Short-term Effectiveness of a Brief Motivational Intervention with Convicted DWI Offenders

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Abstract
This study examines the short-term impact of a brief motivational intervention on DWI offenders mandated to receive a substance abuse assessment. Following a comprehensive assessment, participants were randomly assigned to receive one of two interventions; a motivational interviewing-style feedback (MI) session, or a control intervention that included information about the effects of alcohol advertising on drinking behavior (AI). An index of drinking was computed using the percent of days driving after drinking, percent of heavy drinking days (5 or more drinks), and the mean drinks per day. The findings revealed that the MI group had significantly lower scores at follow-up than the AI group. When examining drinking-driving separately, the AI group was over 6 times more likely than the MI group to have driven after drinking in the follow-up period. There were no associations between the initial Alcohol Expectancy Questionnaire (AEQ) measures and drinking-driving, while drinks per day showed modest correlations with four of the subscales from the AEQ. The MI group showed significant decreases in alcohol-related expectancies across time, while the AI group did not. Within the MI group, changes in the drinking measures were no longer significant when the AEQ subscales were used as time-dependent covariates, and the significance level for the drinking driving measure was reduced but remained highly significant. The results suggest that the MI intervention was associated with changes in AEQ subscales, drinking, and drinking-driving behavior. Furthermore, the changes in drinking behavior may have been mediated by the changes in the AEQ, while the changes in drinking-driving behavior were more directly affected by the MI intervention.

Introduction
Prior work has suggested that treatment of DWI offenders can reduce the risk for recidivism (1, 2,3). However, treatment per se does not necessarily guarantee a reduction in the risk for recidivism. The extent to which treatment can influence subsequent drinking behavior is contingent on client engagement in the treatment process (3). In general, it has been our
experience that DWI offenders are not willing participants in the assessment and treatment process (4). As a result, the current study was designed to evaluate the potential utility of motivational interviewing (5) for getting offenders to engage in treatment and think about actual changes in their drinking behavior.

A second focus of this study was on the relationship of alcohol-related expectancies to subsequent drinking and drinking-driving behavior in DWI offenders. Prior work has shown that alcohol expectancies are related to drinking (6) and treatment outcome (7). Thus, if expectancies are altered, we would expect that drinking behavior should change. While there is extensive literature to support the role of expectancies with drinking behavior, there has been little work on whether alcohol-related expectancies actually influence drinking-driving behavior. Thus, in addition to evaluating the impact of the MI intervention on subsequent drinking and drinking-driving, we are also interested in considering how alcohol expectancies might relate to any changes in drinking or drinking-driving behavior.

Methods
This is part of a larger study evaluating the potential utility of harm reduction approaches for reducing DWI recidivism. The Offenders were told by the participating judges that they were to contact the Research Institute on Addictions (RIA) to schedule an appointment for a substance abuse assessment. Since individuals cannot be mandated to participate in research, participants were offered the choice to participate in the research project described herein, or to be evaluated at RIA’s outpatient alcohol clinic, or to be evaluated at any other community treatment agency. Approximately 81% of those who contacted us elected to participate in the study. Individuals who chose to participate the research project received $50 US for completing the 3-month follow-up interview. The study being reported here focuses on short-term follow-up (3 months) and only includes participants who were randomly assigned to receive either a MI feedback session or a one-session control intervention (described below). Participants with more severe alcohol and/or drug problems were referred for additional treatment. These individuals were excluded from the present analyses because they were still engaged in treatment at the 3-month follow-up. Of the remaining 82 eligible participants, 61 agreed to complete the follow-up interview (AI = 29, MI = 32). Individuals who refused to complete the follow-up were older (36.4 ± 11.4 vs. 30.3 ± 9.6) t(30) = 2.19, p<.04 and more likely to be Protestant (19% vs. 5%) X² (1, n=82) = 3.99, p<.05, as compared to those who completed the follow-up interview. No other demographic or alcohol-related differences were found.

Although the AI group (52%) was more likely than the MI group (24%) to have refused the breath test at arrest X² (1, n=58) = 4.69, p<.05, comparisons for the demographic, alcohol expectancy, and drinking measures showed no significant differences. These results suggest that the randomization process was successful. The sample was mostly white (84%), male (77%), never married (66%), had some college education (57%), were employed (88%), had personal income of over $20,000 (60%), with 40% having household incomes greater than $50,000. In terms of prior arrests, 26% were repeat drinking-driving offenders and 18% had prior arrests for crimes other than drinking-driving. For the drinking-related measures, 38% refused the breath test at arrest, the mean BAC for those that took the test was 0.15%. The mean score on the AUDIT was 4.6 ± 2.77, while for the RIA Self Inventory (RIASI), the mean total score was 9.6 ±
5.7, and the mean score on the recidivism subscale was 3.7 ± 2.14. The sample drank an average of 10% of the days in the 6-months prior to the initial assessment, they drove after drinking an average of 30% of the days they drank, and drank 5 or more drinks 30% of the days they drank, with a mean drinks per day of 0.4 ± 0.5.

Informed consent was obtained from all participants. In addition, release of information forms were obtained to allow us to provide information back to the courts, probation officers, attorneys, or other treatment agencies if necessary. After completing the assessment, individuals were randomly assigned to one of four conditions. However, for purposes of this study only the two conditions consisting of one session were included. Individuals in the control condition watched a video about alcohol advertising, were provided with information about the influence of alcohol advertising on alcohol consumption, and then given a short quiz. The MI condition received a one time structured feedback session using the principles of motivational interviewing. Both interventions lasted approximately 80 minutes.

The assessment consisted of a thorough battery of questionnaires and a structured interview process. Included in the assessment battery were the Alcohol Effects Questionnaire (AEQ) and the Timeline Follow-back (TLFB). The revised AEQ consists of 59 items with a Likert type scale ranging from 1 (Never) to 5 (always). Within the AEQ, a total score and 10 subscales were constructed. The 10 subscales consisted of the following: global positive; increase pleasure of celebrations; increase sexual pleasure; more aggressive/powerful; increase ability to express feelings in social setting; helps to relax; causes impairment; makes me more careless; helps me cope; and increases ability to focus attention and concentrate. As stated above, the TLFB was used to obtain information about alcohol consumption. During administration of the TLFB, whether or not the person drove after each reported drinking occasion was also assessed. Information derived from the TLFB included percent of heavy drinking days (i.e., ≥ 5 drinks per day), the percent of days of days driving after drinking, and the mean number of drinks per day. These measures were highly skewed and were transformed for analytical purposes using a square root transformation. The measures were then standardized and summed together to form a drinking-index. A dichotomous drinking-driving variable based on whether the individual had ever drank and drove in the time period under consideration was also formulated.

Results
The first set of analyses focused on whether the brief intervention had an influence on drinking behavior. A repeated measures ANOVA was performed on the drinking index to determine if changes in the drinking index differed for the AI and MI conditions. The analysis yielded a significant time by condition interaction, F (1,59) = 5.28, p < .03, eta-square=.08, suggesting differential change over time as a function of condition. Results shown in Figure 1, indicate that the drinking index score increased across time for the control condition (-684 ± 1.51 to .162 ± 1.78), while the MI condition showed a slight decrease (-.435 ± 1.87 to -.649 ± 1.76). These results suggest that the MI intervention benefited the offenders over the short-term.
Changes in Drinking Index Score by Experimental Condition

In this next analysis, the focus was specifically on the percent of individuals that continued to drink and drive after the intervention. The dichotomous measure of drinking-driving in the follow-up period was used as the dependent measure in a logistic regression with the dichotomous measure based on the initial assessment used as a covariate and experimental condition as the independent factor. The results are shown below in Table 1. There was a significant effect for experimental condition, LR $X^2$ (2, $n=61$) = 6.70, $p<.04$, indicating that the control condition was over 6 times more likely than the MI condition to drive after drinking during the 3-month follow-up.

Table 1.
Results from the Logistic Regression on Drinking-Driving in Follow-up Period

|                       | B     | Std. Error | Z     | P>|Z|  | Exp(B)   | [95% CI Exp(B)] |
|-----------------------|-------|------------|-------|------|----------|-----------------|
| drink-drive initial   | 0.167 | 1.207      | 0.14  | 0.890| 1.181    | 0.111 - 2.593   |
| experimental cond     | 1.911 | 0.834      | 2.29  | 0.022| 6.764    | 1.320 - 34.66   |
| Constant              | -2.860| 1.327      | -2.15 | 0.031|          |                 |

The next set of analyses considered the influence of alcohol-related expectancies on the drinking and drinking-driving measures. None of the correlations between the AEQ subscales and the percent of days drinking 5 or more drinks or the drinking-driving measures were significant.
Furthermore, only the following subscales showed significant associations with drinks per day: increasing celebratory effects (r=.353, p<.05), increasing sexual pleasure/ability (r=.247, p<.05), helping to relax (r=.338, p<.05), and increasing ability in social settings (r=.275, p<.05).

Changes in alcohol-related expectancies over time was the focus of a series of repeated measures ANOVAs within experimental condition. For the control condition there was only a marginal effect for increasing the celebratory effects subscale, 11.4 ± 4.1 to 10.1 ± 3.9, p<.06. In contrast, for the MI condition, there were significant decreases for the following subscales: increasing celebratory effects, 11.4 ± 3.3 to 9.7 ± 3.9, p<.01; increasing ability in social settings, 9.1 ± 4.3 to 7.7 ± 3.3, p<.05; increasing sexual ability/pleasure, 8.7 ± 4.2 to 6.5 ± 2.5, p<.005; helping to relax, 7.6 ± 3.2 to 6.5 ± 2.5, p<.05; makes careless, 7.6 ± 2.8 to 6.3 ± 3.6, p<.05; and increases focus and attention, 4.2 ± 1.8 to 3.5 ± 1.2, p<.05.

Focus of the next set of analyses was on whether the changes in the alcohol-related expectancies mediated the influence of the MI intervention on drinking and drinking-driving behavior. A series of repeated measures ANOVAs and ANCOVAs were performed within the MI condition on drinking and drinking-driving behavior. Initial results revealed significant time effects for the drinks per day F (1,30) = 4.19, p=.05; percent of days drinking 5 or more drinks F (1,30) = 4.17, p=.05; and percent of days driving after drinking F (1,30) = 45.76, p<.001. When these same analyses were performed using the six AEQ subscales with significant changes over time as covariates the results showed loss of significance for the drinks per day, F < 1, and percent of days drinking 5 or more drinks, F < 1. While the significance level for the drinking-driving measure decreased, it remained highly significant, F (1, 24) = 33.73, p<.001. It is also interesting to note that the specific subscales associated with the changes varied depending on whether drinking or drinking-driving was the focus. For the drinking behavior only the subscale for increasing celebratory effects showed a significant association with the dependent measure. In contrast, for the drinking driving behavior analysis, the increasing ability in social settings, increasing sexual pleasure/ability, and careless unconcern subscales appeared to be the primary factors in reducing the significant influence of the MI intervention.

Discussion
The results suggest that the MI feedback session used in this study was successful in reducing drinking and drinking-driving behavior, as well as alcohol-related expectancies, during the first 3-month period following the intervention. Given the randomization process and the similarity between the two conditions, the finding that the control condition was over six-times more likely to drink and drive in the follow-up period is notable. It suggests that the MI feedback session was very effective in reducing this behavior. Although, it is important to note that the feedback session was modified to include information about the individuals level of risk for DWI recidivism. Thus, it is perhaps, not too surprising that we observed a robust effect for drinking-driving. In conclusion, the results are encouraging, showing support over the short-term for the MI brief intervention. However, these findings need to be tracked over longer periods of time and with larger numbers of participants. Data collection continues with a targeted 18-month follow-up and a 24-30-month follow-up of driver record abstracts that should provide additional tests for the effectiveness of the MI intervention.

Although the drinks per day showed relationships to some of the AEQ subscales, they were
modest and accounted for much less variance in the drinking behavior than the 12% indicated by McCarthy and Smith (8). However, changes in the AEQ subscales across time did reduce the effects of the MI on drinking behavior (both drinks per day and percent of heavy drinking days). Furthermore, while the initial measures of the AEQ were unrelated to drinking-driving, the changes in the AEQ subscales across time for the MI condition appeared to reduce the impact of the MI intervention on drinking-driving behavior. Finally, the subscales that appeared to influence the drinking and drinking-driving behavior differed, suggesting that the types of expectancies driving the two behaviors may differ. While there is some support for alcohol expectancies serving as potential mediators for drinking and drinking-driving behavior, the relationship appears to be more complex. Larger sample size and longer follow-up duration are necessary to help gain further understanding of the role that the expectancies may play in changing behavior and how MI influences these expectancies.

References


