reductions in alcohol use were observed among participants in the early (precontemplation, contemplation and preparation) stages of change who were exposed to the MI compared to participants with comparable treatment readiness in the skills-based counseling. Heather et al. (1996) concluded that brief motivational counseling is a cost-effective method of decreasing alcohol-related illness in heavy drinking males screened in hospital wards. Heather (1995b) recommends measuring drinkers' stage of change and using MI with individuals identified as "not ready to change" because of the marked effect of brief MI with this group.

The success of this intervention must be viewed cautiously due to the absence of random assignment. Pretreatment group differences could have accounted for the treatment effect. Moreover, the nonintervention control group was not a “true” control group because of the possibility that ward staff might have dispensed advice about

drinking reduction (Heather et al., 1996). If the groups did not differ significantly before the intervention, then the treatment effect could have been quite large because of the following situation. As noted, control group participants might have received drinking reduction advice from staff. If this was true and if this advice led to a decrease in drinking in the control group participants, then the treatment effect was probably quite large given that it generated a statistically significant finding. In this case, if advice was given to the control group, it would have had a moderating effect on the treatment effect and yet a significant effect was still observed.

Motivational interviewing has been used with community volunteers, hospital inpatients and outpatients and as the next group of studies indicates, college students. Baer, Kivlahan, Fromme, and Marlatt (1989) conducted a randomized study of alcohol abusing college students comparing classroom group treatment ($n = 32$), a self-paced individualized correspondence course ($n = 11$) and a single session of individualized assessment feedback and advice recommending moderate drinking strategies ($n = 44$).

Results at a 3-month follow-up showed significant reductions in self-monitored drinking quantity and frequency. The authors noted that although the interventions were generally successful, none were successful in eliminating heavy drinking. The individuals who appeared to need the program the most (young male heavy drinkers) were also the most likely to withdraw from the study. Therefore, the results may reflect the treatment of less severe drinkers who did not exhibit the greatest need for intervention. It was hypothesized that the more severe group of young male drinkers might profit from treatment focusing on motivational issues that requires less time and commitment than the other interventions. The motivational intervention would focus on individualized graphic feedback of drinking patterns as a means of providing information

and enhancing motivation to change. Following previous reports by Holder et al. (1991) and Miller et al. (1995), the advice intervention showed promise because of its cost-effectiveness (Baer et al., 1989).

In a later study, Baer et al. (1992a) examined a sample of young adults ($N = 107$), many of whom were college students. The researchers compared the relative effectiveness of a 1-hour MI focusing on feedback and advice, classroom education, and a self-help manual, in reducing drinking. Significant reductions in drinking (approximately 40%) were observed across treatment groups following the intervention phase and at a 2-year follow-up.

Almost all of the randomly assigned participants attended the MI whereas approximately 2/3 attended the classroom sessions and about 1/3 completed the self-help manual. This suggests that a MI may require less effort for participation than other common forms of treatment for young drinkers (Baer et al., 1989; 1992a). On the other hand, because the classroom and self-help conditions were longer in duration, there was more opportunity for participant attrition than in the single session MI. Baer et al. (1992a) were wise to be cautious about their results because of the absence of a control group. They noted that social desirability could have biased the self-report drinking measures and hence could have mediated the observed reductions in drinking. The findings are difficult to interpret because of the weaknesses in experimental controls; however, MI appears to be more appealing to college students than other treatments because of its brevity and relative ease to follow.

A subsequent study by Baer, Kivlahan, and Marlatt (1992b) evaluated a single session of motivational feedback and advice with a sample of heavy drinking college students ($N = 321$). The purpose of the personalized and graphic feedback was to reduce

the risk associated with alcohol use. Volunteers identified from the top quartile of freshman drinkers were randomly assigned to receive assessment feedback and advice (intervention group; $n = 157$) or assessment only (control group; $n = 164$). Assessments were completed during the autumn of the freshman year. The intervention followed during the winter academic term. Reassessment was done during the spring term.

Members of the intervention group showed significantly greater reductions in drinking frequency, average drinking quantity and peak quantity than the control group participants despite a general trend among members of both groups to report less drinking in the spring relative to the autumn. These findings lend possible support to the utility of MI as a means of initiating behavior change with heavy drinking college students; although, the control group was not a true control group so the conclusion cannot be any stronger. The trend toward less drinking among control group participants suggests that the autumn assessment alone might have influenced spring drinking behavior. Therefore, assessment reactivity might have been an experimental confound. Due to the report of less drinking in the spring relative to the autumn, it is possible that a seasonal effect could also have influenced the findings in an uncontrolled manner.

A study of Canadian university undergraduate students conducted by Lightfoot, Matthews, Peters, & McSherry, (1993) provides a comparison to the studies by Baer et al. (1989; 1992a; 1992b) of American college students. The former study examined a randomly selected sample of 600 students. The focus was on evaluating the use of a computerized lifestyle assessment as a minimal intervention strategy for preventing alcohol and drug abuse. Participants identified by the automated assessment as drinking and/or using drugs at elevated risk levels were randomly assigned to one of three conditions: a brief MI with assessment feedback of risk and advice to change, a

computer-generated printout with summaries of the related risks and possible change strategies that were provided in the MI, or a no feedback control group.

Findings indicated that alcohol use was one of the lifestyle areas showing the greatest extent of health risk. Prior to the intervention, students who were using alcohol at levels of elevated risk were frequently in the precontemplation stage of change. Compared to individuals assigned to the control condition, significantly more of the participants in the MI condition progressed from the precontemplation stage to other stages of change (primarily preparation). These data might be inaccurate because stage of change was assessed using an algorithm instead of a longer assessment instrument that would probably have been more reliable. Participants in the MI condition showed greater reductions in their weekly alcohol consumption and peak blood alcohol levels relative to the other participants during the preintervention to postintervention period. Moreover, compared to their control group counterparts, the MI group participants reported fewer consequences related to drinking during the year following the intervention. These findings support the effectiveness of MI as a catalyst for enhancing readiness to change alcohol use among university students.

The findings from these studies that examined the use of MI with diverse populations are encouraging. Results from a study that defies this trend were reported by Kuchipudi, Hobein, Flickinger, and Iber (1990). They used a 2-hour MI in a medical service with alcoholics diagnosed with gastrointestinal disease. The MI comprised three parts which included a discussion of the relationship between the patient's drinking and disease, a compassionate treatment offer and discussion of treatment possibilities. Postdischarge follow-ups at 10 weeks and 16 weeks revealed no significant differences between patients in the intervention ($n = 59$) and control ($n = 55$) groups on measures of

self-reported sobriety and alcoholism program utilization. There was no mention of informed consent being obtained from study participants so it is possible that not all of them may have wished to comply with the experimental protocol. Moreover, an adequate description of the intervention was not provided so it is possible that it did not meet the criteria for classification as a MI.

Before concluding this review of empirical investigations of MI, mention will be given to a study by Saunders, Wilkinson, and Phillips (1995). Even though this research focused on opiate users attending a methadone programme, it is noteworthy in two respects. It is the first published randomized trial of MI and it employed an adapted version of the URICA as an outcome measure.

Saunders et al. (1995) randomly allocated volunteers to a brief motivational intervention ($n = 57$) or an educational placebo control group ($n = 65$). During the 6-month follow-up period the MI participants were initially more contemplative of change, showed better treatment compliance and reported fewer opiate-related problems. The MI group participants showed significantly greater shifts to the contemplation stage of change relative to the control group participants at a 1-week follow-up. Further shifts in the MI group participants to the action stage of change were observed at a 3-month follow-up. Many of the control group participants remained in the precontemplation stage at the same follow-up assessment. Unfortunately psychometric data were not provided for the modified version of the URICA so the validity of the data is unknown.

While the number of studies of interventions identified as MI in the alcoholism treatment literature are not numerous one can still identify some trends. Often the samples are relatively small and yet the findings are still significant. While the goals of MI are to build motivation to change and elicit a commitment to change, the

intervention's outcomes often reflect decreased alcohol consumption. This is an important and powerful finding because MI does not teach skills for reducing alcohol consumption yet experimental findings show reduced alcohol consumption. Taken together, these observations of sample sizes and treatment outcomes suggest that MI can produce significant treatment effects. Given that MI addresses treatment motivation, it is surprising that there are very few studies that report pretreatment and posttreatment motivation using stages of change assessment instruments. This observation suggests future research and it was acknowledged by Sutton (1997) when he recommended using stage of change as an outcome measure in treatment studies. Saunders et al. (1995) addressed this criticism in a sample of opiate users. Despite the negative report of using MI in a medical trial (Kuchipudi et al., 1990), this approach shows promise in the treatment of a variety of alcohol abusing individuals in a variety of settings. The following section examines the potential for using MI with a novel population.

Using Motivational Interviewing with Offenders

Motivational interviewing has been used with offenders but its history in this capacity is short and its use has been sparse. Much of the writing pertaining to the use of MI with offenders has been a series of recommendations rather than reports of empirical research. Before covering the literature pertaining to the use of MI in corrections, brief mention will be given to reports of treatment motivation considered in the context of a responsivity factor (Serin & Kennedy, 1997; Stewart & Millson, 1995).

Stewart and Millson (1995) wrote about a community offender management strategy ($N = 2\,400$) that included case management ratings of offender motivation for treatment. Level of motivation to address treatment needs was directly related to conditional release outcome. As motivation increased, release outcome suspensions

decreased. These findings underscore the importance of offender motivation as a responsivity factor and support the measurement of treatment motivation in offender assessment.

Serin and Kennedy (1997) also researched offender treatment motivation in the context of treatment responsivity. While I agree with their definition of motivation as being dynamic, they (Serin & Kennedy, 1997, p. 10.) misinterpret the writing of Miller and Rollnick (1991) when they mention that "...it therefore behooves the therapist to **motivate** the offender (Miller & Rollnick, 1991)." According to the MI literature, the goal of the therapist is not to motivate the client. In fact, this goal can lead the therapist to act as a cheerleader. In this role, the therapist will likely evoke client resistance. In keeping with the spirit and principles of MI, it behooves the therapist to recognize that his/her role is not as an agent of offender behavior change. Rather, the therapist uses the style and techniques of MI to create an atmosphere in which the offender has the opportunity to build motivation and eventually make a commitment to change. This distinction might seem slight but the consequences of ignoring it can be profoundly damaging to treatment progress.

Another criticism of the study by Serin and Kennedy (1997) lies in their discussion of the TTM. Their attention to the model is encouraging; however, they define the ambivalence that is experienced by individuals in the contemplation stage of change as being related to change. It is customary to conceptualize ambivalence in reference to the addictive behavior instead of the alternate behavior even though the latter is an important area to examine in the context of costs, benefits and ambivalence. Furthermore they advocate use of the URICA (DiClemente & Hughes, 1990; McConaughy et al., 1989) for assessing treatment readiness in offenders even though its items are generic and

designed for use with nonoffender, treatment seeking, community populations. As such, some of the items are too vague and/or inappropriate for use with offenders in most, if not all correctional settings, unless substantial modifications are made to the instrument. This point might have been given some consideration by Serin and Kennedy (1997) because they mention in their discussion that the URICA may not be suitable for use with offenders. This leaves the reader with the impression that Serin and Kennedy (1997) are ambivalent about using the URICA with offenders.

The treatment readiness results and conclusions provided by Serin and Kennedy (1997) are difficult to follow. They report that 45% of their sample ($N = 72$) were in the precontemplation stage of change at pretreatment; however, they do not report the stage of change data for the remaining 55% of their sample. They present posttreatment data for 43% of their sample (precontemplation stage of change) but again there are no data for the remaining 57% of their sample. Moreover, all of their data reflect very low stages of change scale scores (mean scale scores of 13 to 15) which probably indicate that participants responded negatively to many items resulting in a relative absence of scale elevations (floor effect). Serin and Kennedy (1997) concluded that low treatment readiness did not change as a function of treatment. This assertion is inappropriate because the treatment programs to which the participants were exposed were not designed to address or enhance treatment readiness. Thus, the conclusion does not fit with the incompletely reported data. While their interest in treatment readiness is commendable, Serin and Kennedy's (1997) conclusions are tenuous at best.

Moving from a discussion of motivation to MI, various authors have recommended using MI with various forensic populations. McMurran and Hollin (1993) suggest using MI with alcohol abusing young offenders. Annis and Chan (1983)

indirectly recommend MI by questioning the value of highly intensive and confrontive group treatment of offenders with alcohol and drug problems. Murphy and Baxter (1997) note that many treatment programs for domestic abuse perpetrators are confrontational in philosophy and implementation. They discuss the dangers of confrontational approaches, especially the risk that they reinforce the belief held by some batterers that relationships are based on coercive influence. To counter these countertherapeutic approaches, MI is recommended as a viable treatment alternative.

The treatment literature provides recommendations for using MI with sex offenders and it includes some preliminary data pertaining to its application in this population. George and Marlatt (1989) set the stage for using MI with sex offenders when they compared sex offending to the addictive behaviors. Motivational interviewing evolved from the addictions treatment field so according to George and Marlatt's (1989) analogy it is possible that MI could be used in sex offender treatment.

A more direct recommendation for using MI in treating sex offenders comes from Garland & Dougher (1991). They believe that motivation for change is the most important determinant of treatment outcome in offender populations thus motivational interventions could occupy a crucial role in treatment programs. Similarly, Kear-Colwell and Pollock (1997) support using MI with sex offenders who prey on children. They contrasted confrontational and motivational treatment approaches and observed that confrontational approaches disempower the offender by removing responsibility for change and encouraging self-labeling. The conclusion is that motivational approaches like MI provide a more positive influence on the change process.

A step closer toward implementing MI-based sex offender treatment comes from The National Association for the Development of Work with Sex Offenders (NOTA, 1996). This group developed a practice manual that guides the use of MI with sex offenders. Motivational interviewing is especially suitable for sex offenders because many of them present as being inadequately motivated for treatment (Garland & Dougher, 1991, NOTA, 1996). The MI approach is also particularly suitable for offenders who deny culpability, deny the need for treatment, and for those who drop out of treatment or whom are at risk to do so (NOTA, 1996).

A lone empirical study of the use of MI with a sex offender is a case study by Mann and Rollnick (1996). They employed MI with a sex offender who was convicted of sexual assault. This male did not believe that he committed an offense even though he admitted to engaging in sexual intercourse with the complainant. The client agreed to a sex offender assessment despite his belief that sex offender treatment would be irrelevant to his case. Assessment data indicated that he was in the precontemplation stage of change.

Motivational interviewing was used to re-evaluate the client's involvement in the offense with the aim of having him determine whether he could benefit from sex offender treatment. The intervention covered many of the principles and techniques of MI. For example, assessment feedback was given, labeling was discouraged, and personal choice and control were emphasized in the context of deciding whether to participate in treatment.

At follow-up the client had joined the treatment program and met all of the treatment goals. Posttreatment assessment indicated that his precontemplation scale score decreased and his contemplation and action scale scores increased. Similarities between

his sex offending and other addictive behaviors were noted, primarily the vulnerability of the perpetrator to blame and labeling, and the need to avoid using a confrontational approach.

So far the discussion of applying MI in corrections has focused on the treatment of offenders. Inherent in this task is training correctional personnel to deliver the intervention. Miller (1999) enthusiastically endorses training correctional personnel in the MI approach. Correctional officers could benefit from this training given the amount of contact that they have with offenders and in light of the findings from a study ($N = 1\,970$) by Larivière and Robinson (1996). They found that only 23% of Canadian correctional officers exhibited empathic views of offenders whereas 76% of the same national sample endorsed punishment as an important correctional goal. Only 54% of the officers believed in the efficacy of rehabilitation. Successfully implementing MI in correctional settings coupled with positive outcomes from its use by correctional officers and other personnel such as parole officers, psychologists, health services staff, teachers, and work supervisors, could change the aforementioned survey data dramatically.

Clearly there is interest in motivation as a responsivity factor that can be addressed in standardized offender assessments. Also, there is interest in using MI with various offender populations. It appears that a critical mass has developed for implementing and evaluating MI in correctional settings. The final sections of the literature review will discuss using MI in correctional settings as a component in effective correctional substance abuse treatment programs.

Using Motivational Interviewing in Correctional Settings

The introduction and literature review highlighted the prevalence of alcohol dependence among offenders and the association between alcohol use and criminal behavior. Successful treatment of alcohol abuse can have positive postrelease outcomes such as reduced recidivism (Millson et al., 1995). It was noted that alcohol abusing offenders require innovative treatment programs and in particular, formal assessment of their readiness to change. Moreover, ethical and moral arguments were presented in favor of treating alcohol dependence in offenders. Motivational interviewing is an effective and inexpensive intervention that shows promise for use with offenders in correctional settings because it addresses treatment readiness.

An unfortunate practice that is observed in the United States (and perhaps Canada too) is the widespread use of treatment modalities that have insufficient empirical evidence for their effectiveness (e.g., Alcoholics Anonymous). This practice is done at the expense of infrequently used methods that have empirical support and show promise for success (Institute of Medicine, 1989; Miller, 1991; 1992). Sadly, this situation indicates that clinicians and researchers have not heeded the recommendation of Edwards et al. (1977; Rollnick et al., 1993) which stated that new treatment techniques for alcoholism should be developed and rigorously tested.

In keeping with the suggestion of Edwards et al. (1977), researchers (Bien et al., 1993b; Miller, 1991) agree that the existing evidence is sufficient to warrant further investigations of brief interventions in different settings. Motivational interviewing is a brief intervention that could be tested with an offender sample in a correctional setting. This would make an important contribution to existing knowledge because using MI in a correctional setting would be pioneering. Moreover, its use in a population that has high

rates of psychopathology (e.g., incarcerated offenders) would be novel (Miller et al., 1995). Most of the participants in the samples described in this review had significantly fewer symptoms of mental disorders than incarcerated offenders.

Miller (1991) endorses using MI in correctional systems because it is brief, inexpensive and it can be of significant benefit in treating alcohol abuse and other addictive behaviors. Moreover, Miller (1999) strongly supports using MI throughout the phases of an offender's contact with the criminal justice system, from arrest to warrant expiry. Furthermore, MI is adaptable for use in multidisciplinary settings like correctional systems because its fundamentals can be taught to nonprofessionals (Rollnick & Bell, 1991).

Miller (1995b) highlights current opinion that offenders will only respond to coercive control. He compares this mindset with that of counselors who advocated using confrontational approaches with alcoholics in the recent past. Perhaps offenders, like the previously misunderstood alcoholics, will respond much better to MI than to confrontation (Miller, 1999). Motivational interviewing may prove to be a welcome addition and alternative to a practice in forensic settings in which problem drinkers are coerced into traditional abstinence-focused, disease-model treatment programs (Miller, 1987b).

Motivational interviewing might successfully meet the challenges posed by extrinsically motivated individuals (Miller, 1987b) like many offenders because of recent findings by Ryan et al. (1995). They examined the initial motivations for alcohol treatment among a group of alcoholics and found that individuals exhibiting high levels of external and internal motivation demonstrated favorable treatment attendance and treatment retention. In reference to offenders, external motivation is provided by societal

agents such as the courts and parole boards. Internal motivation, or motivation that is initiated and sustained by the individual's own actions, may not be as readily available in offenders. Motivational interviewing might provide an effective "boost" to the offender's internal motivation or natural change processes (Miller et al., 1988) so that an optimal balance between external and internal motivation can be achieved resulting in more favorable treatment participation and outcomes. (For an informative discussion of intrinsic motivation and self-determination theory, see Ryan & Deci, 2000.)

A useful feature of MI is its ease of integration into existing treatment programs such as cognitive-behavioral relapse prevention to form a broad treatment framework (Bien et al., 1993a; Miller & Rollnick, 1991; Rollnick & Morgan, 1995). Saunders et al. (1995) suggest that the effects of MI could be enhanced by its use adjunctively with other treatment. Bien et al. (1993a) characterize brief interventions as focusing on increasing problem awareness and advising change. This is in contrast to longer cognitive-behavioral interventions that contain skills training. These two types of interventions could be combined by initiating treatment with a brief intervention like MI and following with cognitive-behavioral skills training if necessary. This practice follows the view held by Bien et al. (1993b) that the impact of brief interventions is on motivation for change. Once this effect is observed, individuals may require minimal additional assistance to change their behavior because brief interventions may work by assisting natural change processes.

An interesting contrast between cognitive-behavioral skills training and MI is presented by Miller and Rollnick (1991). They note that cognitive-behavioral therapy assumes that the client is motivated otherwise there would be a motivational component in these interventions. Furthermore, the skills training component of these programs

teaches the "how" of change whereas MI teaches the "why" of change. This highlights how MI can complement existing treatment programs by providing a motivational foundation (Bien et al., 1993a; Miller & Rollnick, 1991).

Examples of the ways in which MI can provide a motivational foundation for other treatment programs have already been discussed (Bien et al., 1993a; Brown & Miller, 1993). Motivational interviewing is effective in providing a motivational induction prior to more intensive treatment. In correctional treatment programming, MI could provide a motivational induction prior to substance abuse treatment or social or cognitive skills training.

Motivational interviewing is versatile because it can be used adjunctively with another treatment or as a stand-alone intervention. Bien et al. (1993a) discuss the latter use of MI as an intervention with clients waiting to receive treatment. This reduces pressure on the treatment delivery system to provide immediate treatment. An advantage for the client is the accompanying reduction of risk while s/he waits to enter treatment. This is particularly useful in any system that has a large pool of treatment seekers.

Treatment cost-effectiveness provides a compelling argument for using MI in correctional settings. In a prevalence study conducted by Lightfoot and Hodgins (1988), 80% of their sample reported a need for substance abuse treatment. Forty percent of these offenders expressed a preference for individual therapy. This demand could be met by using MI. Given that individual therapy can be costly it is fortunate that MI is a brief and inexpensive intervention. Moreover, MI has been adapted to a group format (W. R. Miller, personal communication, January 10, 1997). Given the high prevalence of alcohol abuse in offenders, one can argue that even if MI is effective with only a modest

proportion of offenders, this could still translate to a large number of individuals and substantial monetary savings.

Heather (1989) provided an interesting comment about treatment cost. He said that no matter how compelling the cost-effectiveness argument is, psychologists are ethically bound to provide the best treatment available to their clients, even if it is expensive, intensive and long-term.

If MI is implemented in the treatment of alcohol dependence in offenders, then it could reduce institutional costs and societal costs by reducing the probability that offenders will recidivate following their release to the community. This is illustrated in the case of an offender who commits his offense while under the influence of alcohol. Alcohol use might be assessed as a criminogenic need. Treating the alcohol problem and therefore weakening or eliminating the contingency between alcohol use and criminal behavior would reduce the probability of reoffending.

Having described MI as a client-centered approach, it might be of concern that it is the focus of a pilot intervention program for offenders with symptoms of alcohol dependence. The possibility for concern arises from the findings of Gendreau (1996). He noted that nondirective/client-centered therapies have generally been ineffective in reducing offender recidivism. Further, cognitive-behavioral skills based programs are generally accepted as being "appropriate" for use in correctional settings (Gendreau, 1996; Ross & Lightfoot, 1985). In response to this observation, the reader is reminded that MI is client-centered but also directive in its focus on using reflective listening to selectively reinforce self-motivational statements. In addition, the approach uses other strategies for enhancing treatment readiness in the client. Moreover, the goal of using MI in a correctional setting would not be to reduce recidivism; although, this would be a

welcome outcome. Instead, the goal of MI would be to enhance treatment readiness for existing treatment programs that address dynamic risk factors or criminogenic needs. Furthermore, MI could be used as an add-on module at the front-end of a cognitive-behavioral skills training program for offenders.

Another possible concern about using MI is ethical (Miller, 1994b; Rollnick & Morgan, 1995). An ethical dilemma can emerge for clinicians when they wish to use MI with a client who has not expressed a desire to change (e.g., in an opportunistic setting like a hospital emergency ward). However, this dilemma might be of less concern in correctional settings because the clientele are incarcerated for the protection of society. In this case there is an argument for initiating whatever treatment may be necessary to reduce the offender's risk and thereby contribute to community security. Moreover, societal standards, which have permitted the use of coercive measures to initiate treatment with individuals who are not seeking help, will likely accommodate the use of MI in correctional settings.

The Present Study - Implementing Motivational Interviewing in a Correctional Setting

So far this paper has highlighted the importance of developing innovative and effective correctional treatment programs for alcohol dependence. In order to optimize treatment outcome, the treatment recipient should be adequately motivated to participate in treatment. Inadequate treatment readiness is commonplace among inmates who have been identified as requiring rehabilitation programs. Currently there is no systematic use of an empirically tested intervention that addresses offender treatment readiness in the Canadian federal correctional system.

The present study is the first attempt at addressing the need for an empirically tested intervention that targets treatment readiness in offenders with symptoms of alcohol dependence. Motivational interviewing was chosen as the intervention because it is an empirically supported and cost-effective approach that addresses inadequate treatment readiness in drinkers seeking treatment. Its style is nonconfrontational and respectful of the client. This style and the accompanying techniques of MI have been used in effective brief interventions. The approach has been recommended for use in correctional settings but there are few reports that follow these recommendations and fewer still that provide experimental findings.

The treatment matching literature suggests that MI is ideally suited for individuals in the precontemplation and contemplation stages of change. These individuals are well represented among offenders. Furthermore, they are underserved by interventions that target treatment readiness. Therefore, the present study targeted offenders in these early stages of change.

Early in this paper it was noted that rates of alcohol dependence vary across offender samples. Similarly the degree of alcohol dependence varies across offender samples. To capture a wide variety of alcohol dependence in offenders, the Alcohol Dependence Scale (ADS; Skinner & Horn, 1984) was used in participant selection. The ADS identified offenders with varying degrees of alcohol dependence who were suitable for inclusion in the study according to recommendations contained in the Computerized Lifestyle Assessment Instrument's user's guide (CLAI; Robinson, Fabiano, Porporino, Millson, & Graves, 1993).

The literature review discussed the methodological rigor of the majority of the MI research studies. The present pilot intervention program endeavored to continue this trend by utilizing random assignment of participants to the intervention and control groups. Another goal was to use similar treatment outcome measures to those reported in the literature; however, the setting of the present study (federal correctional institution) precluded the use of traditional outcome measures such as the number of standard drinks consumed during drinking days and percent days abstinent. Due to the foregoing, the participants' treatment readiness (stage of change) was chosen as the outcome measure because it can be recorded reasonably in correctional settings and its use in this capacity is not reported widely in the literature.

The remaining sections of the dissertation include the experimental hypotheses, method, results and discussion.

Experimental Hypotheses

1. Intervention group participants identified in the precontemplation (recognition) stage of change at pretest will show greater posttest contemplation (ambivalence) scale scores than their control group counterparts.
2. Intervention group participants identified in the contemplation (ambivalence) stage of change at pretest will show greater posttest preparation or action (taking steps) scale scores than their control group counterparts.
3. Intervention group participants exhibiting significant symptoms of alcohol dependence (ADS scores of 14 - 47) will show greater posttest stages of change scale scores than their control group counterparts.

4. Intervention group participants exhibiting significant problems related to drinking (PRD Scale scores of 4 - 15) will show greater posttest stages of change scale scores than their control group counterparts.

Method

Design

This study can be conceptualized as a 2-group experimental design consisting of an intervention (MI) group and a control group. Thus the independent variable (IV) consists of two levels, intervention and control. The dependent variables are the scale scores from the stages of change instruments. These measures were taken at pretest and posttest and thus constitute repeated measures. Based on the foregoing, this experimental design can be described as “mixed” because of the between-subjects’ IV and the within-subjects’ repeated measures.

Participants

Due to operational constraints during the data collection phase of the experiment, the sample size was limited to 83 participants. There are 42 participants in the intervention group and 41 participants in the control group. The sample is comprised of male federal offender volunteers from the general population of the Regional Reception and Assessment Center (RRAC) of the Pacific Region of the CSC. This catchment area that is served by the RRAC includes British Columbia, the Northwest Territories, the Yukon, and Nunavut. Participants were treated in accordance with the ethical standards of the Canadian Psychological Association (1991) and the American Psychological Association (1992). Table 1 provides a summary of the recruitment process.

Table 1
Summary of Participant Recruitment

Status	<u>n</u>	%
Total Participants Recruited	278	100
Refused to Participate	35	13
Recruits in Preparation, Action or Maintenance Stages	24	9
Absence of Symptoms of Alcohol Dependence	82	29
Reading Level Below Grade 7	32	11
Unable to Complete Study	13	5
Dropped Out	9	3
Resultant Sample Size	83	30

Table 2 provides a summary of the participant's demographic characteristics, which were comparable across groups.

Table 2
Sample (N = 83) Demographic Data

Characteristic	<u>M / (n)</u>	<u>SD / (%)</u>
Ethnicity		
Caucasian	(57)	(69)
Native Indian	(20)	(24)
Other	(6)	(7)
Age	32.57	10.27
Educational Grade Level	10.34	1.67
Alcohol Dependence Scale Score	10.22	8.21
Problems Related to Drinking Scale Score	2.53	2.58
Balanced Inventory of Desirable Responding (Impression Mgmt.)	3.56	4.15
History of Drug Use	(64)	(77)

Apparatus

Readiness to Change Questionnaire (RCQ; Appendix A) The version of the RCQ used in this study is a preliminary long-form of the 12-item Readiness to Change Questionnaire (Rollnick et al., 1992) and the 15-item Readiness to Change Questionnaire - Treatment Version (RCQ (TV); Heather, Luce, Peck, Dunbar, & James, 1999). The version used in this study is a 30-item, self-report instrument that assesses an individual's readiness to reduce heavy alcohol consumption. The RCQ was designed to measure the stages of change. The precontemplation, contemplation, preparation, action and maintenance stages are each measured by six items that are presented in the form of statements. Item responses are based on a five-point Likert scale that ranges from "strongly disagree" to "strongly agree." Scale scores range from 5 - 30. In this study, items were scored using a range of 1 - 5 points which corresponded to the range of response alternatives (strongly disagree to strongly agree). The RCQ has proven utility for measuring treatment motivation in offenders (Weekes, Millson, & Beal, 1994). The long-form version of the RCQ that is used in this study includes all of the items that comprise the shorter 12-item and 15-item versions. The 12-item RCQ has adequate internal consistency (coefficient alpha range: .78 to .82), test-retest reliability (correlation coefficient range: .73 to .85) and predictive validity of its scales (Heather, Rollnick, & Bell, 1993; Rollnick et al., 1992). The coefficient alphas for the 15-item version range from .60 to .77 and the test-retest reliability correlation coefficients range from .69 to .86 (Heather et al., 1999).

Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES,
version 8; Appendix B) The SOCRATES (Miller & Tonigan, 1996) is a 19-item, self-report instrument that is designed to assess motivation to change drinking in alcohol abusers. It is composed of three scales that measure Recognition, Ambivalence and Taking Steps. Items are in the form of statements. Item responses are based on a five-point Likert scale that ranges from “strongly disagree” to “strongly agree.” Scale scores range from 4 - 40. There are similarities between the scales of the SOCRATES and the stages of change that are measured by the RCQ. The recognition scale resembles the precontemplation scale of the RCQ. The ambivalence scale resembles the contemplation scale of the RCQ. The taking steps scale resembles an amalgam of the action and maintenance scales of the RCQ. Taking steps refers to behavior that is directed toward change or focused on maintaining change. The SOCRATES has adequate internal consistency (coefficient alpha range: .82 to .94) and test-retest reliability (correlation coefficient range: .87 to .96) of its scales (Miller & Tonigan, 1996).

University of Rhode Island Change Assessment (URICA; Appendix C) The URICA (DiClemente & Hughes, 1990; McConaughy et al., 1989) is a 32-item self-report instrument that was designed to measure the change process occurring in psychotherapy. The five stages of change are delineated by Prochaska and DiClemente (1986) in their TTM. The precontemplation, contemplation, action and maintenance stages are each measured by eight items that are in the form of statements. Unlike the RCQ and the SOCRATES, the URICA items are not alcohol-specific. The items are generic in the sense that they refer to a “problem” instead of “drinking.” Item responses are based on a five-point Likert scale that ranges from “strongly disagree” to “strongly agree.” Scale scores range from 8 - 40. Research of individuals seeking outpatient

alcoholism treatment indicates that the URICA scales have adequate internal consistency (coefficient alpha range: .69 to .82; DiClemente & Hughes, 1990).

Computerized Lifestyle Assessment Instrument The Computerized Lifestyle Assessment Instrument (CLAI; Robinson et al., 1993) is a modified version of the Computerized Lifestyle Assessment (Skinner, 1994). The CLAI was developed for use with offenders by including an additional section pertaining to criminal behavior. The CLAI is an automated, 623-item, self-report structured interview. It measures health-risk behaviors including the nature and seriousness of alcohol use during the 6 months prior to arrest, and the impact of alcohol use on various lifestyle activities. A notable feature of the CLAI is its use of normative and graphic feedback of alcohol use. Moreover, the CLAI generates a printed report of the assessment results which includes a copy of the graphic feedback that is provided online. The CLAI has acceptable reliability and validity in measuring alcohol use in federal offenders (Robinson et al., 1991; Weekes, Fabiano, Porporino, Robinson, & Millson, 1993).

Alcohol Dependence Scale (ADS; Appendix D) The ADS (Skinner & Horn, 1984) is a 25-item self-report instrument that provides a quantitative measure of the severity of alcohol dependence. This measure is consistent with the concept of the alcohol dependence syndrome (Edwards & Gross, 1976; Skinner & Allen, 1982). Items in the ADS measure loss of behavioral control, obsessive-compulsive drinking style, and psychophysical and psychoperceptual withdrawal symptoms. Scale scores range from 0 - 47. The ADS is embedded in the CLAI. Reliability data were reported by Robinson et al. (1991) in their study of the use of the CLAI with a federal offender population. The Cronbach Alpha coefficient for the ADS was .94. Similar findings were reported by Hodgins and Lightfoot (1989) in their study of the use of the ADS with incarcerated male

federal offenders. Test-retest reliability data from a sample of homeless persons with substance use disorders generated a correlation coefficient of .92 (Drake, McHugo, & Biesanz, 1995).

Problems Related to Drinking Scale (PRD; Appendix E) The PRD (Robinson et al., 1993) is a 15-item self-report instrument that measures various domains such as family, school/employment, finances, legal, etc., that can be the source of problems that are related to drinking. Scale scores range from 0 - 15. The PRD Scale is embedded in the CLAI.

Balanced Inventory of Desirable Responding (BIDR, version 6 - Form 40; Appendix F) The BIDR (Paulhus, 1994) is a 40-item self-report instrument that measures self-deceptive enhancement or the tendency to provide positively biased self-appraisals. The BIDR also measures impression management or the tendency to exhibit positively biased self-presentation to others. Each of the instrument's two scales are measured by 20 items that are presented as propositions. Responses are rated on a 7-point Likert scale that ranges from "not true" to "very true." Scale scores range from 0 - 20. The BIDR has adequate internal consistency (coefficient alpha range: .65 to .86) and test-retest reliability (correlation coefficient range: .69 to .77) of its scales (Paulhus, 1994).

Procedure

Inmates were contacted individually for voluntary participation in the study soon after their arrival in the general population of the RRAC. They were told that the study was being conducted as a partial requirement for the completion of doctoral studies in psychology and for the purpose of improving treatment programs that are provided by the CSC. Issues related to confidentiality, anonymity and the fact that the study had no bearing on the inmates' relationship with the criminal justice system were emphasized.

The study was described briefly and inmates who agreed to consider participating were given an informed consent form (Appendix G). The main points covered in this form were highlighted by the experimenter during his discussions with the recruits. Inmates were then asked if they had any questions. Inmates who remained interested in participating in the study were asked to read and sign the consent form.

One aim of the study's design was to randomly assign participants to the levels of the IV. After consultation with the Regional Advisor for Psychology, Research and Program Evaluation, it was decided to assign participants to the intervention group first and continue to do so until the group was filled. Then, assignment of participants to the control group began until it was filled. This was done because of concern that participants might communicate amongst themselves about the design and elements of the experiment. This could lead some individuals to question why some of the participants were being interviewed (intervention group) and others were not (control group).

Participants were pretested in small groups. Pretesting occurred within a few days of recruiting. Participants were informed that the pretest session was part of the research study. They were told that they would be given a number of questionnaires to complete that ask for their opinion of their drinking habits. Participants were asked to read the questionnaire instructions, respond to the items carefully and summon the experimenter for assistance if necessary. Participants were given the questionnaires individually. When a questionnaire was completed, it was collected by the experimenter and the next questionnaire was given to the participant. The measures were presented to participants in the following order: RCQ, SOCRATES, URICA, and BIDR. The decision not to

counterbalance the order of presentation of the measures was based on the following reasoning:

1. Of the three stages of change instruments, only the RCQ and the SOCRATES are alcohol-specific in the sense that their items contain the word “drinking.” The URICA items do not refer to drinking, instead they contain the word “problem.” Thus, it was decided that the URICA would not be administered first to any of the participants because of the desire for the participants to focus their attention on their drinking behavior while responding to the items in the questionnaires. It was thought that in spite of the reference to “drinking alcohol” in the instructions of the URICA, participants might not focus their attention on their drinking behavior while responding to the URICA items because of their generic nature.
2. Based on the foregoing, it was decided that either the RCQ or the SOCRATES would be administered first to the participants. Given that the RCQ is almost twice the length of the SOCRATES (30 items vs. 19 items), and given that it measures the stages of change from the TTM, it was decided that the RCQ would be administered first in the testing battery. It was thought that participants would have more energy to devote to its completion early in the testing session and that they would respond favorably to the opportunity to complete the briefer instrument (SOCRATES) after completing the RCQ. The “Results” section discusses statistical testing for a possible “order effect” due to the decision not to counterbalance the order of presentation of the stages of change measures.

Before the data collection phase of the experiment, it was decided that participants would be required to produce at least one scale score profile in which the highest scale score(s) would be in the precontemplation (recognition) and/or contemplation (ambivalence) scales of one of the stages of change measures. Each stage of change

measure produces a scale score profile for each participant. This inclusion criterion follows the logic outlined earlier. Participants who produced the highest scale score elevation(s) in the preparation, action, maintenance or taking steps scales of each of the instruments were excluded from further participation in the study. Thus, the study targeted individuals in either the precontemplation (recognition) or contemplation (ambivalence) stages of change. Furthermore, the study targeted inmates with reading comprehension levels of Grade 7 or higher (Jastak & Wilkinson, 1984) to ensure that they were capable of comprehending the content of the questionnaires. Participants with reading comprehension levels below Grade 7 were excluded from further participation in the study.

The juncture following the pretest session delineates the change in procedure for the intervention and control groups. The following section will continue to describe the procedure as it applied to the intervention group. Discussion of the protocol for the control group will conclude the Method section.

The CLAI was administered to the intervention group participants within a few days following pretesting. The experimenter or a Substance Abuse Programs staff member remained in an office adjacent to the CLAI testing room for the duration of the assessment session so that assistance was available if participants had any questions. Following the completion of the CLAI, participant feedback reports were generated from the CLAI database for use in the MI. Alcohol Dependence Scale scores were examined to confirm that participants received a score of 1 or greater for inclusion in the study. This inclusion criterion follows the logic outlined earlier. Participants with ADS scores of zero were excluded from participating in the study because this score indicates an absence of symptoms of alcohol dependence.

Within a few days of completing the CLAI, intervention group participants were contacted individually for participation in the MI; although, this purpose was not communicated directly to them. Instead, participants were told that they would be given their results from the CLAI. The MI typically lasted from 90 to 120 minutes. The section that follows outlines the elements of the intervention. The Institute of Medicine (1989) identifies the definition and integrity of interventions as a common problem in psychotherapy research so these observations were addressed in the present study. The intervention's validity as a MI was confirmed by acknowledged experts in the field of MI (R. K. Hester, personal communication, October 16, 1998; W.R. Miller, personal communication, January 10, 1997). Interviews were audiotaped and a random sample ($n = 4$) of the audiocassettes were reviewed by a member of the Motivational Interviewing Network of Trainers to verify the integrity of the intervention.

Intervention

All interviews followed the principles of MI and incorporated the common elements of effective brief interventions. In more detail, the interviews included the following:

1. Informed consent was sought for audiotaping interviews (Appendix H) as part of the procedure to allow for verification of the integrity of the intervention.
2. Role Induction (Zweben, Bonner, Chaim, & Santon, 1988). A brief structure of the session including its duration, the content to be covered and the roles of the participant and the interviewer were discussed with the participant. It was emphasized that it is common for individuals to receive assessment feedback in an interview. This was done to detract from any suspicion that the participant might have had regarding the possibility that he was going to participate in a MI. Confidentiality and its limits were explained.

The participant was asked if he had any questions and he was instructed to ask questions if any arose during the interview.

3. As a means of establishing further rapport with the participant, the experimenter asked him to comment on the experience of completing the automated assessment.

4. The participant was provided with a copy of the CLAI feedback report. The interviewer ensured that the participant understood the feedback by explaining, interpreting and discussing the results with him. Normative feedback (Sobell et al., 1996) was provided to the participant so he could “anchor” his alcohol consumption in relation to findings from a survey of adult Canadians. Feedback regarding some of the health risks of excessive alcohol consumption was also provided (Sobell et al., 1996). The decision to communicate objective alcohol assessment feedback using a motivational style was based on the Drinker’s Check-up (Miller et al., 1988). Due to operational requirements in the RRAC, a substance abuse history was taken prior to this feedback phase of the MI.

5. To enhance rapport and the interviewer’s understanding of the participant’s alcohol use, a typical drinking day was explored with the participant (Rollnick et al., 1992).

6. Discrepancy was developed by discussing the participant’s values, beliefs and goals and the role that his alcohol use plays in these domains.

7. A decisional balance exercise (Sobell et al., 1996) was used to examine the pros and cons of the participant’s alcohol use. This exercise was included in the intervention because of its utility in helping individuals progress from the precontemplation stage of change to action (Prochaska, 1994).

8. A recapitulation of salient points discussed in the interview was provided by the experimenter to the participant.

9. The possibility of drinking behavior change was discussed and the participant's responsibility, freedom of choice and self-efficacy were emphasized.
10. Permission was sought to provide information about the substance abuse treatment programs that are offered to inmates by the CSC.
11. Permission was sought to provide advice. When permission was granted by the participant, the interviewer recommended a moderate drinking goal to participants with low ADS and PRD scores, and whom expressed a desire to change their drinking behavior. Abstinence was recommended as a goal for participants with high ADS and PRD scores, and whom indicated a willingness to change their drinking behavior.
12. A concluding summary of the interview was provided by the experimenter to the participant.
13. The participant was asked if he had any final comments and/or questions. After addressing any comments and/or questions that the participant might have had, the experimenter thanked the participant for his participation in the feedback session.

One week following the MI, the intervention group participants repeated the pretest protocol except they did not complete the BIDR. The 1-week interval between the MI and the posttest session was chosen because it is unlikely that any shift in readiness to change would be observed following a shorter period of time (W. R. Miller, personal communication, December 10, 1996). A longer interval was not chosen because of operational requirements regarding the penitentiary placement of inmates and the time limit on the data collection phase of the experiment.

Control Group Protocol

Control group participants were not exposed to the MI. Following pretesting and an intertest interval (pretest to posttest) that was equivalent to the average intertest interval for the intervention group participants ($\underline{M}$ = 19 days; $\underline{SD}$ = 7 days), the control group participants received the same posttest measures after their intertest interval ($\underline{M}$ = 18 days; $\underline{SD}$ = 5 days). The control group participants received a CLAI assessment within a few days following posttesting.

Participants were debriefed fully (Appendices I and J) following the completion of the data collection phase of the experiment.

Results

Data screening and analysis were conducted using the Statistical Package for the Social Sciences Graduate Pack software application (SPSS Advanced Version 7.5.1 for Windows 95; SPSS Inc., 1997).

Data Screening

Before commencing the data analysis, invalid, illogical or contradictory stages of change profiles from the stages of change instruments were identified using procedures discussed by Heather et al. (1999). For example, simultaneous scale score elevations in the precontemplation and action stages of change scales. Profiles that exhibited a response bias were also identified. For example, the same response alternative was selected in response to each item in a questionnaire. Ten invalid stages of change profiles were detected in the RCQ data file, 14 invalid profiles were found in the SOCRATES data file, and 10 invalid profiles were identified in the URICA data file. Cases associated with these invalid profiles were deleted from the respective data files.

Further data screening was conducted prior to data analysis according to recommendations outlined by Tabachnick and Fidell (1996). Two cases were deleted from the RCQ data file because of extreme stages of change scale scores ($z > 3.29$). Similarly one case was deleted from the SOCRATES data file and three cases were deleted from the URICA data file. Accounting for all of the deleted cases due to invalid profiles and extreme scale scores, the final sample sizes from an initial pool of 83 participants for the RCQ, SOCRATES, and URICA data files are 71, 68, and 70 respectively. Due to the presence of three separate samples, each of which are associated with one of the three stages of change instruments, findings from the data analyses will be grouped and presented in separate sections that are organized according to the stages of change instruments.

Investigating an “Order Effect”

Due to the decision not to counterbalance the order of presentation of the stages of change instruments during the data collection phase of the experiment, the presence of an order effect was investigated. The order of presentation of the stages of change instruments was as follows: RCQ, SOCRATES, and URICA. If an order effect is present, then there should be evidence of a systematic increase or decrease in “motivation” as a function of the order of presentation of the instruments. In this case, motivation can be operationalized as a participant’s stage of change that has been determined by using a nominal scale of measurement.

The RCQ measures the precontemplation, contemplation, preparation, action, and maintenance stages of change. The URICA measures the same stages with the exception of the preparation stage. The SOCRATES measures recognition, ambivalence, and taking steps. After comparing the recognition scale items with the items of the RCQ and

the URICA, it was determined that the recognition scale of the SOCRATES is similar to the precontemplation scales of the RCQ and the URICA. After similar comparisons, it was observed that the ambivalence scale of the SOCRATES is similar to the contemplation scales of the RCQ and the URICA. The taking steps scale of the SOCRATES can be described as an amalgam of items that measure the action and maintenance stages of change.

If an order effect was operating, then for any given participant, motivation could increase across instruments (e.g., Stage of change identified as precontemplation with the RCQ, ambivalence with the SOCRATES, and action with the URICA.) or it could decrease across instruments (e.g., Stage of change identified as maintenance with the RCQ, ambivalence with the SOCRATES, and precontemplation with the URICA.)

The first step in the analysis was the allocation of a stage of change for each participant with each instrument by using a nominal scale of measurement. Using the RCQ and the URICA, the participant's stage of change was determined by the highest stage of change scale score. With the SOCRATES, the stage of change scale with the highest decile score determined the participant's stage of change. If there was a tie between two or more stages of change scale scores (or decile scores) in an instrument, then the "lowest" stage of change was selected. For example using the SOCRATES, if a participant's stages of change profile has two peaks which correspond to the recognition and ambivalence scales and the decile scores for these scales are identical, then the participant's stage of change would be recognition.

A subsample of 54 participants was gathered using the cases that are common in the three data files that correspond to the stages of change measures. Stages of change allocations were compared between the following pairs of instruments: RCQ and

SOCRATES, RCQ and URICA, and, SOCRATES and URICA. In each comparison, stages of change allocations between pairs of instruments were coded according to whether they were comparable (e.g., precontemplation and recognition, ambivalence and contemplation, etc.) or different (e.g., precontemplation and ambivalence, recognition and maintenance, etc.). The newly coded data, that enabled an examination of the concordance between the instruments in their stages of change allocations, were subjected to a Chi Square analysis to determine if there were significant differences in the observed versus expected frequencies of the stages of change allocations. None of the results from the Chi Square analyses were statistically significant. For the RCQ vs. SOCRATES comparisons, $\chi^2(2, N = 19) = 4.53, p < .11$. For the RCQ vs. URICA comparisons, $\chi^2(2, N = 23) = 4.26, p < .12$. For the SOCRATES vs. URICA comparisons, $\chi^2(1, N = 36) = 2.78, p < .10$.

Before continuing, the experimental hypotheses will be reviewed:

Experimental Hypotheses

1. Intervention group participants identified in the precontemplation (recognition) stage of change at pretest will show greater posttest contemplation (ambivalence) scale scores than their control group counterparts.
2. Intervention group participants identified in the contemplation (ambivalence) stage of change at pretest will show greater posttest preparation or action (taking steps) scale scores than their control group counterparts.
3. Intervention group participants exhibiting significant symptoms of alcohol dependence (ADS scores of 14 - 47) will show greater posttest stages of change scale scores than their control group counterparts.

4. Intervention group participants exhibiting significant problems related to drinking (PRD Scale scores of 4 - 15) will show greater posttest stages of change scale scores than their control group counterparts.

Demographic Data

Statistical analysis of the intertest interval data, and the demographic data presented in Table 2 did not reveal any significant differences between the two groups. Findings from an analysis of the BIDR impression management scale data revealed the following: MI group ($\underline{M} = 3.68$, $\underline{SD} = 4.63$); Control group ($\underline{M} = 3.42$, $\underline{SD} = 3.64$). These means are not significantly different.

Stages of Change by Measure

The distribution of the stages of change allocations to the participants, across the stages of change measures, is provided in Table 3. In general, most participants were classified by the RCQ as being in the preparation, action or maintenance stages of change. The majority of participants were classified by the SOCRATES as being in the ambivalence or taking steps stages of change. Most participants were classified by the URICA as being in the contemplation stage of change.

Table 3

Stages of Change by Group and Time for the Readiness to Change Questionnaire, the Stages of Change Readiness and Treatment Eagerness Scale, and the University of Rhode Island Change Assessment

Measure	Group	n	Pretest			Posttest		
			PC/R	C/Am	P+A+M/TS	PC/R	C/Am	P+A+M/TS
RCQ	MI	34	4	2	28	3	3	28
	Ctrl	37	8	3	26	4	2	31
SOCRATES	MI	34	7	19	8	7	18	9
	Ctrl	34	7	12	15	6	15	13
URICA	MI	37	0	34	3	0	33	4
	Ctrl	33	0	24	9	0	26	7

Note. PC = precontemplation, R = recognition, C = contemplation, Am = ambivalence, P = preparation, A = action, M = maintenance, TS = taking steps.

Readiness Scores by Measure

Readiness scores, like the stages of change, provide a measure of treatment motivation. Readiness scores were calculated by summing the means of the contemplation (ambivalence), preparation, action, and maintenance (taking steps) scales and then subtracting the mean of the precontemplation (recognition) scale (Carbonari, DiClemente, & Zweben, 1994). The distribution of readiness scores across measures is provided in Table 4. The SOCRATES readiness scores are smallest in magnitude because this instrument measures the least (3) stages of change relative to the other measures. The RCQ readiness scores are largest in magnitude because this instrument measures the most (5) stages of change relative to the other measures. One observes little change in the measures of central tendency and dispersion across testing intervals.

Table 4
Readiness Scores by Group and Time for the Readiness to Change Questionnaire, the Stages of Change Readiness and Treatment Eagerness Scale, and the University of Rhode Island Change Assessment

Measure	Group	Pretest			Posttest		
		<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>
RCQ	MI	13.00	3.19	34	13.18	3.14	34
	Ctrl	11.48	4.13	37	12.05	3.65	37
SOCRATES	MI	4.15	1.20	34	4.43	1.30	34
	Ctrl	4.20	1.56	34	4.20	1.37	34
URICA	MI	10.18	1.96	37	10.32	2.02	37
	Ctrl	9.80	2.15	33	9.85	1.99	33

Relationship Between the Stages of Change Measures

Intercorrelations are provided in Table 5 to illustrate the degree of association between readiness scores from the stages of change measures. One observes that all of the correlations between the measures are reasonable strong and significant.

Table 5
Intercorrelations for Readiness Scores from the Readiness to Change Questionnaire, the Stages of Change Readiness and Treatment Eagerness Scale, and the University of Rhode Island Change Assessment

Measure	RCQ	SOCRATES	URICA
RCQ	---	.63	.59
SOCRATES	.58	---	.52
URICA	.79	.56	---

Note. Intercorrelations for pretest readiness scores ($n = 53$) are presented above the diagonal, and intercorrelations for posttest readiness scores ($n = 53$) are presented below the diagonal. All coefficients are significant at $p < .01$.

Relationship Between the Drinking Measures

The intercorrelation between the ADS and the PRD scores is $r(53) = .65, p < .01$. This value illustrates the reasonably strong and significant association between these two drinking measures.

Readiness to Change Questionnaire

Principal Components Analysis

Despite the small sample ($N = 71$), a Principal Components Analysis (PCA) was conducted. This data reduction technique was implemented to permit preliminary exploration of the data. Principal components extraction with Varimax rotation was performed using the 30 items of the RCQ that was administered at pretest. Table 6 provides a summary of the three components (precontemplation, action/maintenance, and contemplation/preparation) that were extracted. Although the components do not separate according to the 5 stages of change that are measured by the RCQ, their groupings make theoretical sense. The action/maintenance component addresses behavioral features of the change process. The contemplation/preparation component addresses cognitive features of the change process. Data pertaining to the component structure of the instrument were unavailable therefore more precise comparisons between these data and normative data were not possible.

Table 6
Principal Components of the Readiness to Change Questionnaire

Component	Eigenvalue	Percentage of Variance	Cumulative Percentage
1	14.31	47.69	47.69
2	2.88	9.59	57.28
3	1.55	5.15	62.43

Table 7 provides a summary of the component loadings. A loading is the correlation between an item and a component. Items with loadings of .32 and above were interpreted as recommended by Tabachnick and Fidell, (1996). The majority of the loadings are in excess of .55 which can be described as good (Comrey & Lee, 1992, as cited in Tabachnick & Fidell, 1996). Seven items did not load on any of the components. Communalities represent the variance in an item that is accounted for by the components (Tabachnick & Fidell, 1996).

Table 7
Principal Components Loadings of the Readiness to Change Questionnaire

Item	<u>Component Loading</u>			Communality
	1	2	3	
28	.80			.78
11	-.78			.71
27	.76			.60
26	-.75			.76
6	-.72			.74
1	-.71			.64
23	.70			.81
3	.64			.79
16	-.62			.68
9	.56			.77
20		.71		.77
24		.69		.81
17		.69		.71
25		.60		.81
29		.58		.81
30		.55		.69
14		.52		.72
19			.78	.82
7			.70	.80
12			.66	.69
18			.58	.84
13			.55	.85
8			.47	.79

Despite the limitations placed on the analysis by the small sample, it appears that the underlying component structure of the RCQ is quite robust therefore the prescribed stages of change scoring rules for the instrument were used.

Drinking Severity and Treatment Readiness

As a means of studying the relationship between drinking severity and treatment readiness, correlation coefficients were examined between the drinking measures and readiness scores. Of the two drinking measures, the ADS scores were more highly correlated with the readiness scores than the PRD scores. The magnitude of the correlation coefficient between the ADS scores and the readiness scores was $r(69) = .51$, $p < .01$. The magnitude of the correlation coefficient between the PRD scores and the readiness scores was $r(69) = .42$, $p < .01$.

Only one of the participants identified with moderate or more severe symptoms of alcohol dependence was in the precontemplation stage of change at pretest. All of the other participants in this group showed some degree of problem recognition by being in the higher stages of change. On the other hand, 19% of the participants identified with low levels of alcohol dependence were in the precontemplation stage of change at pretest.

Multivariate and Univariate Analyses

The multivariate parametric approach was used as an initial step towards addressing the experimental hypotheses. A 2 x 2 repeated measures Multivariate Analysis of Variance (MANOVA) did not yield significant results so a covariate was sought for use in a 2 x 2 repeated measures Multivariate Analysis of Covariance (MANCOVA). Scores from the PRD Scale were significantly correlated with the following RCQ scale scores: precontemplation, $r(69) = -.50$, $p < .01$; contemplation,

$r(69) = .37, p < .01$; preparation, $r(69) = .43, p < .01$; action, $r(69) = .30, p < .01$; and, maintenance, $r(69) = .25, p < .05$. The PRD scores were more significantly correlated with the stages of change scale scores than the ADS scores or a combination of the ADS and PRD scores. Similarly all other reports of covariates in the remainder of the Results section pertain to the most highly correlated covariates (of all of the available covariates) with the stages of change subscales. Based on the foregoing, adjustment was made for the PRD scores (covariate). A 2 x 2 repeated measures MANCOVA was performed with the posttest scale scores serving as the dependent variables. The dependent variables were measured on two occasions (pretest and posttest) and thus constitute repeated measures (within-subjects factor). The second factor is “group” (intervention or control) which constitutes the between-subjects factor. Given the nature of the factors, the analysis can be described as being “mixed” (between-subjects and within-subjects factors), and “doubly multivariate” (multiple dependent variables measured repeatedly; Tabachnick & Fidell, 1996). Using Wilks’ Lambda as the criterion, there was a significant main effect for group, $F(5, 64) = 3.60, p < .01$. Findings from univariate analyses of the contemplation and preparation scales data were not significant when pretest group differences in these scale scores were controlled with Analysis of Covariance (ANCOVA).

Light Drinkers

Optimum profiling was used to further explore for the presence of significant between-groups differences in the stages of change scale scores. Optimum profiling involved dividing the sample into smaller and more homogeneous subsamples based on degree of drinking severity. Analyses of the data generated by participants with significant symptoms of alcohol dependence did not uncover significant findings so

attention shifted to participants with few symptoms of alcohol dependence (ADS scores ranging from 1 to 13). A 2 x 2 repeated measures MANOVA did not yield significant results so a covariate was sought for use in a 2 x 2 repeated measures MANCOVA. Scores from the PRD Scale were significantly correlated with the following RCQ scale scores: precontemplation, $r(51) = -.34, p < .05$; contemplation, $r(51) = .39, p < .01$; and, preparation, $r(51) = .34, p < .05$. Based on the foregoing, adjustment was made for the PRD scores (covariate). Using Wilks' Lambda as the criterion, there was a significant main effect for group, $F(5, 46) = 3.82, p < .01$. Findings from univariate analyses of the contemplation and preparation scales data were not significant when pretest group differences in these scales were controlled with ANCOVA. However, a trend towards statistical significance was discovered in the precontemplation scale data. A One-way ANCOVA was performed using these posttest scale scores as the dependent variable. "Group" was the independent variable. After controlling for PRD scores, a trend towards significance was observed. Using the data from Table 8, intervention group participants had, on average, lower posttest precontemplation scale scores than their control group counterparts, $F(1,50) = 3.68, p = .06$. Table 8 presents descriptive statistics of the sample. Table 9 provides a summary of the ANCOVA.

Table 8
Descriptive Statistics Using the Precontemplation Scale of the Readiness to Change Questionnaire for Participants with Low Levels of Alcohol Dependence

Group	Pretest			Posttest		
	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>
Intervention	13.74	5.03	27	14.22	4.79	27
Control	16.31	5.28	26	16.65	4.77	26

Table 9

Analysis of Covariance of Posttest Precontemplation Scale Scores of Participants with Low Levels of Alcohol Dependence with Problems Related to Drinking Scale Scores as Covariate

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>η^2</u>
Covariate	1	144.02	144.02	7.04 ^{**}	.12
Group	1	75.31	75.31	3.68 [*]	.07
Error	50	1022.53	20.45		
Total	52	1244.87	23.94		

^{*} $p = .06$. ^{**} $p < .05$.

Drinkers with Few Problems Related to Drinking

Analyses of the data generated by participants with significant problems related to drinking (PRD scores ranging from 4 to 15) did not reveal significant results so the focus was diverted to participants with few problems related to drinking (PRD scores ranging from 0 to 3.). A 2 x 2 repeated measures MANOVA was performed. Using Wilks' Lambda as the criterion, there was a significant main effect for group, $F(5, 45) = 3.27$, $p < .05$. Findings from univariate analyses of the contemplation and preparation scales data were not statistically significant when pretest group differences in these scale scores were controlled with ANCOVA.

Precontemplators

Further subsamples were examined for the presence of significant between-groups differences in the stages of change scale scores. As was done earlier, a nominal scale of measurement was used to allocate stages of change using participants' pretest RCQ data. A sample of participants ($n = 12$) was identified in which each member had been allocated to the precontemplation stage of change. A univariate approach to analysis was

used instead of the multivariate approach because of the small sample. Posttest scale scores were compared between precontemplators in the intervention and control groups using a One-way ANOVA. None of the results were statistically significant; although, examination of group means indicated that further attention to the contemplation scale data was warranted. Due to the repeated measures experimental design, pretest contemplation scale scores were used as the covariate in a One-way ANCOVA. Posttest contemplation scale scores were used as the dependent variable. "Group" was the independent variable. After controlling for pretest contemplation scale scores, intervention group precontemplators had significantly greater posttest contemplation scale scores than their control group counterparts, $F(1,9) = 7.31, p < .05$. Table 10 presents descriptive statistics of the sample. Table 11 provides a summary of the ANCOVA. These findings should be viewed cautiously due to the small sample size.

Table 10
Descriptive Statistics of Precontemplators Using the Contemplation Scale of the Readiness to Change Questionnaire

Group	Pretest			Posttest		
	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>
Intervention	15.50	2.08	4	17.50	2.65	4
Control	13.00	3.02	8	14.13	2.85	8

Table 11

Analysis of Covariance of Posttest Contemplation Scale Scores of Precontemplators with Pretest Contemplation Scale Scores as Covariate

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>η^2</u>
Covariate	1	19.75	19.75	3.06	
Group	1	47.22	47.22	7.31*	.45
Error	9	58.12	6.46		
Total	11	108.25	9.84		

* $p < .05$

Analysis of the data generated by participants in the contemplation stage of change did not render significant findings.

Readiness to Change Questionnaire - Treatment Version

A shorter version of the RCQ can be derived from the long-form that was used in this study by selecting a subsample of items (Heather et al., 1999). The RCQ (TV) (Heather et al., 1999) measures the precontemplation, contemplation, and action stages of change. The RCQ items that comprise this short-form were analyzed to determine whether they would yield any significant findings.

Data Screening

One invalid stages of change profile was detected so the case associated with it was deleted from the data file. Two cases were deleted from the data file because of extreme stages of change scale scores ($z > 3.29$). Taking these deletions into consideration, the resultant sample size was 80.

Principal Components Analysis

Once again, and despite the small sample, a PCA was conducted to allow preliminary exploration of the data. Principal components extraction with Varimax rotation was performed using the 15 items which comprise the RCQ (TV) from the RCQ that was administered at pretest. Table 12 provides a summary of the three components (action, precontemplation/contemplation, and contemplation) that were extracted. The components correspond reasonably well with the stages of change that are measured by the RCQ (TV) with the exception of the precontemplation/contemplation component which is not as clearly defined as the other components. Therefore, these data provide a partial replication of the instrument's normative component structure. Aside from the correspondence between these results and published data pertaining to the component structure of the instrument, there were few similarities between eigenvalues, percentages of variance explained, and item loadings.

Table 12

Principal Components of the Readiness to Change Questionnaire - Treatment Version

Component	Eigenvalue	Percentage of Variance	Cumulative Percentage
1	6.69	44.61	44.61
2	1.72	11.50	56.11
3	1.10	7.32	63.43

Table 13 provides a summary of the component loadings. The majority of the loadings are in excess of .55 which can be described as good (Comrey & Lee, 1992, as cited in Tabachnick & Fidell, 1996). All of the items loaded on at least one of the components. Item loadings were dissimilar in magnitude to published values (Heather et al., 1999).

Table 13
Principal Components Loadings of the Readiness to Change Questionnaire - Treatment Version

Item	<u>Component Loading</u>			Communality
	1	2	3	
14	.84			.72
29	.77			.75
24	.76			.76
4	.74			.57
16	-.64			.55
17	.59			.42
11	-.48			.64
12		.81		.70
7		.71		.72
19		.68		.66
6		-.65		.58
26		-.54		.74
21		-.39		.32
2			.79	.69
27			.71	.69

Findings from the PCA supported the decision to use the prescribed stages of change scoring rules for the instrument and continue with further analyses.

Multivariate and Univariate Analyses

A 2 x 2 repeated measures MANOVA did not yield significant results so a covariate was sought for use in a 2 x 2 repeated measures MANCOVA. Scores from the PRD Scale were significantly correlated with the following RCQ (TV) scale scores: precontemplation, $r(69) = -.48, p < .01$; contemplation, $r(69) = .38, p < .01$; and, action, $r(69) = .29, p < .01$. Based on the foregoing, a 2 x 2 repeated measures MANCOVA was performed by adjusting for the PRD scores (covariate). Using Wilks' Lambda as the criterion, there were significant main effects for group, $F(3, 75) = 3.71, p < .05$, and time, $F(3, 75) = 3.19, p < .05$. Findings from univariate analyses of the precontemplation and

contemplation scales data were not statistically significant when pretest group differences in these scale scores were controlled with ANCOVA.

Light Drinkers

Optimum profiling was used to examine the data more closely. Analyses of the data generated by participants with significant symptoms of alcohol dependence did not uncover significant findings, so, once again, attention shifted to participants with few symptoms of alcohol dependence (ADS scores ranging from 1 to 13). A 2 x 2 repeated measures MANOVA did not yield any significant results so a covariate was sought for use in a 2 x 2 repeated measures MANCOVA. After examining various covariates individually and in various combinations, it was decided that the best covariate was the PRD Scale scores. Scores from the PRD Scale were significantly correlated with the following RCQ (TV) scale scores: precontemplation, $r(51) = -.27, p < .05$; and, contemplation, $r(51) = .37, p < .01$. Based on the foregoing, a 2 x 2 repeated measures MANCOVA was performed by adjusting for the PRD scores (covariate). Using Wilks' Lambda as the criterion, there were significant main effects for group, $F(3, 52) = 4.45, p < .01$, and time $F(3, 52) = 3.27, p < .05$. Findings from univariate analyses of the precontemplation and contemplation scales data were not significant when pretest group differences in these scale scores were controlled with ANCOVA.

Drinkers with Few Problems Related to Drinking

Analyses of the data generated by participants with significant problems related to drinking (PRD Scale scores ranging from 4 to 15) did not reveal significant results. Again, attention turned to participants with few problems related to drinking (PRD Scale scores ranging from 0 to 3). A 2 x 2 repeated measures MANOVA provided significant results using data from these participants. Using Wilks' Lambda as the criterion, there

were significant main effects for group, $F(3, 50) = 3.93$, $p < .05$, and time $F(3, 50) = 3.34$, $p < .05$. Findings from univariate analyses of the precontemplation and contemplation scales data were not statistically significant when pretest group differences in these scale scores were controlled with ANCOVA.

Contemplators

A sample of participants ($n = 33$) was identified in which each member had been allocated to the contemplation stage of change based on pretest data. Posttest scale scores were compared between contemplators in the intervention and control groups using a One-way ANOVA. None of the results were statistically significant so a suitable covariate was sought for use in a One-way ANCOVA. Scores from the PRD Scale were significantly correlated with the following RCQ (TV) scale scores: precontemplation, $r(31) = -.55$, $p < .01$; and, contemplation, $r(31) = .48$, $p < .01$. Based on the foregoing, adjustment was made for PRD Scale scores (covariate). Posttest action scale scores were the dependent variable. "Group" was the independent variable. After controlling for PRD Scale scores, a trend towards statistical significance was observed. Intervention group participants had higher posttest action scale scores than their control group counterparts, $F(1,30) = 3.98$, $p = .06$. Table 14 presents descriptive statistics of the sample. Table 15 provides a summary of the ANCOVA.

Table 14

Descriptive Statistics of Contemplators Using the Action Scale of the Readiness to Change Questionnaire - Treatment Version

Group	Pretest			Posttest		
	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>
Intervention	18.76	2.86	21	20.67	2.44	21
Control	17.08	3.53	12	19.00	2.45	12

Table 15

Analysis of Covariance of Posttest Action Scale Scores of Contemplators with Problems Related to Drinking Scale Scores as Covariate

Source	df	SS	MS	F	η^2
Covariate	1	3.76	3.76	.62	
Group	1	23.99	23.99	3.98 ^a	.12
Error	30	180.91	6.03		
Total	32	205.88	6.43		

^ap = .06

Analysis of the data generated by participants in the precontemplation stage of change did not provide significant findings.

Stages of Change Readiness and Treatment Eagerness Scale

Principal Components Analysis

As was the case with the RCQ data, and in spite of the small sample ($N = 68$), a PCA was conducted as a means of preliminary exploration of the data. Principal components extraction with Varimax rotation was performed using the 19 items of the SOCRATES that was administered at pretest. Table 16 provides a summary of the three components (recognition, taking steps, and ambivalence) that were extracted. The percentage of variance that was explained by the ambivalence component is comparable to the value reported in the published normative data of the instrument (Miller & Tonigan, 1996).

Table 16

Principal Components of the Stages of Change Readiness and Treatment Eagerness Scale

Component	Eigenvalue	Percentage of Variance	Cumulative Percentage
1	9.43	49.60	49.60
2	2.62	13.78	63.38
3	1.36	7.18	70.56

Table 17 provides a summary of the component loadings. The majority of the loadings are in excess of .63 which can be described as very good (Comrey & Lee, 1992, as cited in Tabachnick & Fidell, 1996). One item did not load on any of the components. In general, component loadings were of greater magnitude than those reported in the published normative data (Miller & Tonigan, 1996).

Table 17

Principal Components Loadings of the Stages of Change Readiness and Treatment Eagerness Scale

Item	<u>Component Loading</u>			Communality
	1	2	3	
7	.90			.86
10	.90			.86
17	.86			.85
15	.83			.85
19	.83			.82
14	.83			.81
12	.77			.77
3	.74			.81
1	.56			.75
8		.79		.72
9		.79		.67
13		.77		.71
4		.72		.60
5		.64		.52
18		.58		.75
2			.85	.79
16			.80	.79
6			.56	.74

Despite the small sample, the components and the item loadings illustrate the three stages of change that are measured by the SOCRATES. This indicates that it was reasonable to use the prescribed stages of change scoring rules for the instrument and continue with the analyses that address the experimental hypotheses.

Multivariate and Univariate Analyses

As with the RCQ data, the multivariate parametric approach was used initially to address the experimental hypotheses. A 2 x 2 repeated measures MANOVA did not yield significant results. The situation did not improve with the use of a 2 x 2 repeated measures MANCOVA.

Light Drinkers

As with the RCQ data, the data generated by participants with significant symptoms of alcohol dependence did not reveal significant findings so focus shifted to participants with few symptoms of alcohol dependence (ADS scores ranging from 1 to 13). A 2 x 2 repeated measures MANOVA did not produce significant results. Scores from the PRD Scale were significantly correlated with the SOCRATES recognition scale, $r(48) = .36, p < .05$, so PRD Scale scores were used as the covariate in a 2 x 2 repeated measures MANCOVA. The recognition, ambivalence, and taking steps posttest scale scores served as the dependent variables. Using Wilks' Lambda as the criterion, there was a significant main effect for group, $F(3, 45) = 3.02, p < .05$. Findings from a univariate analysis of the recognition scale data indicated a trend toward statistical significance; however, they were invalidated by a violation of the assumption of homogeneity of regression when pretest group differences in these scale scores were controlled with ANCOVA. Findings from a univariate analysis of the ambivalence scale

scores were not statistically significant when pretest group differences in these scale scores were controlled with ANCOVA.

Univariate analyses were conducted to further examine relationships in the data. A One-way ANCOVA was performed using data from the entire SOCRATES sample. Posttest recognition scale scores served as the dependent variable. "Group" was the independent variable. Scores from the PRD Scale were selected as the covariate because of their relationship with the recognition scale scores, $r(66) = .51, p < .01$. After controlling for scores on the PRD Scale, intervention group participants had significantly greater posttest recognition scale scores than their control group counterparts, $F(1,65) = 5.61, p < .05$. Table 18 presents descriptive statistics of the sample. Table 19 provides a summary of the ANCOVA.

Table 18

Descriptive Statistics of Participants' Recognition Scale Scores of the Stages of Change Readiness and Treatment Eagerness Scale

Group	Pretest			Posttest		
	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>
Intervention	27.29	7.14	34	27.38	7.16	34
Control	25.21	8.39	34	24.38	7.69	34

Table 19

Analysis of Covariance of Participants' Posttest Recognition Scale Scores with Problems Related to Drinking Scale Scores as Covariate

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>η^2</u>
Covariate	1	1101.76	1101.76	28.19 ^{**}	.30
Group	1	219.18	219.18	5.61 [*]	.08
Error	65	2540.30	39.08		
Total	67	3795.06	56.64		

^{*} $p < .05$. ^{**} $p < .01$.

Drinkers with Significant Problems Related to Drinking

Unlike the RCQ data, the SOCRATES data did not provide any significant findings in the subsample of participants with few problems related to drinking (PRD Scale scores from 0 to 3). However, a One-way ANCOVA was performed using data from participants with significant problems related to drinking (PRD Scale scores ranging from 4 to 15). Posttest recognition scale scores served as the dependent variable. "Group" was the independent variable. Pretest recognition scale scores were the covariate because of their correlation with posttest recognition scale scores, $r(18) = .73$, $p < .01$. After controlling for pretest recognition scale scores, intervention group participants had significantly greater posttest recognition scale scores than their control group counterparts, $F(1,17) = 4.90$, $p < .05$. Table 20 presents descriptive statistics of the sample. Table 21 provides a summary of the ANCOVA. These findings should be viewed cautiously due to the small sample size.

Table 20

Descriptive Statistics of Participants' Recognition Scale Scores of the Stages of Change Readiness and Treatment Eagerness Scale

Group	Pretest			Posttest		
	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>
Intervention	31.00	3.38	8	33.00	2.88	8
Control	30.75	4.33	12	29.33	6.11	12

Table 21

Analysis of Covariance of Participants' Posttest Recognition Scale Scores with Pretest Recognition Scale Scores as Covariate

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>η^2</u>
Covariate	1	273.87	273.89	23.90 ^{**}	.58
Group	1	56.15	56.15	4.90 [*]	.22
Error	17	194.78	11.46		
Total	19	533.20	28.06		

^{*} $p < .05$. ^{**} $p < .01$.

Analyses of the pretest data from participants in the recognition or ambivalence stages of change did not provide significant results.

University of Rhode Island Change Assessment

Principal Components Analysis

In spite of the small sample ($N = 70$), a PCA was conducted to enable preliminary exploration of the data. Principal components extraction with Varimax rotation was performed using the 32 items of the URICA that was administered at pretest. Table 22 provides a summary of the three components (action, precontemplation/contemplation, and maintenance) that were extracted. These components correspond reasonably well to

the stages of change that are measured by the URICA. Published data of the instrument's component structure were unavailable therefore more precise comparisons between these data and normative data were not possible.

Table 22

Principal Components of the University of Rhode Island Change Assessment

Component	Eigenvalue	Percentage of Variance	Cumulative Percentage
1	11.78	36.80	36.80
2	3.09	9.65	46.45
3	2.02	6.31	52.76

Table 23 provides a summary of the component loadings. The majority of the loadings are in excess of .55 which can be described as good (Comrey & Lee, 1992, as cited in Tabachnick & Fidell, 1996). Ten items did not load on any of the components.

Table 23
Principal Components Loadings of the University of Rhode Island Change Assessment

Item	<u>Component Loading</u>			Communality
	1	2	3	
30	.83			.75
14	.81			.73
25	.80			.71
3	.74			.67
7	.69			.69
10	.62			.59
20	.46			.75
5		-.76		.71
4		.71		.73
11		-.70		.85
1		-.69		.68
23		-.67		.67
15		.62		.71
2		.58		.63
6		.46		.70
8		.41		.54
18			.83	.85
32			.76	.67
27			.72	.69
28			.64	.67
16			.51	.55
13			-.48	.57

Findings from the PCA were sufficiently strong to permit use of the prescribed stages of change scoring rules and continuation of further analyses.

Multivariate and Univariate Analyses

Multivariate, univariate, and nonparametric analyses did not generate significant findings. Similarly, there were no significant findings when readiness scores were subjected to statistical analysis.

One trend was detected by using a 2 x 2 repeated measures MANCOVA with PRD Scale scores as the covariate. The PRD Scale scores were correlated with all of the URICA scale scores: precontemplation, $r(68) = -.39, p < .01$; contemplation, $r(68) = .35, p < .01$; action, $r(68) = .30, p < .05$; and, maintenance, $r(68) = .32, p < .01$. The posttest URICA scale scores served as the dependent variables. Using Wilks' Lambda as the criterion, there was a trend towards significance for group, $F(4, 64) = 2.43, p = .06$. Findings from a univariate analysis of the contemplation scale data were not significant when pretest group differences in these scale scores were controlled with ANCOVA.

Alcohol Readiness to Change Scale

A short-form of the URICA can be derived from the long-form that was used in this study by selecting a subsample of items (Carbonari, DiClemente, Addy, & Pollak, 1996). The Alcohol Readiness to Change Scale (ALCREADI - AB; Carbonari et al., 1996) measures the same stages of change as the URICA. The short-form items were analyzed to determine whether they would yield any significant findings.

Data Screening

Three invalid stages of change profiles were detected so the cases that were associated with these profiles were deleted from the data file. Two cases were deleted from the data file because of extreme stages of change scale scores ($z > 3.29$). Taking these deletions into consideration, the resultant sample size was 78.

Principal Components Analysis

Once again, and despite the small sample, a PCA was conducted to allow preliminary exploration of the data. Principal components extraction with Varimax rotation was performed using the 24 items from the URICA that was administered at

pretest and which comprise the ALCREADI - AB. Table 24 provides a summary of the four components (precontemplation, contemplation, action and maintenance) that were extracted. The four components correspond to the stages of change that are measured by the ALCREADI - AB. Published data of the instrument's component structure were unavailable therefore more precise comparisons between these data and normative data were not possible.

Table 24
Principal Components of the Alcohol Readiness to Change Scale

Component	Eigenvalue	Percentage of Variance	Cumulative Percentage
1	10.09	42.06	42.06
2	2.20	9.15	51.21
3	1.54	6.41	57.62
4	1.35	5.61	63.23

Table 25 provides a summary of the component loadings. The majority of the loadings are in excess of .55 which can be described as good (Comrey & Lee, 1992, as cited in Tabachnick & Fidell, 1996). Two items did not load on any of the components.

Table 25
Principal Components Loadings of the Alcohol Readiness to Change Scale

Item	<u>Component Loading</u>				Communality
	1	2	3	4	
5	-.80				.71
11	-.77				.84
23	-.75				.65
15	.69				.77
24		.76			.73
21		.67			.77
12		.65			.63
19		.64			.79
13		-.58			.39
22		.55			.60
8		.43			.51
30			.83		.80
25			.81		.71
14			.71		.61
10			.66		.67
7			.59		.73
17			.54		.50
28				.80	.68
32				.75	.69
18				.73	.84
27				.59	.70
16				.51	.58

Despite the small sample, the components and the item loadings illustrate the four stages that are measured by the ALCREADI - AB. This indicates that it was reasonable to use the prescribed stages of change scoring rules for the instrument and continue with the analyses.

Multivariate and Univariate Analyses

Multivariate, univariate, and nonparametric analyses of the data and readiness scores did not generate statistically significant findings or any findings that approached statistical significance.

Discussion

The first hypothesis predicted that precontemplators in the MI group would show greater posttest contemplation (ambivalence) scores than their control group counterparts. This hypothesis was supported with data from the RCQ. Motivational interview group precontemplators identified at pretest using the RCQ showed significantly greater posttest contemplation scores than their control group counterparts. In other words, when compared with participants who did not receive the MI, the MI group participants who were not thinking about changing their drinking at pretest showed evidence of more posttest thinking about changing their drinking. When the entire sample's data were examined, the SOCRATES data indicated that the MI group participants had significantly greater posttest recognition scores than their control group counterparts. In other words, when compared with participants who did not receive the MI, the MI group participants showed evidence of more posttest knowledge that their drinking was a problem.

The second hypothesis predicted that contemplators in the MI group would show greater posttest preparation or action (taking steps) scores than their control group counterparts. This hypothesis was not supported; although, MI group contemplators identified at pretest using the RCQ (TV) showed a trend toward greater posttest action scores than their control group counterparts. In other words, when compared with participants who did not receive the MI, the MI group participants who were thinking about changing their drinking at pretest showed evidence of more posttest behavior that was directed toward changing their drinking.

The third hypothesis predicted that MI group participants exhibiting significant symptoms of alcohol dependence would show greater posttest stages of change scale scores than their control group counterparts. This hypothesis was not supported;

although, control group participants exhibiting low levels of alcohol dependence showed a trend toward greater posttest precontemplation scores than their MI group counterparts. In other words, when compared with MI group participants, the participants who did not receive the MI and who exhibited low levels of alcohol dependence showed slight evidence of less posttest recognition of harmful drinking.

The fourth hypothesis predicted that MI group participants exhibiting significant problems related to drinking would show greater posttest stages of change scale scores than their control group counterparts. This hypothesis was partially supported. Intervention group participants exhibiting significant problems related to drinking showed significantly greater posttest recognition scores than their control group counterparts. In other words, when compared with participants who did not receive the MI, the intervention group participants who exhibited several problems related to drinking showed greater posttest awareness that their drinking was a problem.

Based on the pattern of findings in relation to the hypotheses, it is evident that overall, neither a significant main effect nor a significant interaction was detected in the multivariate analyses. In general, it was only after examining subsamples of the data that certain group differences emerged following univariate analyses. This observation might indicate that the stages of change measures do not directly measure the effects of the MI. Alternatively, the intervention might not have succeeded in elevating posttest stages of change scale scores as predicted. These points will be elaborated upon later.

Placed in the context of the existing literature, these findings make two significant contributions that extend the existing body of knowledge. First, they are the product of possibly one of the first systematic examinations of the application of MI in a general population inmate sample.

Second, the findings are unique not only because of the nature of the experimental setting from which they come but also because of the relative absence of examples in the literature in which stage of change has been used as an outcome measure following a MI. Thus, this study provides novel outcome data in its evaluation of the intervention, both out of necessity, and in order to fill a void in the scientific literature. The necessity to use stage of change as an outcome measure is due to the inability to use drinking-related variables as outcome measures with inmates. However, this situation was fortuitous because the stages of change findings add to the hitherto paucity of these data as outcome measures in the MI literature.

With respect to existing theory, most of the findings are consistent. Certainly more significant findings were predicted, and their absence will be discussed later. Motivational interview group precontemplators showed increased posttest levels of contemplation. A major focus of the MI was to share and discuss with participants the objective feedback of symptoms of alcohol dependence and problems related to drinking. This consciousness raising process is grounded in the TTM and its use with precontemplators is further grounded in matching theory. Both theories are supported by the enhanced contemplation that was observed among precontemplators. Moreover, this finding is supported by other empirical research (Saunders et al., 1995). For similar reasons, all MI group participants showed increased posttest recognition of problem drinking. Again, fostering a sense of problem recognition is a goal in MI and this was accomplished by the intervention. Thus, matching theory, MI theory, and the TTM would predict these findings, and these theories are supported by these findings.

Motivational interviewing theory predicts that an effective MI will facilitate an individual's progression from thinking about change to making a commitment to change. Indeed, the observed increase in posttest action scale scores in the MI group contemplators is supported by MI theory.

Given that MI was developed for use with individuals with relatively severe drinking problems, one would predict that the more severe drinkers in the sample would have shown ample evidence of change following the intervention. This finding was absent and is thus inconsistent with existing theory. An explanation for this finding is that individuals with severe drinking problems might have had adequate knowledge of their drinking problems and they might have already been contemplating change. The findings from the comparison of the drinking severity and the stages of change data are similar to the findings of Weekes et al. (1994) and suggest that heavier drinkers are aware of their drinking behavior and its consequences. Stages of change research provides data from individuals who have spent years in contemplation (Prochaska, Velicer, Guadagnoli, Rossi, & DiClemente, 1991), thus inertia within a particular stage can be expected. This would account for an absence of stages of change movement at posttest. Moreover, the sample did not have a significant number of participants with substantial or severe alcohol dependence so there are power considerations that will be discussed later.

A trend was observed in which control group drinkers with low levels of alcohol dependence showed evidence suggestive of less posttest recognition of harmful drinking. This finding is consistent with the theory discussed earlier. That is, light drinkers who do not receive drinking-related assessment feedback would not be expected to show significant problem recognition. In fact, by definition, they probably do not experience

many harmful effects from drinking therefore they do not likely spend much time considering their drinking behavior.

Motivational interview group drinkers with several problems related to their drinking showed enhanced posttest recognition of problem drinking. Again, this finding would be predicted using the MI and TTM theories.

Moving from theory to practice, these findings provide preliminary support for continued investigation of MI in correctional settings with general population inmates identified as having problems with alcohol. An absence of strong evidence of the effects of MI should not discourage further investigations of the approach, nor should the intervention be viewed as a failure in the present study. It is possible, as will be discussed later, that methodological issues prevented the full effects of the MI to be observed.

The PCA findings provide preliminary support for continued use of the SOCRATES and the RCQ (TV) in correctional settings with general population inmates identified as having problems with alcohol. The findings from these analyses provide some support for the underlying structure of these instruments and the stability of their respective component structures. Therefore, it appears reasonable to use these instruments to measure the stages of change with inmates. Due to the absence of findings from the URICA, its use in correctional settings should be contemplated carefully.

Aside from the possible limitations of the URICA that will be discussed later, other more general limitations were observed that will be described and discussed in relation to their impact on the findings. First, true randomization was not employed due to the desire to control for potential concern among the participants regarding differences in their assignment to the experimental conditions. In spite of the fact that the data for each experimental condition were collected during separate periods of time, there were no

obvious reasons that indicated that the groups would be significantly different. For example, the data collection spanned all of the seasons in a 1-year period; but, there are no known seasonal differences in the demographics and other pertinent characteristics of admissions to correctional reception centers that might potentially influence the data. Examination of the data indicates that the groups differed to a degree at pretest therefore it is possible that there was not true random assignment; although, pretest group differences were controlled statistically during the data analyses. With better randomization, use of this statistical procedure might have been obviated because pretest group differences might not have been evident. This reduction in variability could increase our ability to detect the intervention's effects by increasing the magnitude of the effects.

A larger sized sample with larger frequencies of cases in the precontemplation stage and in the substantial and severe categories of alcohol dependence would have increased the power of the study. For example, to detect a medium effect size at a power value of .80 and using $\alpha = .05$, the sample size would have to be at least 128 to use a t-test of the difference between two independent means. The sample size must increase to 393 when one wishes to detect a small effect size using the same parameters (Cohen, 1992). An increase in power might be accompanied by an increase in the robustness of the statistical tests and possibly larger effect sizes. Despite the restriction on the sample size in the present study, it is larger than many of samples reported in the MI literature. Furthermore, in a discussion of sample size and power with W. R. Miller (personal communication, December 10, 1996), he mentioned that any effects that are not evident in a sample of the size used in the present study would likely be of little clinical significance. In fact the observed findings, while statistically significant, might be of

limited clinical significance. The posttest group differences of a few measurement units might not be of much practical importance when the item scoring rules of the measures are considered. For example, the between group differences could account for stronger endorsements of items. For example, the response to a particular item could have been “agree” at pretest and “strongly agree” at posttest. In the case where the differences reflect the positive endorsement of items that were previously responded to as “unsure,” then the findings take on greater significance. Although, one cannot ignore chance fluctuations in responding from the pretest to posttest sessions that might influence the findings.

Continuing with the sample, its characteristics could have had an impact on the findings. There were far more participants with low levels of alcohol dependence than substantial or severe levels of dependence. Moreover, it can be argued that contrary to the recommendations for intervention in the CLAI user’s guide (Robinson et al., 1993), individuals who receive low score on the ADS and/or the PRD Scale do not necessarily require intervention. This argument follows the logic of the risk principle (Andrews et al., 1990) which suggests that treatment resources are squandered when they are directed towards individuals with a low risk to reoffend, or in this case, individuals scoring low on alcohol assessment measures. A practical illustration of this argument is provided by close examination of the ADS items. An individual could receive a score as high as 8 on the ADS following an isolated event of excessive drinking. While perhaps significant psychometrically, this score is less likely to be clinically significant in the sense that it indicates a treatment need. Some participants of the many in this study with co-occurring drug abuse might have been more concerned about their drug abuse. This is another possible explanation for the weak findings. Thus, having a more homogeneous sample of

more severely dependent drinkers might have provided more data indicative of stage shifts.

The choice of outcome measure may have had an influence on the number of significant findings. Outcome measures such as percentage of days abstinent, number of standard drinks consumed during drinking days, blood alcohol and liver enzyme levels, etc., would have provided other data for analysis that could have been more sensitive to the effects of the intervention. However, these variables were inappropriate for use given the research setting and population. Institutional drinking-related behavior such as “brew” activity is an inaccurate measure because, for example, the “brewmaster” and the “storekeeper” could be providing a service for others who may ultimately consume the brew. Furthermore, intoxication from brew is infrequent and likely to be related to boredom rather than a stable underlying pattern of abuse that would be the focus of intervention. It would have been preferable to have some objective and collateral outcome measures. Follow-up measures that could be examined include performance measures in institutional and community based alcohol treatment programs, and alcohol-related breaches and crime.

Of the measures used, the URICA is potentially the most problematic. The items are vague because of their reference to the “problem” instead of the actual target behavior, in this case drinking. This vagueness decreases the probability that the respondents remained focused on the target behavior. In fact the data from this study show that more precontemplators were identified with the RCQ. Assuming that the RCQ and the URICA are equally valid measures of this stage of change, one would expect better concordance between the two measures in the identification of the precontemplation stage of change. It is possible that the precontemplators identified by

the RCQ responded to the URICA items by thinking of a problem other than drinking. This hypothesis is supported by the preponderance of participants identified as contemplators by the URICA. If this focus on behaviors other than the target behavior occurs when responding to the URICA items, then the URICA data are of questionable validity and this could explain the absence of significant findings. Moreover, the intended use of the instrument with help-seeking clients in the community is obvious by examining the wording of various items. These items are rendered confusing, amusing, and even useless when they are used out of context in a correctional setting. Therefore, use of the URICA in its present form in future correctional research is questionable. It was beyond the scope of this study to pilot-test a modified version of the URICA that would be better suited for the target population.

The absence of counterbalancing could be responsible for an order effect in which significant findings were generated by instruments administered earlier or later in the test administration sequence. This however, is unlikely because the findings that were obtained are few rather than many and they are specific to various subsamples. Furthermore, significant findings were observed in two of the three measures. Moreover, the findings are predictable and compatible with existing theories and literature which makes their occurrence due to an experimental confound even less likely. Finally, the vagueness and/or inappropriateness of some of the URICA items would, on the surface, appear to exert a more powerful influence than an order effect. Item weaknesses likely provide a more tenable explanation for the poor performance of the URICA as an outcome measure.

Of importance to the measures in general is the difficulty in measuring psychological constructs with precision. All three instruments purport to measure the stages of change and yet they all measure at least one or more different stages and they comprise different component structures. Moreover, Miller and Tonigan (1996) note that the SOCRATES more likely measure processes of change that lie within the stages of change. The absence of common findings across instruments suggests that there is poor concordance among these instruments. The data from the present study suggest that this situation exists because of the disparity between the stages of change allocations across instruments in Table 3. Sutton (1996b) alluded to this subject in his critique of the TTM. Poor concordance among supposedly equivalent assessment instruments is neither surprising nor uncommon in the measurement of human behavior. For example, personality disorders assessment instruments have show only modest and in some cases poor concordance (Hyer, Skodol, Kellman, Oldham, & Rosnick, 1990; Perry, 1992).

A related concern is the relative merits of using a continuous versus a discrete scale of measurement in the stages of change instruments. Again, this situation exists in the personality disorders assessment literature (Hyer et al., 1990). Regarding the stages of change, the SOCRATES and the URICA are recommended for dimensional measurement of the stages of change while the RCQ is suggested for categorical measurement. The absence of significant nonparametric statistical findings suggests support for dimensional measurement of the stages of change. Thus, the underlying measurement assumptions of the instruments and their psychometric properties impact on the measurement of the stages of change. Current debate over these measurement issues demands caution in the interpretation of the reliability and validity of the measures. Therefore, the absence of stronger and more numerous findings could have more to do

with measurement issues than the intervention's impact on treatment readiness. Saunders et al. (1995) devote attention in their discussion to the difficulties that the stage measures encounter in capturing the subtleties of the change process. Readiness rulers (Rollnick, Mason, & Butler, 1999) provide an alternative and simpler measure of treatment readiness that is recommended for future research.

Aside from measurement issues, criticism can be focused on the TTM.

Measurement difficulties could be due to the underlying theory. Most people would agree that the TTM has great practical utility in teaching individuals about behavior change. The TTM is appealing and it makes intuitive sense; but, some individuals might question the theory's utility in empirical research because of difficulties in replicating factor analytic findings from the URICA (Davidson, 1992; W. R. Miller, personal communication, January 13, 1999). Weaknesses in instrumentation and theory could diminish the validity of the data and the findings in this study.

A criticism addressed to all of the measures is the choice not to use alternate and equivalent forms of the instruments at posttest. It is possible that the design of this study actually measured the test-retest reliability of the instruments rather than changes in stage of change as a function of the intervention. Some of the participants, after recognizing that the posttest questionnaires looked familiar to the ones that were administered at the pretest, might have attempted to respond to the posttest questionnaire items in the same manner as they did at pretest. This could have been particularly true for suspicious individuals who might have suspected that the experimenter was attempting to catch them "lying" by looking for evidence of response discrepancies between the two administrations of the instruments. In another scenario, there might have been participants who "refused" to show any evidence of a willingness to change. For

example, some inmates are positively reinforced by their peers for demonstrating an unwillingness to contemplate behavior change. In this case the treatment effects could be masked, so they might actually be stronger.

Moving from measurement concerns to methodological concerns, it is possible that a longer intertest interval might have allowed for further consolidation of the material covered during the MI, possibly permitting further change that could have been detected at posttest. Moreover, a longer intertest interval would have decreased the probability that participants would have remembered their pretest item responses in the event that posttest responding was influenced by the memory of pretest item responses. The intertest interval was not extended due to operational concerns at the reception center. A longer period before posttest might have resulted in participant attrition due to institutional transfers for penitentiary placements. Furthermore, a longer intertest interval would have extended the data collection phase of the study which had to be completed during the experimenter's tenure as a doctoral intern.

Due to the nature of a dissertation and the absence of research assistants in this study, the author undertook and carried out almost every aspect of the experiment single-handedly, from its conceptualization to its write-up. This can be a problem, especially in regard to the assessment, intervention, posttesting and statistical analysis phases of the research. The experimenter was anything but "blind!" Furthermore, due to the necessity of informed consent, it is probable that some of the participants were not blind with respect to their assignment in the experimental conditions. Thus, despite the best intentions of the researcher, it is possible that his behavior might have been influenced by his knowledge of the participants and their group assignments. Furthermore, there was no way to control experiment-related communication between the inmates while they were

housed in the same living unit. This, in turn, could have had an impact on the findings. Similarly, if any of the participants were aware of their group assignments, then this could have impacted on their behavior and ultimately on the findings. For example, demand characteristics might have operated by increasing the probability that participants would respond to the intervention in a manner in which they thought the experimenter would desire. There could have been situational pressure on the participants to report their willingness to undergo behavior change. This situation is unlikely given the absence of any “blanket effects” in the results. That is, there were a few significant findings that were observed in specific subsamples. These findings are predictable using the theoretical underpinnings of MI, the TTM, and treatment matching. This decreases the strength of competing explanations of the findings.

Continuing with the intervention, it could be argued that it defied the spirit of MI by being manual-driven. The intervention might not have been flexible enough to allow the therapist to tailor the MI to the participants’ stages of change. At worst, the intervention’s validity would be in question and so too would the study’s findings. The semi-structured interview format was chosen for experimental rigor. This decision does not preclude the therapist’s adherence to the spirit of the approach. The criticism of the intervention’s format is an empirical question that can only be answered by future research.

Another possible criticism of the intervention is that it might not have provided participants with an adequate “dose” of its active ingredients. This is possible but unlikely due to the literature that was reviewed which suggests that brief interventions can be as effective as longer, more intensive interventions. Furthermore, the present intervention is characterized by its use of the effective elements of brief interventions.

Despite these explanations, stronger results might have been observed if another treatment session was included in the intervention. Motivational Enhancement Therapy (e.g., four sessions) could have been used to be sure that the treatment dose was adequate.

The timing of the intervention could also have influenced the findings. Due to operational demands, the MI followed a substance abuse interview that contained many closed questions. One could argue that this does not set a good tone for the debut of a MI, thus lessening its impact on outcome; however, the research of Patterson and Forgatch (1985) indicates that clients adapt quickly to changes in therapist style. Moreover, the presence of significant findings indicates that if the substance abuse history-taking had a negative effect on the impact of the intervention by moderating its effects, then an absence of the history-taking would hail even greater treatment effects.

One could argue that the findings can be explained by assessment reactivity and not the MI. Remember that the CLAI provides graphic feedback of the level of alcohol dependence and problems related to drinking. There is literature that suggests that computerized assessment and feedback of results can have a positive effect on drinking risk (Daniels, Somers, Orford, & Kirby, 1992). The decision to include the assessment as part of the intervention was made because of the desire to model the intervention based on the Drinker's Check-up (Miller et al., 1988) which combines assessment with a MI. It is likely that assessment alone is insufficient to change treatment readiness. This is especially true given the research by Prochaska (1994) on the necessary conditions for progression to a higher stage of change. Ultimately, a dismantling study could determine the active ingredients that MI brings to the behavior change process and allow one to determine the adequacy of assessment alone as a means of producing changes in treatment motivation.

Another way of examining assessment reactivity is by examining the control group (Baer et al., 1992b; Heather, Campion, Neville, & MacCabe, 1987). Simply responding to the stages of change instruments at pretest could have exerted a treatment effect that could have resulted in progression to a higher stage of change at posttest. If this was the case, then the effect of the intervention must have been sufficiently powerful to produce significant findings. Thus, control for pretest reactivity could result in even larger and clearer intervention effects. It could be argued that simply assessing a behavior could place pressure on an individual to change; although, it should be remembered that the stages of change instruments do not ask questions about behavior change; instead, they are comprised of simple statements about change. Moreover, the nature of the MI precluded direct questioning about whether participants were going to change their behavior. The spirit of the approach is gentler.

Unlike the spirit of the MI approach, the experimental setting was far from gentle and it could have exerted a powerful influence on the participants' behavior. The reception center is used to assess inmates for placement in an institution with a security rating that is commensurate with their level of risk. Generally inmates wish to be placed in lower security facilities. Inmates are well aware that their behavior is being monitored continually by reception center staff in order to better inform the placement decision. Thus, apart from a possible "creaming effect" in which more motivated offenders might have volunteered for participation in the study, it is possible that participants were "putting on their best face" (or using the terminology of Cleckley, 1976; "mask") with the hope of getting a good penitentiary placement. This could be reflected in data that are inflated; although, the pattern of results suggests that this type of effect did not materialize.

While it is certainly possible that demand characteristics were operating in the experimental setting, Prochaska & DiClemente (1998) note that the URICA is less susceptible to misreporting stage of change in contexts where there may be pressure to report readiness to take action toward behavior change. Thus, the absence of significant findings from the URICA could be due to its insensitivity to situational demand characteristics. Although, another way of phrasing this criticism is the reliance upon self-report. Impression management is common, in particular among this cohort; however, the BIDR data did not indicate that this was a problem. Moreover, there is no compelling reason for an offender to underreport or overreport alcohol use in posttrial assessment. Furthermore, there is literature (Skinner & Allen, 1983) that favors computerized alcohol assessment over face-to-face and self-report assessment modalities.

State dependent factors could have influenced the findings. The period of time spent in a reception center can be unstable and short-term psychological stressors can cause sudden deterioration in an individual's psychological status. It is possible that excessive symptomatology was reported during the computer assessment as a means of soliciting help. This is a well-known phenomenon (Robins, 1985) that could have artificially inflated the size of the subsample of heavier drinkers. This would ultimately decrease the validity of the findings. This phenomenon is unlikely to have occurred due to the small number of heavy drinkers in the sample; nevertheless, it would have been preferable to conduct the experiment at a point later in the inmates' sentences.

Future research should focus on examining whether other methods of evaluating outcome provide fruitful findings. For example, covert measurement of an intermediate treatment outcome could be provided by measuring the rate at which participants access reference material pertaining to alcohol use following a MI (J. S. Tonigan, personal

communication, May 20, 1997). Evaluation of client treatment participation and performance using therapist ratings, treatment completion, and outcome data from future alcohol treatment also promises to provide a means of evaluating the effectiveness of MI. The processes of change offer another set of measures for evaluating MI. Ultimately, one would hope to see improved community adjustment and a decrease in alcohol-related problems/offenses in offenders who have been exposed to MI in the context of comprehensive substance abuse assessment, treatment and follow-up.

Because comorbid drug abuse is commonplace among inmates, this begs future MI research aimed specifically at substance abuse. In a similar manner, the relative surplus of literature extolling the virtues of using MI with sex offenders begs empirical research using this population or other populations like persistently violent offenders. Pretest assessment could be done exclusively with paper-and-pencil measures to eliminate computerized feedback of assessment results. Conducting the research in a different setting and/or later in the inmate's sentence could eliminate some demand characteristics. Further suggestions for improvements in future research can be found in the preceding sections that address the limitations of this study.

The present study broke new ground by boldly (behind the scenes) going into a traditionally oppressive, controlling and confrontational milieu, and presenting a different approach that would appear to be at odds with the correctional ethos. The choice of outcome measures was unique and the few significant findings support further investigation of the MI approach and some of the stages of change measures.

The 2-group, pre-post experimental design used in this study, and some of the accompanying statistical analyses, might be viewed as simple or standard. This is especially true given the complexity of many of the large-scale studies like Project

MATCH. Notwithstanding this apparent simplicity, this study has given the author, and hopefully the reader, an appreciation for the complexities of the scientific endeavor. It is tempting to design a “conquer the world” study as the next step in addressing the issues that have been discussed. Instead, I propose that future research examines the use of MI with similar populations and other populations like drug dependent offenders or sex offenders. Process measures and client satisfaction measures might provide interesting data. For those who appreciate a menu of future research recommendations, I’ll add that an examination of MI delivered to groups of offenders would be equally interesting, from the therapist, researcher, and theoretician perspectives.

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Appendix A**Readiness to Change Questionnaire**

DATE : _____

The following questionnaire is designed to identify how you personally feel about your drinking right now. Please think about your current situation and drinking habits, even if you have given up drinking completely. Read each question below carefully, and then decide whether you agree or disagree with the statements. Please tick the answer of your choice to each question. If you have any problems please ask the questionnaire administrator.

Your answers are completely private and confidential.

Key: SD = Strongly Disagree D = Disagree U = Unsure

A = Agree

SA = Strongly Agree

	SD	D	U	A	SA	For office use only
1. There is no need for me to change my drinking habits.	☐	☐	☐	☐	☐	☐ PC
2. I enjoy my drinking but sometimes I drink too much.	☐	☐	☐	☐	☐	☐ C
3. I have reached the stage where I should seriously think about giving up or drinking less alcohol.	☐	☐	☐	☐	☐	☐ PA
4. I am trying to stop drinking or drink less than I used to.	☐	☐	☐	☐	☐	☐ A
5. I was drinking too much at one time, but now I've managed to cut down (or stop) my drinking.	☐	☐	☐	☐	☐	☐ M
6. It's a waste of time thinking about my drinking because I do not have a problem.	☐	☐	☐	☐	☐	☐ PC
7. Sometimes I think I should quit or cut down on my drinking.	☐	☐	☐	☐	☐	☐ C
8. I have decided to do something about my drinking.	☐	☐	☐	☐	☐	☐ PA
9. I know that my drinking has caused problems and I'm now trying to correct this.	☐	☐	☐	☐	☐	☐ A
10. I have changed my drinking habits (either cut down or quit) and I'm trying to keep it that way.	☐	☐	☐	☐	☐	☐ M
11. There is nothing seriously wrong with my drinking.	☐	☐	☐	☐	☐	☐ PC
12. My drinking is a problem sometimes.	☐	☐	☐	☐	☐	☐ C
13. I'm preparing to change my drinking habits (either cut down or give up completely).	☐	☐	☐	☐	☐	☐ PA

A = Agree

SA = Strongly Agree

SD D U A SA

(Office Use) 165

	SD	D	U	A	SA	(Office Use)
14. Anyone can talk about wanting to do something about their drinking, but I am actually doing something about it.	☐	☐	☐	☐	☐	A
15. It is important for me to hold on to the changes I've made. now that I've cut down (or quit) drinking.	☐	☐	☐	☐	☐	M
16. I am a fairly normal drinker.	☐	☐	☐	☐	☐	PC
17. I am weighing up the advantages and disadvantages of my present drinking habits.	☐	☐	☐	☐	☐	C
18. I have made a plan to stop or cut down drinking and I intend to put this plan into practice.	☐	☐	☐	☐	☐	PA
19. I am actually changing my drinking habits right now (either cutting down or quitting).	☐	☐	☐	☐	☐	A
20. I have already done something about my drinking (either cut down or stopped completely) and I'm trying to avoid slipping back.	☐	☐	☐	☐	☐	M
21. Giving up or drinking less alcohol would be pointless for me.	☐	☐	☐	☐	☐	PC
22. I'm uncertain whether or not I drink too much.	☐	☐	☐	☐	☐	C
23. I have a drinking problem and I really want to do something about it.	☐	☐	☐	☐	☐	PA
24. I have started to carry out a plan to cut down or quit drinking.	☐	☐	☐	☐	☐	A
25. I am working hard to prevent having a relapse of my drinking problem.	☐	☐	☐	☐	☐	M
26. There is nothing I really need to change about my drinking.	☐	☐	☐	☐	☐	PC
27. Sometimes I wonder if my drinking is out of control.	☐	☐	☐	☐	☐	C
28. If I don't change my drinking soon, my problems will just get worse.	☐	☐	☐	☐	☐	PA
29. I am actively working on my drinking problem.	☐	☐	☐	☐	☐	A
30. I've succeeded in stopping or cutting down drinking and I want to stay that way.	☐	☐	☐	☐	☐	M

Appendix B

Stages of Change Readiness and Treatment Eagerness Scale

8/95

Date: _____

Personal Drinking Questionnaire 8A

INSTRUCTIONS: Please read the following statements carefully. Each one describes a way that you might (or might not) feel about your drinking. For each statement, circle one number from 1 to 5, to indicate how much you agree or disagree with it right now. Please circle one and only one number for every statement.

	NO! Strongly Disagree	No Disagree	? Undecided or Unsure	Yes Agree	YES! Strongly Agree
1. I really want to make changes in my drinking.	1	2	3	4	5
2. Sometimes I wonder if I am an alcoholic.	1	2	3	4	5
3. If I don't change my drinking soon, my problems are going to get worse.	1	2	3	4	5
4. I have already started making some changes in my drinking.	1	2	3	4	5
5. I was drinking too much at one time, but I've managed to change my drinking.	1	2	3	4	5
6. Sometimes I wonder if my drinking is hurting other people.	1	2	3	4	5
7. I am a problem drinker.	1	2	3	4	5
8. I'm not just thinking about changing my drinking, I'm already doing something about it.	1	2	3	4	5
9. I have already changed my drinking, and I am looking for ways to keep from slipping back to my old pattern.	1	2	3	4	5
10. I have serious problems with drinking.	1	2	3	4	5

	NO! Strongly Disagree	No Disagree	? Undecided or Unsure	Yes Agree	68 Strongly Agree
11. Sometimes I wonder if I am in control of my drinking.	1	2	3	4	5
12. My drinking is causing a lot of harm.	1	2	3	4	5
13. I am actively doing things now to cut down or stop drinking.	1	2	3	4	5
14. I want help to keep from going back to the drinking problems that I had before.	1	2	3	4	5
15. I know that I have a drinking problem.	1	2	3	4	5
16. There are times when I wonder if I drink too much.	1	2	3	4	5
17. I am an alcoholic.	1	2	3	4	5
18. I am working hard to change my drinking.	1	2	3	4	5
19. I have made some changes in my drinking, and I want some help to keep from going back to the way I used to drink.	1	2	3	4	5

Appendix C

University of Rhode Island Change Assessment

This questionnaire is to help us improve services. Each statement describes how a person might feel when starting therapy or approaching problems in their lives. Please indicate the extent to which you tend to agree or disagree with each statement. In each case, make your choice in terms of how you feel right now, not what you have felt in the past or would like to feel. For all statements that refer to your "problem" answer in terms of what is typed on the "PROBLEM" line below. And "here" refers to the place of treatment or the program.

There are FIVE possible responses to each of the items in the questionnaire:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Undecided
- 4 = Agree
- 5 = Strongly Agree

Choose your response to each statement by circling the number that represents how much you agree or disagree with the statement.

DATE: _____

PROBLEM = DRINKING ALCOHOL

1. As far as I'm concerned, I don't have any problems that need changing. 1 2 3 4 5
2. I think I might be ready for some self-improvement. 1 2 3 4 5
3. I am doing something about the problems that had been bothering me. 1 2 3 4 5
4. It might be worthwhile to work on my problem. 1 2 3 4 5
5. I'm not the problem one. It doesn't make much sense for me to be here. 1 2 3 4 5
6. It worries me that I might slip back on a problem I have already changed, so I am here to seek help.
1 2 3 4 5
7. I am finally doing some work on my problem. 1 2 3 4 5
8. I've been thinking that I might want to change something about myself. 1 2 3 4 5
9. I have been successful in working on my problem but I'm not sure I can keep up the effort on my own.
1 2 3 4 5
10. At times my problem is difficult, but I'm working on it. 1 2 3 4 5
11. Being here is pretty much a waste of time for me because the problem doesn't have to do with me.
1 2 3 4 5

- 1 = Strongly Disagree**
2 = Disagree
3 = Undecided
4 = Agree
5 = Strongly Agree

PROBLEM = DRINKING ALCOHOL

12. I'm hoping this place will help me to better understand myself. 1 2 3 4 5
13. I guess I have faults, but there's nothing that I really need to change. 1 2 3 4 5
14. I am really working hard to change. 1 2 3 4 5
15. I have a problem and I really think I should work at it. 1 2 3 4 5
16. I'm not following through with what I had already changed as well as I had hoped, and I'm here to prevent a relapse of the problem. 1 2 3 4 5
17. Even though I'm not always successful in changing, I am at least working on my problem. 1 2 3 4 5
18. I thought once I had resolved my problem I would be free of it, but sometimes I still find myself struggling with it. 1 2 3 4 5
19. I wish I had more ideas on how to solve the problem. 1 2 3 4 5
20. I have started working on my problems but I would like help. 1 2 3 4 5
21. Maybe this place will be able to help me. 1 2 3 4 5
22. I may need a boost right now to help me maintain the changes I've already made. 1 2 3 4 5
23. I may be part of the problem, but I don't really think I am. 1 2 3 4 5
24. I hope that someone here will have some good advice for me. 1 2 3 4 5
25. Anyone can talk about changing; I'm actually doing something about it. 1 2 3 4 5
26. All this talk about psychology is boring. Why can't people just forget about their problems? 1 2 3 4 5
27. I'm here to prevent myself from having a relapse of my problem. 1 2 3 4 5
28. It is frustrating, but I feel I might be having a recurrence of a problem I thought I had resolved. 1 2 3 4 5
29. I have worries but so does the next guy. Why spend time thinking about them? 1 2 3 4 5
30. I am actively working on my problem. 1 2 3 4 5
31. I would rather cope with my faults than try to change them. 1 2 3 4 5
32. After all I had done to try to change my problem, every now and again it comes back to haunt me.

1 2 3 4 5

Appendix D**Alcohol Dependence Scale**

Alcohol Dependence Scale

1. Consider the 6 months before your arrest. How much did you drink the last time you drank?
 - a. Enough to get high or less
 - b. Enough to get drunk
 - c. Enough to pass out
2. Consider the 6 months before your arrest. Did you often have hangovers on Sunday or Monday mornings?
 - a. No
 - b. Yes
3. Consider the 6 months before your arrest. Did you have the “shakes” when sobering up (hands tremble, shake inside)?
 - a. No
 - b. Sometimes
 - c. Almost every time I drank
4. Consider the 6 months before your arrest. Did you get physically sick (vomit, stomach cramps) as a result of drinking?
 - a. No
 - b. Sometimes
 - c. Almost every time I drank
5. Consider the 6 months before your arrest. Did you have the “DT’s” (delerium tremens) – that is, see, feel or hear things not really there; feel very anxious, restless, and over-excited?
 - a. No
 - b. Once
 - c. Several times
6. Consider the 6 months before your arrest. When you drank, did you stumble about, stagger and weave?
 - a. No
 - b. Sometimes
 - c. Often
7. Consider the 6 months before your arrest. As a result of drinking, did you feel overly hot and sweaty (feverish)?
 - a. No
 - b. Once
 - c. Several times

8. Consider the 6 months before your arrest. As a result of drinking, did you see things that were not really there?

- a. No**
- b. Once**
- c. Several times**

9. Consider the 6 months before your arrest. Did you panic because you feared you might not have a drink when you needed it?

- a. No**
- b. Yes**

10. Consider the 6 months before your arrest. Did you have blackouts (loss of memory without passing out) as a result of drinking?

- a. No, never**
- b. Sometimes**
- c. Often**
- d. Almost every time I drank**

11. Consider the 6 months before your arrest. Did you carry a bottle with you or keep one close at hand?

- a. No**
- b. Some of the time**
- c. Most of the time**

12. Consider the 6 months before your arrest. After a period of abstinence (not drinking), did you end up drinking heavily again?

- a. No**
- b. Sometimes**
- c. Almost every time**

13. Consider the 6 months before your arrest. Did you pass out as a result of drinking?

- a. No**
- b. Once**
- c. More than once**

14. Consider the 6 months before your arrest. Did you have a convulsion (fit) following a period of drinking?

- a. No**
- b. Once**
- c. Several times**

15. Consider the 6 months before your arrest. Did you drink throughout the day?

- a. No**
- b. Yes**

16. Consider the 6 months before your arrest. After drinking heavily, was your thinking fuzzy or unclear?

- a. No**
- b. Yes, but only for a few hours**
- c. Yes, for one or two days**
- d. Yes, for many days**

17. Consider the 6 months before your arrest. As a result of drinking, did you feel your heart beating rapidly?

- a. No**
- b. Once**
- c. Several times**

18. Consider the 6 months before your arrest. Did you almost constantly think about drinking and alcohol?

- a. No**
- b. Yes**

19. Consider the 6 months before your arrest. As a result of drinking, did you hear “things” that were not really there?

- a. No**
- b. Once**
- c. Several times**

20. Consider the 6 months before your arrest. Did you have weird and frightening sensations when drinking?

- a. No**
- b. Once or twice**
- c. Often**

21. Consider the 6 months before your arrest. As a result of drinking, did you “feel things” crawling on you that were not really there (such as bugs and spiders)?

- a. No**
- b. Once**
- c. Several times**

22. Consider the 6 months before your arrest. With respect to blackouts (loss of memory):

- a. Never had a blackout**
- b. Had blackouts that lasted less than an hour**
- c. Had blackouts that lasted for several hours**
- d. Had blackouts that lasted for a day or more**

23. Consider the 6 months before your arrest. Did you try to cut down on your drinking and fail?

- a. No**
- b. Once**
- c. Several times**

24. Consider the 6 months before your arrest. Did you gulp drinks (drink quickly)?

- a. No**
- b. Yes**

25. Consider the 6 months before your arrest. After taking one or two drinks, could you usually stop?

- a. Yes**
- b. No**

Appendix E

Problems Related to Drinking Scale

Problems Related to Drinking Scale

1. Were you in a fight while drinking where you hit someone?
 - a. Never.
 - b. Yes, but not in the 6 months before my arrest.
 - c. Once in the 6 months before my arrest.
 - d. Twice in the 6 months before my arrest.
 - e. Three or more times in the 6 months before my arrest.
2. Were there major arguments in your family because of your drinking?
 - a. Never.
 - b. Yes, but not in the 6 months before my arrest.
 - c. Once in the 6 months before my arrest.
 - d. Twice in the 6 months before my arrest.
 - e. Three or more times in the 6 months before my arrest.
3. Did your drinking result in a marital or family separation?
 - a. Never.
 - b. Yes, but not in the 6 months before my arrest.
 - c. Once in the 6 months before my arrest.
 - d. Twice in the 6 months before my arrest.
 - e. Three or more times in the 6 months before my arrest.
4. Did you lose friends because of your drinking?
 - a. Never.
 - b. Yes, but not in the 6 months before my arrest.
 - c. Once in the 6 months before my arrest.
 - d. Twice in the 6 months before my arrest.
 - e. Three or more times in the 6 months before my arrest.
5. Were you in trouble at work or at school because of your drinking?
 - a. Never.
 - b. Yes, but not in the 6 months before my arrest.
 - c. Once in the 6 months before my arrest.
 - d. Twice in the 6 months before my arrest.
 - e. Three or more times in the 6 months before my arrest.
6. Did you miss 2 or more days of work or school because of your drinking?
 - a. Never.
 - b. Yes, but not in the 6 months before my arrest.
 - c. Once in the 6 months before my arrest.
 - d. Twice in the 6 months before my arrest.
 - e. Three or more times in the 6 months before my arrest.

7. Were you arrested for drinking and driving?
- Never.
 - Yes, but not in the 6 months before my arrest.
 - Once in the 6 months before my arrest.
 - Twice in the 6 months before my arrest.
 - Three or more times in the 6 months before my arrest.
8. Were you in trouble with the law because of your drinking? (Do not include driving offences.)
- Never.
 - Yes, but not in the 6 months before my arrest.
 - Once in the 6 months before my arrest.
 - Twice in the 6 months before my arrest.
 - Three or more times in the 6 months before my arrest.
9. Did your drinking result in your getting hurt in an accident?
- Never.
 - Yes, but not in the 6 months before my arrest.
 - Once in the 6 months before my arrest.
 - Twice in the 6 months before my arrest.
 - Three or more times in the 6 months before my arrest.
10. Did your drinking lead to an accident where others got hurt or where property was damaged?
- Never.
 - Yes, but not in the 6 months before my arrest.
 - Once in the 6 months before my arrest.
 - Twice in the 6 months before my arrest.
 - Three or more times in the 6 months before my arrest.
11. Were you hospitalized for an illness connected to your drinking?
- Never.
 - Yes, but not in the 6 months before my arrest.
 - Once in the 6 months before my arrest.
 - Twice in the 6 months before my arrest.
 - Three or more times in the 6 months before my arrest.
12. Did your drinking result in an illness that kept you from regular activities for 2 or more days?
- Never.
 - Yes, but not in the 6 months before my arrest.
 - Once in the 6 months before my arrest.
 - Twice in the 6 months before my arrest.
 - Three or more times in the 6 months before my arrest.

13. Did you spend too much money while drinking or after drinking?

- a. Never.
- b. Yes, but not in the 6 months before my arrest.
- c. Once in the 6 months before my arrest.
- d. Twice in the 6 months before my arrest.
- e. Three or more times in the 6 months before my arrest.

14. Did you spend money on alcohol that was needed for essentials (such as food, clothing and payments)?

- a. Never.
- b. Yes, but not in the 6 months before my arrest.
- c. Once in the 6 months before my arrest.
- d. Twice in the 6 months before my arrest.
- e. Three or more times in the 6 months before my arrest.

15. Did you seek professional help or go to a group such as Alcoholics Anonymous for help with your drinking?

- a. Never.
- b. Yes, but not in the 6 months before my arrest.
- c. Once in the 6 months before my arrest.
- d. Twice in the 6 months before my arrest.
- e. Three or more times in the 6 months before my arrest.

Appendix F

Balanced Inventory of Desirable Responding

Balanced Inventory

Date:

Using the scale below as a guide, write a number beside each statement to indicate how much you agree or disagree with it.

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7

NOT TRUE SOMEWHAT VER

TRUE

(Do я

- _____ 1. My first impressions of people usually turn out to be right.
- _____ 2. It would be hard for me to break any of my bad habits.
- _____ 3. I don't care to know what other people really think of me.
- _____ 4. I have not always been honest with myself.
- _____ 5. I always know why I like things.
- _____ 6. When my emotions are aroused, it biases my thinking.
- _____ 7. Once I've made up my mind, other people can seldom change my opinion.
- _____ 8. I am not a safe driver when I exceed the speed limit.
- _____ 9. I am fully in control of my own fate.
- _____ 10. It's hard for me to shut off a disturbing thought.
- _____ 11. I never regret my decisions.
- _____ 12. I sometimes lose out on things because I can't make up my mind soon enough.
- _____ 13. The reason I vote is because my vote can make a difference.
- _____ 14. My parents were not always fair when they punished me.
- _____ 15. I am a completely rational person.
- _____ 16. I rarely appreciate criticism.
- _____ 17. I am very confident in my judgements.
- _____ 18. I have sometimes doubted my ability as a lover.
- _____ 19. It's all right with me if some people happen to dislike me.
- _____ 20. I don't always know the reason why I do the things I do.

TOTAL:

Appendix G

Informed Consent Form

Principal Investigator: Joel Ginsburg (Psychology Intern, RRAC)
Faculty Sponsor: Dr. John Weekes (Correctional Service of Canada)
Chair of Carleton University's Department of Psychology Research Ethics Committee: Dr. Mary Gick
Chair of Carleton University's Department of Psychology: Dr. Kim Matheson

Informed Consent

The purpose of informed consent is to provide the information required for you to decide whether you wish to participate in this study. Informed consent must be obtained from all research participants to ensure that they understand the requirements of participation and that participation is voluntary.

The purpose of this study is to examine the use of motivational interviewing with inmates so we can improve the services that are offered to inmates.

If I choose to participate in this study, I will be asked to complete some brief questionnaires about my opinions of my alcohol use. Other information that will be used in this study will come from my lifestyle assessment which is part of my standard assessment at the Regional Reception Assessment Center. I might also be asked to discuss my lifestyle and substance use in a 1 hour interview. The selection of interview participants does not use any personal information. I will have the same chance as other volunteers to be chosen for an interview. If I am not chosen for an interview it will not be due to any fault of my own. The duration of my involvement in this study will be about 2 hours, which will be spread over three or four sessions.

I consent to having the information described above included in this study. This information will be grouped with similar information from other inmates who have participated in this study. My identity will be kept strictly confidential. All information in computer files or any other files will include code numbers and no other identifying information. Access to the research files will be strictly limited to the investigators and their research assistants. The results of this study may be published in academic journals or presented at conferences but my identity will remain strictly confidential. If at any time I change my mind and want to have my information deleted from the research file, I can notify the investigators.

I can decline this offer to participate in this study. If I choose to participate in this study, I can refuse to answer any of the questions. I may withdraw from participating in this study at any time. Declining this offer to participate, refusing to answer questions and/or withdrawing from this study will not have any effect on my stay here at this institution, my penitentiary placement, my relationships with any staff of the Correctional Service of Canada (CSC), or my current or future relationships with the CSC or any other branch of the criminal justice or mental health systems. These actions will not jeopardize any opportunities that I may have for receiving treatment or participating in any other programs while I am incarcerated.

I understand that my participation in this study is completely voluntary. I will not receive any¹⁸⁶ special treatment or privileges if I participate in this study although by participating I will have some time away from the inmate range; I might learn more about myself; and, the investigators will learn more about improving the services that are offered to inmates. The opinions of me that are held by staff of the CSC will not be influenced by my decision regarding participation in this study.

I may discuss this study with the principal investigator and I may request that he provide me with information about its results.

There are no potential risks that I might incur by participating in this study. If, during the course of this study, I feel that I require psychological or psychiatric care, I may contact the principal investigator and he will inform me of how to obtain these services.

Name (print): _____ Signature: _____

Date: _____ Witness: _____

Appendix H

Informed Consent for Audiotaping Form

**Regional Reception Assessment Centre Psychological Services
Informed Consent for Audiotaping Feedback Sessions**

The assessment feedback that you are about to receive will be given by a psychology intern. A psychology intern is a student who is almost finished his/her education to become a registered psychologist. Part of the intern's training is to give assessment feedback to his/her clients. This is what will be done in today's meeting.

All psychology interns are supervised by registered psychologists. This supervision allows the intern to receive feedback about his/her progress in the internship programme. Supervision is a very important part of any internship.

You are asked for your consent to have this assessment feedback session audio-taped for supervision purposes. This recording will be kept strictly confidential. Your name, FPS number and any other identifying information will not be kept on the audio cassette.

The audio cassette recording of the session will allow the intern to review his/her work so that he/she can learn from this training experience. The cassette might be reviewed by a registered psychologist to provide the intern with feedback on the performance of his/her duties. The psychologist will not know your identity.

The audio-taping of your assessment feedback session will not have any effect on your stay at this institution, your penitentiary placement, your relationships with any staff of the Correctional Service of Canada (CSC), future release decisions, or your current or future relationships with the CSC or any other branch of the criminal justice or mental health systems.

I agree to have my assessment feedback session audio-taped for the psychology intern's supervision.

Name (Print)

Signature

Date

Witness

Start:

Finish:

Appendix I

Debriefing Form - Motivational Interview Group

Principal Investigator: Joel Ginsburg (RRAC, Mountain Institution and Carleton University)
Faculty Sponsor: Dr. John Weekes (Correctional Service of Canada, National Headquarters)
Chair of Carleton University's Department of Psychology Ethics Committee: Dr. Lise Paquette
Chair of Carleton University's Department of Psychology: Dr. Kim Matheson

Debriefing (Motivational Interview Group Participants)

Symptoms of alcohol dependence are common among inmates. Treating alcohol dependence depends on many things including the person's willingness to change his/her harmful drinking habits. Willingness to change can be measured, and this information helps institution staff choose treatment programs for inmates.

The purpose of this research is to test the use of motivational interviewing for increasing willingness to change harmful drinking habits in inmates who have shown symptoms of alcohol dependence. Motivational interviewing assesses a person's alcohol use, and the way that it fits with his/her values and goals in life. One aim of motivational interviewing is to increase the person's awareness of the harmful effects of his/her drinking habits. For example, besides causing physical effects like liver damage, harmful drinking habits may prevent people from living according to their values and/or reaching their goals. After realizing these effects, many people become concerned and wish to change their harmful drinking habits.

To test the use of motivational interviewing for increasing willingness to change harmful drinking habits in inmates, one group of inmates received a motivational interview, and another group of inmates did not receive the interview. It is thought that the inmates who received the motivational interview will show more willingness to change their harmful drinking habits than the inmates who did not receive the interview.

The details of the motivational interview were not described to you during the research. This was done so that you would respond to the interview naturally, without being influenced by any of the information that is given on this sheet.

This research will provide important information about the use of motivational interviewing for increasing willingness to change harmful drinking habits in inmates. This type of treatment will be used by the Correctional Service of Canada with inmates participating in substance abuse treatment programs and possibly other programs. Future research might study willingness to change drug use.

Thank you for participating in this research.

Please contact Joel Ginsburg if you have any questions or comments about this research, or, if you would like to know the results from this study. For ethical concerns, please contact Joel, the chair of the ethics committee, or the chair of the department of psychology.

Appendix J**Debriefing Form - Control Group**

Principal Investigator: Joel Ginsburg (RRAC, Mountain Institution and Carleton University)
Faculty Sponsor: Dr. John Weekes (Correctional Service of Canada, National Headquarters)
Chair of Carleton University's Department of Psychology Ethics Committee: Dr. Lise Paquette
Chair of Carleton University's Department of Psychology: Dr. Kim Matheson

Debriefing (Control Group Participants)

Symptoms of alcohol dependence are common among inmates. Treating alcohol dependence depends on many things including the person's willingness to change his/her harmful drinking habits. Willingness to change can be measured, and this information helps institution staff choose treatment programs for inmates.

The purpose of this research is to test the use of motivational interviewing for increasing willingness to change harmful drinking habits in inmates who have shown symptoms of alcohol dependence. Motivational interviewing assesses a person's alcohol use, and the way that it fits with his/her values and goals in life. One aim of motivational interviewing is to increase the person's awareness of the harmful effects of his/her drinking habits. For example, besides causing physical effects like liver damage, harmful drinking habits may prevent people from living according to their values and/or reaching their goals. After realizing these effects, many people become concerned and wish to change their harmful drinking habits.

To test the use of motivational interviewing for increasing willingness to change harmful drinking habits in inmates, one group of inmates received a motivational interview, and another group of inmates did not receive the interview. It is thought that the inmates who received the motivational interview will show more willingness to change their harmful drinking habits than the inmates who did not receive the interview.

This research will provide important information about the use of motivational interviewing for increasing willingness to change harmful drinking habits in inmates. This treatment will be used by the Correctional Service of Canada with inmates participating in substance abuse treatment programs and possibly other programs. Future research might study willingness to change drug use.

Thank you for participating in this research.

Please contact Joel Ginsburg if you would like to participate in a motivational interview, if you have any questions or comments about this research, or, if you would like to know the results from this study. For ethical concerns, please contact Joel, the chair of the ethics committee, or the chair of the department of psychology.