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Motivational Interviewing and Relapse Prevention for DWI: A Pilot Study

L.A.R. Stein and **Rebecca Lebeau-Craven**

Abstract

Driving while impaired is a serious national health problem, and there is a need to develop effective treatments for persons arrested for Driving While Intoxicated (DWI). Motivation for changing substance use behaviors may be critical for avoiding further infractions. Once motivated, the client may more readily develop skills that enhance efficacy to cope with situations leading to DWI. Motivational Interviewing (MI; Miller & Rollnick, 1991) was delivered to DWI-involved clients to enhance motivation to change. It was followed by Relapse Prevention (RP; Marlatt & Gordon, 1985) to develop coping skills. Clients rated MI/RP more favorably than standard care, evidenced improved coping skills, and showed general improvement at the end of the four-week treatment. This pilot study (N = 25) indicates that more well controlled clinical trials are warranted to study the effectiveness of MI/RP in treating persons engaged in DWI.

Driving while impaired (DWI) is a serious national health problem. In 1998, 38% of all traffic fatalities involved alcohol, and this represents one alcohol-related traffic fatality every 33 minutes (National Highway Traffic Safety Administration [NHTSA], 1998). In 1993, over 1.2 million Americans were injured in alcohol-related vehicular crashes (NHTSA, 1994b), and in 1990 such injuries cost over $46 billion (NHTSA, 1994a). DWI arrests accounted for the highest arrest rates in 1990 (1.8 million), followed by larceny theft, and drug offenses (FBI, 1991). In 1997, one out of every 122 licensed drivers was arrested for driving under the influence of alcohol or narcotics (NHTSA, 1998). These data indicate the need for effective strategies in reducing this public health problem. One such strategy involves treatment of persons engaged in DWI in order to reduce the probability of future infractions.

Persons involved in DWI are a heterogeneous group (Veneziano & Veneziano, 1992; Nochajski, Miller, Wieczorek, & Whitney, 1993), and this suggests that treatment must be tailored to individual needs. DWI-involved clients may differ in terms of current life-problems, alcohol or substance dependence, criminal history, and motivation. At least one study has suggested that motivation and efficacy for changing drinking behavior are critical for avoiding further infractions (Wells-Parker, Williams, Dill & Kenne, 1998). Motivation may be a particularly salient factor in treating clients coerced into treatment for DWI.

Motivational Interviewing (MI; Miller & Rollnick, 1991) represents a promising approach to address reluctance to engage in treatment for substance-related risky behaviors including DWI. To date it has not been formally applied to treating this population, although a few studies reference the empathic and nonconfrontational style found in MI as useful for treating this population (Yu & Watkins, 1996; Dan, 1992). The effectiveness of MI for treating substance abuse has been demonstrated in adults (Bien, Miller, & Boroughs, 1993a; Brown & Miller, 1993; Miller, Benefield, & Tonigan, 1993), and adolescents (Colby et al., 1998; Monti et al., 1999). Several studies from Project MATCH (a large multi-site treatment outcome study) also support the wide spread applicability of MI in treating alcohol disorders (Project MATCH, 1997) and in treating persons high in anger (Project MATCH, 1998). MI has been used as both an intact treatment (Miller, Zweben, DiClemente, & Rychtarik, 1995), and as a preparation for treatment (Bien, et al. 1993a; Brown & Miller, 1993). Several elements of MI are thought to

be important: an empathic nonconfrontational style, an emphasis on client responsibility and choice, individualized feedback, a menu of goal alternatives, advice to change, no assumption that participants are ready to change, and an emphasis on increasing self-efficacy (Miller & Sovereign, 1989).

As noted earlier, DWI-involved clients may be relatively unmotivated to change. In general, MI is designed to develop ambivalence about a problem behavior by having the individual explore the discrepancy between the behavior and her or his goals. Through the development of discrepancy and ambivalence, intrinsic motivation is promoted and behavior change is triggered (Miller, 1994). MI has the advantage of identifying and mobilizing a client's own values and goals to stimulate behavior change. As suggested by Donovan, Salzberg, Chaney, Queisser and Marlatt (1990), once these values and goals are mobilized, the DWI-involved client can more readily develop skills that enhance efficacy to cope with situations leading to DWI.

Relapse Prevention (RP; Marlatt & Gordon, 1985) is a self-control program that combines behavioral skills training, cognitive interventions, and lifestyle change procedures. The goal of RP is to teach individuals (who are engaged in the active phase of treatment) how to anticipate and cope with relapse. The effectiveness of RP has been demonstrated in several studies (Chaney, O'Leary, & Marlatt, 1978; Koski-Jannes, 1992; Ito, Donovan & Hall, 1988; Annis & Davis, 1988; Sandahl & Ronnberg, 1990; O'Farrell, 1993). Irvin and colleagues (1999) conducted a meta-analysis of 26 studies and found that RP was particularly effective for alcohol or poly-substance disorders. Carroll (1996) reviewed over 24 randomized controlled trials and found good evidence for the effectiveness of cognitive-behavioral treatment (CBT) compared with no treatment controls. CBT was also compared with active treatment, and generally CBT was found to be comparable to or more effective than other treatment (Carroll, 1996). CBT may be particularly useful in reducing severity of relapse, enhance durability of effects, and be well suited for psychologically impaired clients (Carroll, 2000). Longabaugh and Morgenstern (1999) conducted a comprehensive review and found that substance abusers who received cognitive-behavioral coping skills training (CBST) as a component of a more comprehensive treatment have better drinking-related outcomes than patients who do not receive CBST. Just as Longabaugh and Morgenstern (1999) indicated that the combination of MI and CBST could increase skill use for some substance abusers generally, several researchers have suggested that applying such approaches to DWI-involved clients specifically may be a potentially promising method of treatment (Donovan et al., 1990; Connors, Maisto, & Hershfield, 1986; Rosenberg & Brian, 1986).

Connors et al. (1986) examined two behavioral interventions and found that pre-post measures for both groups indicated more frequent use of portable breathalizers and perceived increased probability of being arrested if clients drank and drove. In comparison to DWI-involved clients who were more socially and/or alcohol impaired, Donovan et al. (1990) found coping skills training to be effective in treating first time DWI clients who were better educated, more socially stable, drank less often, and had fewer episodes of heavy drinking. However, RP may be most efficacious when applied to persons in a high state of distress or with a significant history of problematic drinking (Dimeff & Marlatt, 1995), both of which may characterize incarcerated DWI-involved persons. RP is designed to be highly ideographic and to work best when tailored to the individual (Somers & Marlatt, 1992). As noted above, persons engaging in DWI are a diverse group, and treatment must be tailored to the individual needs of these clients. Because MI and RP in combination address treatment issues that may be particularly germane to DWI-involved clients (motivation and development of effective coping skills), applying these interventions to this population may be an effective treatment strategy.

This study examined the receptiveness of convicted DWI-involved clients to a treatment involving MI followed by RP. Clients' perceptions of MI/RP and treatment as usual (see Methods for description) were compared. This study also examined the effectiveness of MI/RP in developing specific coping skills to avoid future problems with substance use including DWI. This is a study utilizing archival data that were not generated originally for the purposes of a treatment outcome study. However, this study has the advantage of focusing on process measures and intermediate outcomes as recommended by Fitzpatrick (1992). Such a focus provides information for program improvement, dissemination, and identification of effective treatment models (Fitzpatrick, 1992).

This study adds to our knowledge base in several important ways. First, we are aware of no other published studies examining the development of coping skills in incarcerated clients involved in multiple DWI offenses. Second, we are aware of no other published studies using MI followed by RP in treating incarcerated DWI-involved clients. Third, we examine not only changes in coping skills, but also client evaluation of and receptivity to treatment. We provide detail regarding aspects of MI/RP and treatment as usual that these clients found effective and ineffective. Client receptivity is seldom studied in this setting, but may inform design and implementation of treatment programs.

Methods

Participants

The MI/RP program was offered in a private, minimum-security correctional facility in a midwestern city. Persons were placed in the facility for misdemeanors including DWI, petty theft, minor fraud, domestic violence, suspension of drivers license, and simple nonviolent assault or for felonies including initial felony offense, 3rd and 4th shoplifting offense, vehicular homicide, drug abuse, and theft or fraud. Persons were also placed at the facility after serving a portion of their maximum-security prison sentence. Depending on type of sentence and good behavior while incarcerated, some residents obtained work release.

The facility offered a comprehensive chemical dependency treatment program (CDTP; described below). Treatment was delivered by certified chemical dependency counselors. Clients were screened into this program on the basis of an assessment determining substance abuse, misuse, or addiction. This involved assessment of life problems due to alcohol or drugs, health problems due to use, evaluation of DSM-IV diagnosis for substance abuse or dependence (via structured clinical interview), drug screen, and collateral reports. Because CDTP was mandatory for all persons engaged in multiple DWI offenses, a large proportion of clients in the CDTP had a history of multiple DWI offenses. Success in the program was determined by the extent to which a client accurately identified him/herself as alcoholic or chemically dependent, and by treatment attendance and participation in order to meet treatment goals as determined in the initial assessment.

To be eligible for MI/RP, clients needed to have successfully completed the CDTP, not be on a work release that conflicted with the program, and still be incarcerated at the facility (in some cases clients were discharged after completion of the CDTP). Approximately 330 people completed CDTP over the nine-month period and 13% (N = 38) were eligible for MI/RP. Of the 38 persons eligible, 25 volunteered (without reimbursement) to participate in MI/RP. All participants had driven while intoxicated on multiple occasions. Characteristics of the final sample are presented in Table 1. As can be seen from Table 1, this is a diverse group in terms of their motivation and readiness to change (Prochaska & DiClemente, 1983). Although a large proportion (32%) were in the Precontemplation stage, the Maintenance stage of change was also represented (16%).

Instruments

Background Questionnaire—This is a self-report questionnaire covering family/social history, substance use, lifetime substance dependence (determined by checklist and responses to open-ended questions), functional value of substance use, stage of change, legal involvement, and life problems. Classification of stage of change was determined using descriptions of each stage as described by McConnaughy, Prochaska & Velicer (1983). The Background Questionnaire was completed prior to beginning MI/RP and was developed for this program.

Cognitive Assessment—This was a brief battery consisting of WAIS-R subtests including Vocabulary, Block Design, Object Assembly, Digit Symbol, and Similarities (Wechsler Adult Intelligence Scale-Revised; Wechsler, 1981); Trail Making A and B (Bornstein, 1985; Spreen & Strauss, 1991); and the WMS-R Logical Memory subtest (Wechsler Memory Scale-Revised; Wechsler, 1987). As part of the MI, feedback on results was provided to clients prior to engaging in RP. Except for Vocabulary and Similarities, these tests have been shown to be sensitive to prolonged alcohol abuse (Anderson, 1994). Vocabulary and Similarities were used to estimate premorbid cognitive functioning.

Homework—Clients were provided with approximately six homework assignments during the course of MI/RP. These consisted of exercises examining the pros and cons of using or not using substances and identifying and coping with antecedents to behaviors, as well as identifying positive and negative consequences of behaviors. Exercises focused on evaluating and enhancing confidence in coping with situations that trigger substance use; goal setting and use of rewards; and identifying and coping with stressful life events, as well as daily hassles and uplifts. Homework was graded using a Likert scale (0-“Very Poor,” 1-“Poor,” 2-“Adequate,” 3-“Good,” 4-“Very Good”). Grades were based on application of principles used in the MI/RP sessions and effort as determined by detail clients provided. Assignments were handed back with detailed therapist comments to provide feedback to clients.

Relapse Avoidance Plan—In a free response format, clients were asked to respond to the following: (1) Warning signs that I might be building up to using. (2) What I will do when I experience these signs. (3) What are signs that others might see in me when I might be headed towards a relapse? (4) What I'd like others to do if they see signs of relapse (even if I don't see them). (5) I feel I might have problems in the following areas during the recovery process. (6) I feel the following will be helpful to my recovery. This questionnaire was given as a pre- and post-test to evaluate improvement in coping skills. Each section was graded using the Likert scale described above. Grades were based on detail and specificity provided in the plan and the therapist's judgment regarding the plan's practicality (for example, a low score would be given if an avoidance plan indicated the respondent would drive away from the trigger, yet s/he did not have access to a car). Each plan received an overall score that was calculated by totaling the score on all sections and dividing by six. Feedback on the pre- and post-tests were provided to clients.

Clinical Outcome Summary—For each client enrolled in MI/RP, a report was written by the therapist. Each report included a section that documented clinical outcome after participating in MI/RP. Progress made during treatment (positive outcome) was noted (for example, identifying specific strategies to cope with triggers) as was negative treatment outcome (for example, drop out or no progress). The number of positive and negative outcomes could then be tallied for each client.

Program Evaluation—Via free response format, this questionnaire asked clients what they got out of the CDTP (benefits), what they hoped to get out of the program but did not (unmet

expectations), and how this program could be improved. The same inquiries were made for MI/RP. It also asked clients to rate the overall usefulness of each treatment using a 5-point Likert scale (1-“Not At All Useful” to 5-“Very Useful”). This questionnaire was developed to evaluate and improve MI/RP, and clients were told the therapist would not look at their answers until after her tenure at the facility was completed (nine-month term). Questionnaires were filled out privately and placed in a sealed envelope.

Procedure

In the week following completion of the CDTP, eligible persons were asked if they wanted to volunteer for a Relapse Prevention discussion group meeting twice per week over four weeks, with meetings lasting 90 minutes. They were told the content of the group would largely be determined by their needs and that all information was confidential (unless it involved harm to self/others or escape plans). They were also informed that as part of their participation, they would be asked to fill out questionnaires and engage in testing with feedback before RP began. After agreeing to participate, they were asked to complete the Background Questionnaire and return it within three days (before MI/RP began). Before beginning MI/RP clients were asked to complete the Relapse Avoidance Plan (pre-test). At the completion of MI/RP, they completed the Relapse Avoidance Plan (post-test) again and the confidential Program Evaluation. MI/RP was provided by a masters-level psychology trainee.

MI Assessment and Feedback—After agreeing to participate in the MI/RP treatment program and completing the Background Questionnaire, clients engaged in one hour of individual cognitive testing. The following day, 30 minutes of individualized feedback were provided, which included relevant information from the Background Questionnaire (symptoms of substance abuse or dependence, family history of substance use, and pros and cons of use) and normative feedback using cognitive testing results. The session was conducted with an empathic nonconfrontational style, an emphasis on client responsibility and choice, a menu of goal alternatives, advice to change, no assumption that the client was ready to change, and an emphasis on increasing self-efficacy. It was based primarily on suggestions of Miller and Rolmick (1991), and the content of MI that was delivered was as follows: (1) introduction and rapport; (2) assessment results with normative feedback; (3) eliciting reactions to feedback and what, if anything, they might do with the information; (4) brief discussion of expectations of RP group and any goals they might have; and (5) what it is about themselves that makes them believe they can reach goals they set for themselves.

Relapse Prevention—Groups met twice per week over four weeks for 90-minute sessions. Sessions closely followed the suggestions and techniques as outlined by Marlatt and Gordon (1985). Group rules were briefly covered along with the basic philosophy of RP: with appropriate information and skills, people can learn to exert more influence over their responses to high-risk situations instead of responding reactively or passively (Dimeff & Marlatt, 1995). Homework and handouts were given to coincide with session content. Initial sessions were aimed at establishing group cohesion, continued motivational enhancement, and assessing the history of problem behavior. Subsequent groups focused on coping with immediate problematic situations, learning to identify and cope with specific high-risk situations, and balancing the client's lifestyle. As needed, motivational issues continued to be addressed. The group exercises were very powerful in further enhancing motivation to change and building self-efficacy in that members learned from each other. RP is comprehensive and multifaceted. It includes, for example, a menu of specific techniques to change cognitions and balance lifestyles. For specific techniques and suggestions, see Marlatt and Gordon (1985) and Dimeff and Marlatt (1995). A standard manual was used to deliver all treatments. The content of the RP that was delivered was as follows: (1) a functional analysis of substance use; (2) training to recognize and cope with craving and thoughts about substances, training in problem

solving, planning for emergencies, recognizing seemingly irrelevant decisions, and refusal skills; (3) cognitive processes related to substance use (irrational thinking); (4) identification of past and future high-risk situations; (5) encouragement and review of extra-session implementation of skills; and (6) practice of skills within session.

Treatment as Usual—This intervention consisted of the CDTP, which was mandatory for all persons convicted of multiple DWI offenses. It emphasized the disease model, and as such alleviated blame. In this model addictive behavior is a manifestation of an underlying disease process rooted in biological factors; there is no cure, the problem is progressive in nature, and relapse must be avoided to circumvent reactivation of the disease process (Dimeff & Marlatt, 1995).

This treatment was an intensive four-week program (covering 16 days) with Antabuse (if medically able) and drug testing. Morning sessions (about two hours) were held in groups of approximately 40 people and involved psycho-educational lectures or films (for example, effects of alcohol on the organs, how substance abuse affects families, and the impact of DWI on drivers and victims' families). Afternoon sessions (approximately 60-90 minutes) of about eight clients per group were facilitated by certified chemical dependence counselors. These small groups discussed reasons for being in treatment, the emotional and physical effects of alcohol and other drugs, defenses such as denial, signs and stages of alcoholism, the AA model, problem solving, the “alcoholic family,” strengths and plans for the future, who the client has hurt, refusal skills, shame, coping with withdrawal and signs of relapse, finding new substance-free activities, and faulty beliefs (“I can drink or use again”). Individual sessions were also available, and regular attendance at AA was strongly recommended.

Also available to all persons at the facility were programs for dealing with family problems, job training, case management, aftercare, health services, clothing and housing assistance, educational and recreational programs, and art therapy.

Coding Data and Reliability—The MI/RP program was originally run by the first author as part of her graduate training. Three years later, archival data, which were not originally collected for the purposes of performing a treatment outcome study, were examined by the authors to evaluate success or failure of MI/RP. Many of the responses from the Background Questionnaire, the Program Evaluation, and the Relapse Avoidance Plan (RAP; pre/post) were in a free-response format. Clinical outcome summaries on each client were also available. Inter-rater reliability on homework could not be conducted as all assignments were returned and no copies were retained in records. Separately, the authors reviewed each client's responses and outcome summary to create coding categories and then together determined categories to be used in coding. Responses on the RAP were independently graded by the second author as described above (see Instruments), who was blind to pre-/post-test status. Two months elapsed, and then these authors separately coded each client's responses as well as the outcome summaries. Disagreements were resolved through discussion between coders.

Reliability between coders was generally high. On the RAP, correlations ranged from $r = 0.52$ to $r = 0.98$, with $r = .90$ for the median and $r = .91$ for the mode. Kappas were obtained for the other coded data and ranged from $K = 0.81$ to 0.94, with $K = 0.86$ for the median, $K = .94$ for the mode, and $K = 0.87$ on average. Correlation of $r = 0.52$ is attenuated because of low variation in post-test scores. Post-test RAP scores generally increased substantially and had less variation.

Results

The number of groups attended out of eight was high (mean, M = 7.54, SD = 0.98), and only two clients out of 25 dropped out. Average length of sentence was 86 days. On average three clients were included per group (median and mode = 4), SD = 0.98. The average number of homework assignments completed was 4.48 (SD = 2.20). The average score on completed homework was M = 2.61, SD = 0.72. Table 2 indicates the level of cognitive impairment found in the sample. As compared to Vocabulary and Similarities, 24% evidenced attentional deficits (Digit Symbol), 24% showed recent memory deficits (Logical Memory 2), and 16% evidenced deficits in mental flexibility (Trails B).

Program Evaluation

On the Program Evaluation form, clients rated the overall usefulness of the CDTP and MI/RP programs separately. For CDTP, M = 3.80 and SD = 0.95 and for MI/RP, M = 4.60 and SD = .60. Analysis revealed t = 4.29, df = 19, and $p < 0.0004$ with a large effect size (ES) of d = 0.96.

For each client, the total number of benefits obtained from MI/RP (M = 1.47, SD = 0.51) and from CDTP (M = 0.88, SD = 0.78) was calculated. A t-test was conducted to determine whether there were differences between the two groups in the number of benefits obtained: t = 2.58, df = 16, and $p < 0.020$ with a medium ES of d = 0.63. Using the Bonferroni correction for this and the next two related t-tests (see below), this result is nonsignificant (.05/3 = .017 < 0.020). In answering how they benefited from CDTP, although 20% of clients noted that they received very little benefit or became discouraged, 20% indicated that this group helped them become more aware of their problem with substances. In answering how they benefited from MI/RP, 32% of clients noted specific coping skills that would help in recovery, and 16% noted a sense of self-reliance or hope. These percentages represent the most frequently endorsed categories.

For each client, the total number of unmet expectations was obtained for MI/RP (M = 0.29, SD = 0.47) and for CDTP (M = 0.53, SD = 0.51). A t-test was conducted to determine whether there were differences between the two groups in the number of unmet expectations: t = 1.46, df = 16, and $p < 0.163$ (NS) with a medium ES of d = 0.36. When asked to describe any unmet expectations, 16% stated that CDTP met or surpassed expectations. However, 12% had hoped to receive information specific to their needs and 12% also wanted more information regarding triggers and alternative behaviors from CDTP. With respect to MI/RP, 36% of clients indicated that the program met or surpassed expectations, although 12% wanted more time in individual sessions. Again, these percentages represent the most frequently endorsed categories.

Clients were asked how the treatment programs could be improved. For each client, the total number of improvements for MI/RP (M = 0.50, SD = 0.15) and for CDTP (M = 1.17, SD = 0.19) was calculated. A t-test was conducted to determine whether there were differences between the two groups in the number of improvements that were needed: t = 2.92, df = 17, and $p < 0.010$ with a large ES of d = 0.69. To improve CDTP, 36% of clients wanted fewer lectures and movies and more time in discussion groups. Similarly, 20% suggested more individual time during CDTP. With respect to improving MI/RP, 32% indicated that the group could not be improved, whereas 20% suggested more individual time. These percentages represent the most frequently endorsed categories.

Relapse Avoidance Plan (RAP; Pre-Post)

Thirteen clients had both pre- and post-test RAP's retained in their records. In some cases both RAP's were completed, however, due to copier failure the RAP was returned to the client without a copy being made for the file. In comparing clients with both RAP's and those without both, no significant differences were found on the following variables: cognitive impairment,

age, age client began using alcohol regularly, age client began using drugs regularly, number of lifetime DWI offenses, whether the client had graduated high school, or whether he or she had been treated previously for substance abuse (effect sizes were also small).

Table 3 indicates significant improvement in overall coping skills. After correcting α using the Bonferroni correction, NS results were obtained in recognizing signs of relapse clients might notice in themselves (Signs) and action clients might take when they notice these signs (Action). Results were significant for signs of relapse others might notice (Signs, Others), action others might take (Action, Others), identification of problem areas during recovery, and aspects of clients' lives that may be helpful during recovery (Helpful Aspects).

Clinical Outcome Summaries

For each client, the total number of positive outcomes from MI/RP was obtained ($M = 1.32$, $SD = 0.95$ out of 14) as was the total number of negative outcomes ($M = 0.72$, $SD = 0.74$ out of 7). A t-test was conducted to determine whether there were differences in the number of positive and negative outcomes obtained: $t = 2.12$, $df = 24$, and $p < 0.044$ with a medium ES of $d = 0.43$.

Discussion

This study described and provided evidence for the feasibility of an innovative intervention program for incarcerated DWI-involved persons with diverse treatment needs. At the outset of MI/RP, some clients (44%) were relatively unmotivated and some (at least 24%) exhibited signs of cognitive impairment. Even so, clients were very receptive to the MI/RP program, were actively involved as indicated by attendance and homework assignments, and generally evidenced positive clinical outcome as noted in clinical summaries. They rated MI/RP as more useful than their mandatory CDTP; however, given client ratings, it appears that they also found CDTP enjoyable and useful for the most part. It should be noted that MI/RP offers a far less time consuming alternative to CDTP and for this reason alone, MI/ RP could be considered a viable alternative.

Strengths of CDTP included assisting clients to more closely examine problems with substance use. A number of clients (16%) also felt that this program met or exceeded their expectations. At the same time, some clients (36%) disliked the use of lectures and movies in CDTP and felt they received very little from treatment (20%). In contrast, strengths of MI/RP included development of specific coping skills, and a substantial number of clients (36%) felt the group met or exceeded expectations. Clients expressed a desire for more individual time in both CDTP and MI/RP.

Pre- and post-test data suggest that MI/RP improves and expands knowledge of available coping skills in DWI-involved clients. Results suggest improvement in clients identifying triggers to relapse as well as aspects of their lives that may assist in preventing relapse. Interestingly, clients did not improve in identifying specific signs of relapse they might notice or specific action they themselves might take. However, clients did improve in identifying specific signs of relapse that others might notice and actions others might take to assist them. This may be because CDTP had already helped clients focus on the role they themselves play in their own recovery. These data suggest that it may be useful to expand a DWI-involved client's coping repertoire to include the role of others in the environment.

The results of this investigation provide some limited evidence for the usefulness of MI/RP with incarcerated DWI-involved clients. Power was limited due to small sample size, however, the medium and large effect sizes found for even the NS results indicate the effectiveness of this program. As an archival study using clinical data, this study has a number of weaknesses.

For example, we could not control for the effects of history in the pre/post-test design (i.e., CDTP preceded MI/RP), we could not counter-balance interventions, we could not control for differences in therapy group size between CDTP and MI/RP, nor could we utilize random assignment to groups. Similarly, because the Program Evaluation Questionnaire was delivered after both treatments were completed, recency effects could influence results of this questionnaire. However even with these limitations, results of this research do indicate that controlled studies on the usefulness of MI/RP are warranted.

Future studies must include a larger number of clients with minorities, more women, and the use of random assignment to treatment and control conditions. In addition, it will be important to examine the usefulness of MI/RP in non-volunteer groups, as well as the contributions of MI and RP separately. Results indicate an improvement in coping skills knowledge, and it will be important for future studies to evaluate post-release enactment of such skills. In addition, post-release measures must not be limited to DWI recidivism, but must also examine other outcome variables. Such variables might include improved work performance, reduced substance use, improved social relations and quality of life, and reductions in other problematic behaviors such as injuries related to substance use. The present study could not address enactment of coping skills in high-risk situations. However, it is important to note that cognitive factors influence substance-use behaviors (Nathan, 1993), and our results suggest improvement in such cognitive factors.

Overall, MI/RP appears to hold promise as an intervention for chronic DWI-involved clients with diverse arrest and substance use histories. It can be tailored specifically to individual needs and is deliverable in a relatively brief group format. These clients were quite receptive to the intervention as evidenced in their comments about treatment. This study illuminated processes of treatment and change that were salient to clients in this setting. Future studies that utilize such process measures, as well as post-release outcome data, will likely make a large contribution to this important public health concern.

Biographies

Lynda Stein, Ph.D., is a licensed clinical psychologist and Assistant Professor in the Department of Psychiatry and Human Behavior at Brown University's Center for Alcohol and Addiction Studies. Her areas of interest include detection of biased responding and assessment and treatment of persons involved in the justice system. She currently has an NIDA-funded R01 studying treatment of juvenile offenders.

Rebecca Lebeau-Craven, M.P.H., is Research Associate-Project Coordinator in the Center for Alcohol and Addiction Studies. Rebecca was the principal investigator on a recently completed a Project where she received a Center-funded grant to study criminal behavior and substance use in incarcerated teens. Her interests include substance use and other risky behaviors in homeless teens and teens involved in the justice system. Rebecca has been working in research in the addictions for the last 6 years.

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Table 1

Sample Characteristics (N = 25)

Characteristic	M	SD	%
Age	32.44	6.97	-
Male	-	-	88
White Ethnic Background	-	-	100
Not Married	-	-	88
HS Graduate	-	-	64
Hollingshead[a]	4.00	3.75	-
Most Common Medical Concern: Ulcers	-	-	20
History of Physical/Emotional/Sexual Abuse	-	-	40
Most Common Life Problem: Stress/Anxiety	-	-	44
Family History of Substance Abuse	-	-	52
Age First Use			
Alcohol	13.14	3.14	-
Drugs	13.55	3.75	-
Age Regular Use			
Alcohol	17.35	2.54	-
Drugs	15.17	3.68	-
Stage of Change			
Precontemplation	-	-	32
Contemplation	-	-	12
Determination	-	-	36
Action	-	-	4
Maintenance	-	-	16
Reason to Drink[b]			
To feel “buzzed”	-	-	48
Socialize	-	-	36
Relax	-	-	20
To become “numb”	-	-	20
Usually Drink ≥ 6 drinks when drinking	-	-	86
≥3 Alcohol Dependence Criteria (Lifetime)	-	-	28
Past Year Substance Use[b]			
Marijuana	-	-	28
Cocaine	-	-	12
Amphetamine	-	-	12
Number of Lifetime DWI Arrests	4.33	2.61	-
Previous Substance Abuse Treatment[c]	-	-	68

Note: Mean = M; standard deviation = SD.

[a] Hollingshead (1975) socio-economic status indicator, scored on a Likert scale from 1 (lowest status) to 9 (highest status).

[b] Categories not mutually exclusive.

[c]Treatment prior to current incarceration.

Table 2

Cognitive Testing (N = 21)

	Score		
Test	**M**	**SD**	**% Impaired as Compared to Vocabulary and Similarities**
WAIS-R			
Vocabulary	9.00	2.20	-
Similarities	12.83	17.59	-
Block Design	16.35	19.19	4
Object Assembly	10.26	2.38	4
Digit Symbol	8.04	1.87	24
WMS-R			
Logical Memory 1	20.70	7.15	12
Logical Memory 2	16.70	8.36	24
Trails A (seconds)	28.87	10.24	4
Trails B (seconds)	71.78	33.42	16

Note: WAIS-R is Wechsler Adult Intelligence Scale-Revised (1981); WMS-R is Wechsler Memory Scale-Revised (1987).

Mean = M; standard deviation = SD.

Table 3

Pre- Post Scores on Relapse Avoidance Plan (RAP)

		Pre-		Post-					
Skills[c]	**N**	**M**	**SD**	**M**	**SD**	**t**	**df**	**p<**	**ES (d)**
Signs	13	1.69	1.70	3.12	.82	2.59	12	.023	.72
Action	13	1.77	1.42	2.62	.87	2.01	12	.068	.56[a]
Signs, Others	13	1.38	1.50	2.69	1.11	3.58	12	.004[b]	1.00
Action, Others	13	1.31	1.18	2.62	.77	5.52	12	.001[b]	1.53
Problem Areas	13	1.08	1.19	2.54	1.05	5.02	12	.001[b]	1.39
Helpful Aspects	13	1.38	1.19	3.15	.90	4.31	12	.001[b]	1.20
Overall	13	1.41	1.20	2.80	.65	5.05	12	.001	1.40

Note: Mean = M; standard deviation = SD.

[a] All are large ES except ES = .56, which is medium.

[b] Using the Bonferroni correction for the six subsections, α is .05/6 = .008 for significance.

[c] Signs = signs of relapse clients might notice in themselves; Action = action clients might take when they notice signs of relapse; Signs, Others = signs of relapse others might notice; Action, Others = action others might take to assist clients; Problem Areas = problem areas for clients during recovery process; Helpful Aspects = aspects of clients' lives that will be helpful during recovery; Overall = average of scores on the six sections of the RAP.