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THE ASSOCIATION BETWEEN GENERALIZED ANXIETY DISORDER AND ALCOHOL ABUSE AND DEPENDENCE

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Generalized Anxiety Disorder (GAD) is a chronic disorder that is often comorbid with other psychiatric disorders (Ballenger et al., 2001; Grant, Hasin, Stinson, et al. 2005)

The association between GAD and Alcohol Use Disorders (AUD) has received attention due to the possibility that individuals with GAD may resort to alcohol for self-medication (Grant et al., 2005)

In a population based study, 65% of males and 32.8% of females with a lifetime GAD diagnosis also had a lifetime AUD diagnosis (Vesga-Lopez et al. 2008)
To characterize the association between GAD and alcohol use disorders, and to determine whether depression is a moderator of this association.
METHODS - SAMPLE

- Family study of Missouri residents (MOFAM)
- Over-sampled for African American (AfAm) race (>50% AA)
- Three risk groups based on paternal excessive alcohol use:
  - Recurrent drunk driving (RDD; ascertained from driving records), Maj. n=267, AfAm n=151
  - High risk (mother of children reported father drank excessively), Maj. n=147, AfAm n=210
  - Control (drawn from general population, irrespective of paternal alcohol status), Maj n=190, AfAm n=319
METHODS – Data Analysis

- Dependent Variable: Alcohol Abuse and Dependence
- Independent Variable: GAD
- Covariates: Race, age (<18y), Sex, Income (<$45,000), Regular Marijuana Use, Marijuana Abuse and Dependence, Regular Smoker, Nicotine Dependence, Social Phobia, Panic Attacks (>3), Panic Disorder
- Potential Effect Modifier: Major Depressive Disorder (MDD)
Bivariant relationships were assessed using the chi-square statistic.

The Breslow-Day test for homogeneity was used to test for effect modification by MDD.

Logistic Regression was employed to construct a multivariable model.

All covariates were assessed as confounders: A variable was considered a confounder if its addition to the model resulted in a >10% change in the OR for GAD.
**RESULTS: Table 1. Characteristics of MOFAM sample by GAD diagnosis.**

<table>
<thead>
<tr>
<th></th>
<th>GAD Diagnosis (n=78)</th>
<th>No GAD Diagnosis (n=1199)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>61.54</td>
<td>52.21</td>
<td>0.110</td>
</tr>
<tr>
<td>Family type</td>
<td></td>
<td></td>
<td>0.064</td>
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<tr>
<td>Repeat drunk driving</td>
<td>32.05</td>
<td>32.53</td>
<td></td>
</tr>
<tr>
<td>High risk</td>
<td>38.46</td>
<td>27.19</td>
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</tr>
<tr>
<td>Control</td>
<td>29.49</td>
<td>40.28</td>
<td></td>
</tr>
<tr>
<td>Age &lt;18y</td>
<td>42.31</td>
<td>57.38</td>
<td>0.009</td>
</tr>
<tr>
<td>Female</td>
<td>58.97</td>
<td>50.04</td>
<td>0.126</td>
</tr>
<tr>
<td>Income (&lt;$45,000)</td>
<td>60.0</td>
<td>55.34</td>
<td>0.431</td>
</tr>
<tr>
<td>Condition</td>
<td>User</td>
<td>Marijuana Abuse and Dependence</td>
<td>Regular Smoking</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>---------</td>
<td>--------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Regular Marijuana</td>
<td>20.51</td>
<td>21.79</td>
<td>32.05</td>
</tr>
<tr>
<td>Regular Smoking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicotine Dependence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Depressive Disorder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Phobia</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Panic Attack*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panic Disorder</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*At least 4 panic attack episodes that peak within 10 minutes
RESULTS – Interaction between GAD and Major Depression

- Using the Breslow-Day test, we identified a significant interaction between GAD and major depression (p=.028)

- Therefore, the interaction was modeled as a set of dummy variables:
  - GAD with MDD (GAD+MDD+) n=29
  - GAD without MDD (GAD+MDD-) n=49
  - MDD without GAD (GAD-MDD+) n=103
### RESULTS: Table 2. Logistic Regression Model predicting AUD by GAD and MDD status

<table>
<thead>
<tr>
<th>Status</th>
<th>Crude OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAD+MDD+</td>
<td>2.075 (.904-4.762)</td>
<td>0.547 (0.194-1.543)</td>
</tr>
<tr>
<td>GAD+MDD-</td>
<td>2.403 (1.281-4.508)</td>
<td>1.774 (0.816-3.854)</td>
</tr>
<tr>
<td>GAD-MDD+</td>
<td>2.927 (1.891-4.530)</td>
<td>1.966 (1.151-3.357)</td>
</tr>
</tbody>
</table>

*Adjusted for race, family status, age, sex, marijuana abuse and dependence, nicotine dependence and social phobia
In unadjusted analyses, GAD without depression and depression without GAD are significantly positively associated with AUD.

After controlling for relevant confounders (race, family status, age, sex, marijuana abuse and dependence, nicotine dependence, and social phobia) the strength of the association is attenuated for GAD+MDD- and GAD-MDD+, and that for GAD+MDD+ changes direction, although only the OR for GAD-MDD+ is statistically significant.
CONCLUSIONS

- The relationship between GAD and AUD may be moderated by MDD such that having GAD+MDD+ is negatively associated with AUD and having GAD+MDD- is positively associated with AUD.

- Due to a relatively small number of individuals with GAD in our sample, we lacked statistical power to detect significant effects of this magnitude.

- Attempts should be made to replicate these results in larger samples.
REFERENCES

