The Relative Contribution of Genes and Environment to Alcohol Use in Adolescents and Young Adults

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Aim
• Assess the relative contribution of genetic and environmental influences to the variation in frequency of alcohol use in adolescents and young adults.
• Test whether this relative contribution of genes and environment is affected age and sex.

Method

Participants
• Data from a longitudinal survey study of the Netherlands Twin Register were used. The sample for these analyses consisted of 688 twin pairs of 13-15-years old, 744 twin pairs of 16-18-years old, 752 twin pairs of 19-21 years old and 569 twin pairs of 21-24-years old.

Measure
• Frequency of drinking was assessed by the question: ‘How often do you drink alcohol?’ Participants could respond from (1) ‘I do not drink alcohol’ to (8) ‘daily’.

Results

Table 1. Twin Correlations for Frequency of Drinking

<table>
<thead>
<tr>
<th></th>
<th>13-15</th>
<th>16-18</th>
<th>19-21</th>
<th>22-24</th>
</tr>
</thead>
<tbody>
<tr>
<td>MZ males</td>
<td>.80</td>
<td>.73</td>
<td>.63</td>
<td>.67</td>
</tr>
<tr>
<td>DZ males</td>
<td>.72</td>
<td>.48</td>
<td>.43</td>
<td>.53</td>
</tr>
<tr>
<td>MZ females</td>
<td>.83</td>
<td>.76</td>
<td>.64</td>
<td>.74</td>
</tr>
<tr>
<td>DZ females</td>
<td>.59</td>
<td>.51</td>
<td>.57</td>
<td>.25</td>
</tr>
<tr>
<td>DZ opposite sex</td>
<td>.44</td>
<td>.42</td>
<td>.37</td>
<td>.20</td>
</tr>
</tbody>
</table>

Figure 1. Parameter Estimates for Frequency of Drinking

Conclusion
• Parameter estimates were different for 13-15, 16-18, 19-21 and 22-24-year olds.
• Parameter estimates were equal for males and females, except among 13-15-year old adolescents.
• Additive genetic factors explained a relatively large part of the variance in frequency of drinking in adolescents and young adults, except among 13-15-year old males.
• In 13-15-year olds shared environmental factors explained 81% of the variance in frequency of drinking in males and 25% in females, while shared environment did not contribute to the variance of frequency of drinking in older adolescents and young adults.
• Unique environmental effects explained about 20% of the variance of frequency of drinking in adolescents in the age of 13-15-year and 16-18-years and about 30% in 19-21-year olds and 22-24-year olds.
• Results suggest that different common environmental factors affected 13-15-year old males and 13-15-year old females. Different genes were expressed in males and females.

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