Influence of Family History on Brief Interventions with DWI Offenders

P Stasiewicz
TH Nochajski

Research Institute on Addictions, 1021 Main St., Buffalo, New York 14203, USA

Introduction
There is an abundance of research that focuses on family history of problems with alcohol or other drugs. Much of this research considers development of problems and the role that family history may play in the onset of heavy or hazardous drinking. Findings have indicated that children of alcoholics (COA) have an increased risk of developing psychiatric disorders, have fewer communicative skills, and more relational problems. The types of problems delineated for COAs, would suggest that drinking-driving might be a problem behavior that is relatively frequent. However, when reviewing the DWI literature, information concerning family history for alcohol problems is sparse.

The current paper has two aims. The first aim is to provide a general description of the relationship between family history and risk factors for DWI recidivism in a sample of convicted DWI offenders. The second aim is to evaluate whether having a family history for alcohol problems influences the impact of a brief intervention designed to reduce the risk for DWI recidivism.

Methods
Sample: The initial sample consisted of 419 convicted DWI offenders. This sample is part of a larger study evaluating the potential utility of harm reduction approaches for reducing DWI recidivism. The offenders in the current sample 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. The participating courts represent urban (Buffalo, Lackawanna), suburban (Amherst, Clarence, Depew, Lancaster, West Seneca), and rural areas (Aurora, Boston, Brant). Offenders were offered the choice to participate in the research project described herein, or to be evaluated at any other community treatment agency. Approximately 81% of those who contacted us elected to participate in the study. Comparisons between the individuals who entered the study and those who did not revealed no differences for age, race, or gender. In addition, there were no differences for repeat DWI offender status or breath-test refusal rate. However, the group that elected not to participate (.172 ± .049) did have a higher reported BAC at arrest than the individuals who entered the study (.160 ± .048; t(354) = 2.02, p=.045).

The study protocol was reviewed and approved by the University at Buffalo Institutional Review Board. Informed consent was obtained from all participants and release of information forms were obtained which allowed us to provide information back to the courts, probation officers, attorneys, or other treatment agencies if necessary. Following the clinical evaluation, the participants were randomly assigned to one of four conditions. Two of these conditions, Alcohol Information (AI) or Motivational Interviewing (MI) involved a single 80-90-minute session. The AI condition included videos depicting various alcohol advertising campaigns, handouts describing the effect of alcohol advertising, and brief set of questions pertaining to the video and handouts. The MI session involved a feedback process that utilized the principles of motivational interviewing. The feedback session used information from the initial assessment and focused not on drinking reduction per se, but rather on reducing risk for subsequent arrest for DWI. The other two conditions used
the feedback session and then included an additional six-sessions of either driver education or six sessions of skills training with a harm reduction focus. However, because of the short-term follow-up being considered in this paper, only the two single sessions were evaluated (AI and MI).

Comparisons across the initial assessment measures between the AI and MI groups showed no significant differences for any of the demographic, personal, alcohol, or drug-related characteristics. These results suggest that the randomization process was successful.

Overall, the mean age was 33 (SD=11), with sample being mostly white (91%), male (81%), never married (62%), had some college education (64%), were employed (80%), had personal income of over $20,000 (58%), with 36% having household incomes greater than $50,000, with 33% having a positive family history for alcohol problems. Twenty-nine percent were repeat drinking-driving offenders and 19% had prior arrests for crimes other than drinking-driving. For the drinking-related measures, 31% refused the breath test at arrest, the mean BAC for those that took the test was 0.161% (SD=.049).

Short-term follow-up data (3-4 month) has been collected for 104 (51%) of the 204 individuals randomly assigned to the MI and AI conditions. Individuals who chose to participate in the research project received $50 US for completing the follow-up interview. Comparisons across demographic, personal, and alcohol- and drug-related characteristics between the individuals who completed the follow-up (CF) within the 4-month window and those who have not (NF) showed only a significant difference for never being married (CF = 64.5% NF = 52.0%; \( \chi^2 [1, 353] = 4.82, p=.028 \)) and lifetime alcohol diagnosis (CF = 29.5% NF = 41.2%; \( \chi^2 [1, 353] = 4.49, p=.034 \)). The results for the lifetime alcohol diagnoses suggest that the individuals who did not complete the follow-up within the 4-month time frame may have been at greater risk for subsequent drinking-driving than the group who completed the follow-up. However, the relationships between lifetime alcohol diagnoses and current drinking-driving from the initial assessment were not significant.

**Measures - Initial Assessment:** The measures for the initial assessment included the Family History section of the Addiction Severity Index (ASI). This section of the widely used ASI was administered to assess for family history of alcohol and other drug use. A score of 2 was used as an indication of a positive family history (FH+), while any score less than 2 was considered negative for family history (FH-). The Timeline Follow-back was used to collect days drinking, drinks per day drinking, and days drinking-driving in the six-months prior to the initial interview. Measures constructed from this instrument consisted of percent of days drinking, percent of days drinking-driving, and percent of days drinking 5 or more drinks. These measures were transformed using a log transformation, the log transformed measures were then added together to form an index of drinking. The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item self-administered questionnaire used to identify persons whose alcohol consumption has become hazardous or harmful to their health. The alcohol, drug, antisocial personality, and conduct disorder sections of the Diagnostic Interview Schedule-IV were used to establish diagnoses for these characteristics. The Alcohol Dependence Scale (ADS) is a 29-item measure of the alcohol dependence syndrome and was used as an additional measure of problem severity. The Drinker Inventory of Consequences (DRINC) is a self-administered 50-item questionnaire designed to measure adverse consequences of alcohol abuse in five areas: Interpersonal, Physical, Social, Impulsive, and Intrapersonal. The Abstinence Self-Efficacy Scale was used to assess the confidence the individuals had in remaining abstinent across 20 situations. Four subscales were derived from this measure: negative affect, physical pain,
social/positive contexts, and withdrawal urges. The URICA and SOCRATES were used to assess the motivation level of the individual to change his/her drinking behavior. Four subscales (precontemplation, contemplation, action, maintenance) and a readiness to change score are derived from the URICA, while three subscales are derived from the SOCRATES (ambivalence, Recognition, and Taking Steps). The Processes of Change scale was used to assess how individuals deal with situations to refrain from drinking. A total of 13 subscales are derived from this measure.

The Research Institute on Addictions Self Inventory (RIASI) consists of 52 items that assess a variety of proximal and distal characteristics that are highly correlated with alcohol or drug problems. This measure was used as an additional marker of potential risk. The Drug Abuse Screening Test (DAST) is a brief 20-item measure of the seriousness of drug involvement. The Alcohol Effects Questionnaire (AEQ) is a 59-item measure. Participants were asked to agree or disagree with statements reflecting beliefs regarding alcohol. There are 10 subscales assessed in this instrument. State and Trait anger are measured using the 57-item State-Trait Anger Scale (STAXI). This instrument assesses anger both as an emotional state that varies in intensity, and as a relatively stable personality trait. The nine dimensions of the Symptom Checklist-90 Revised (SCL-90-R) were used to measure psychiatric severity. Sensation Seeking was measured using 19 items derived from various sensation seeking scales. The items were selected because of specific relationships with outcomes of interest for DWI offenders.

**Measures - Follow-Up Assessment:** Measures included in the follow-up consisted of the timeline follow-back for alcohol use and drinking-driving behavior, using the same procedure to create a drinking index as was done for the initial assessment. The AUDIT was re-administered as a measure of alcohol use and problems, and the RIASI was re-administered as a measure of risk.

**Results**

The first set of analyses considered the relationship of family history with various problem and use indicators from the initial assessment. Simple crosstab Chi-Square tests were used for categorical measures and t-tests for continuous measures. Results show that relative to the FH- individuals (n = 282), the FH+ individuals (n = 137) were more likely to have less than a high school education (p=.048) and less likely to have more than a high school education (p=.04). In addition, the FH+ group was more likely than the FH- group to have a criminal history for crimes other than DWI (p=.045).

With regard to alcohol-related characteristics, the FH+ group were younger when they had their first drink (p<.000), younger when they first got drunk (p<.000) and younger when they started drinking regularly (p=.004). The FH+ group had higher typical week (p=.001) and heaviest day BAC levels than the FH- group (p=.003). Also, within the six-months prior to the initial assessment, relative to the FH- individuals, the FH+ individuals drank more days (p=.008), had more 5+ drinking days (p=.001), averaged more drinks per day (p=.004) and more drinks on drinking days (p=.001). Additionally, the FH+ group scored significantly higher on the ADS (p<.000), total AUDIT (p<.000), the AUDIT drinking items (p<.000), the AUDIT problem items (p<.000), the total score on the RIASI (p<.000), and the score on the recidivism subscale of the RIASI (p<.000). Furthermore, The FH+ group scored significantly higher than the FH- group on the total DRINC (p<.000), the physical problem (p<.000), interpersonal problems (p<.000), intrapersonal problems (p<.000), drinking impairment problems (p<.000), and social problems (p<.000) The FH+ group also scored higher than the FH- group on the negative affect (p<.000), social/positive contexts (p=.018), physical pain (p=.002), and withdrawal/urges (p=.001) subscales of the DRINC.
Finally, the FH+ group was more likely to have had prior treatment for alcohol problems (p=.001) and qualify for a lifetime alcohol diagnosis based on DSM-IV criteria (p=.011) than the FH- group.

The results for the motivation measures indicated that on the URICA, the FH- group scored higher on the precontemplation scale than the FH+ group (p=.048), however, for the contemplation (p<.000), action (p<.000), maintenance (p<.000), and readiness for change scores (p<.000), the FH+ group scored higher than the FH- group. For the SOCRATES, the results showed the FH+ group outscoring the FH- group for the ambivalence (p<.000), recognition (p<.000), and taking steps (p<.000) subscales.

AEQ results showed that the FH+ individuals scored higher than the FH- individuals on the global positive effect (p<.000), positive properties (p<.000), alcohol increases sexual pleasure (p=.004), aggression (p<.000), social expression (p<.000), relaxation (p<.000), impairment (p<.000), careless unconcern (p<.000), coping (p<.000), and helps increase focus of attention (p=.028) subscales.

For drug-related measures, relative to the FH- individuals, the FH+ individuals were more likely to have a family history for other drug problems (p<.000), to have used drugs in their lifetime (p=.030), be currently using drugs (p=.002), use drugs when using alcohol (p=.001), qualify for a lifetime drug diagnosis of some type (p =.001), been in treatment for problems with other drugs (p=.014), and score higher on the DAST (p=.011).

Comparisons across measures of psychological distress indicated that relative to the FH-group, the FH+ group was more likely to qualify for a conduct disorder diagnosis (p<.000) and an antisocial personality disorder (p<.000). In addition, the FH+ individuals were more likely than the FH- individuals to have a family history for psychological problems (p=.001), gone for psychological counseling (p=.001), been hospitalized for psychological problems (p=.017), and experienced problems in sexual relations (p=.049). Furthermore, comparisons across the nine subscales of the SCL-90-R showed that the FH+ group scored significantly higher than the FH- group on the somatization (p=.002), obsessive compulsive (p=.004), anxiety (p=.049), depression (p<.000), interpersonal sensitivity (p=.004), hostility (p=.031), paranoid ideation (p=.007), psychoticism (p=.010), and phobic anxiety subscales (p=.049), as well as the global severity index this measure (p=.001).

While there were no significant differences across any of the state anger measures of the STAXI, the FH+ individuals were higher than the FH- individuals on trait anger (p<.000), trait angry temperament (p=.001), and trait angry reaction (p=.001). Furthermore, the FH+ group scored higher than the FH- group across anger expression out (p=.043) and anger expression in (p=.009).

To evaluate the effectiveness of the MI intervention and how family history may have influenced the impact of the MI, the next set of analyses utilized repeated measures ANOVA. There were no significant pre-existing differences between the two conditions on demographic, personal, drinking, or driving characteristics.

Results from the repeated measures ANOVA are shown in Table 1. The interaction of treatment condition by family history status for the total AUDIT score was not significant, F < 1. However, decreases in scores for all groups from initial interview to follow-up, reflect a significant effect for time, F(1, 99) = 29.52, p<.000, eta-square=.229. When the drinking items score and the problem items score were considered individually, the results reflected the same patterns as the total score.
Table 1. Mean Scores for Risk Factors as a Function of Treatment Condition and Family HX for Alcohol Problems.

<table>
<thead>
<tr>
<th></th>
<th>FH- Al (n=36)</th>
<th>FH- MI (n=34)</th>
<th>FH+ Al (n=15)</th>
<th>FH+ MI (n=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total AUDIT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Test</td>
<td>5.89 (3.97)</td>
<td>6.82 (5.41)</td>
<td>7.87 (5.19)</td>
<td>7.68 (6.01)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>3.66 (2.47)</td>
<td>3.15 (2.61)</td>
<td>4.40 (7.59)</td>
<td>3.74 (3.30)</td>
</tr>
<tr>
<td><strong>RIASI Total Score</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Test</td>
<td>9.00 (5.23)</td>
<td>9.33 (6.46)</td>
<td>14.80 (6.98)</td>
<td>12.00 (9.39)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>9.86 (5.97)</td>
<td>8.36 (4.02)</td>
<td>14.93 (8.41)</td>
<td>12.37 (7.61)</td>
</tr>
<tr>
<td><strong>RIASI Recidivism Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Test</td>
<td>3.19 (1.70)</td>
<td>3.73 (2.08)</td>
<td>5.60 (2.87)</td>
<td>4.16 (2.61)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>3.50 (2.02)</td>
<td>2.52 (1.44)</td>
<td>4.93 (3.24)</td>
<td>4.00 (2.33)</td>
</tr>
<tr>
<td><strong>DRINKING INDEX</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Test</td>
<td>3.87 (2.31)</td>
<td>4.82 (2.88)</td>
<td>4.69 (2.42)</td>
<td>4.61 (2.92)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>2.92 (1.82)</td>
<td>2.59 (2.37)</td>
<td>1.67 (2.14)</td>
<td>2.64 (2.29)</td>
</tr>
</tbody>
</table>

For the RIASI total score, as with the total score for the AUDIT, the interaction of treatment condition by family history status was not significant. However, in contrast to the AUDIT, where all groups showed decreases, for the RIASI total score, three of the four groups remained the same or increased slightly. The MI – FH negative group showed a decrease that was not statistically significant.

Results for the recidivism subscale of the RIASI showed a significant treatment condition by time interaction, $F(1, 99) = 7.23, p=.008$, eta-square=.068. Simple effects tests show that the interaction of treatment condition by time interaction within the FH- group was significant, $F(1,100) = 12.50, p=.001$, eta-square=.111, while the interaction within the FH+ group was not significant, $F < 1$.

Finally, results for the drinking index show a significant treatment condition by family history status by time interaction, $F(1, 100) = 4.44, p=.038$, eta-square=.043. Similar to the results for the recidivism subscale of the RIASI, the simple effects test showed a significant treatment condition by time interaction within the FH- group, $F(1, 100)=4.16, p=.044$, eta-square=.039, while the treatment condition by time interaction within the FH+ group was not significant, $F < 1$. 
Discussion
In summary, the findings for the comparison of the FH+ and FH- groups suggest that the FH+ individuals appear to be much more at risk for development of severe problems. They were more likely than the FH- individuals to qualify for a lifetime alcohol diagnosis, score higher on the AUDIT, ADS, DRINC and all the subscales of the DRINC, as well as all the subscales of the AEQ. While the presence of a family history does not indicate the individual is in fact a problem from a drinking-driving perspective, the presence of all the other risk factors would point towards a much greater risk for drinking-driving than if the family history were negative. Given the strong associations found between family history and all the other indicators, family history may be useful as a potential screening item for drinking-drivers. However, how this characteristic is measured may be important. In the current study we used the family history section of the ASI to assess family history for alcohol problems. This measure uses multiple items to determine the family history. This contrasts with use of single item measures that are sometimes used for purposes of determining whether a DWI offender has a family history for alcohol problems. Future work needs to evaluate specific measures of family history and how well they identify the high-risk individuals.

The results for the 4-month follow-up suggest that for the AUDIT and drinking index, all groups showed decreases. This is not surprising given the short time period for the follow-up. Many of these individuals were still under licenses suspension or on probation at the time of the follow-up, which may have influenced their capacity for drinking-driving. Nonetheless, significant effects for the intervention were found for the recidivism subscale of the RIASI and the drinking index. However, these effects were limited to the FH- group. These results suggest that the brief intervention may be effective in the short-term for individuals who are at lower risk for subsequent alcohol problems. Results for the FH+ group might suggest a need for something more intense than the brief intervention. Future research needs to consider longer-term follow-up, increased sample size, and alternative methods for assessing family history.