RESEARCH REPORT

Occupational level of the father and alcohol consumption during adolescence; patterns and predictors

M Droomers, C T M Schrijvers, S Casswell, J P Mackenbach

Study objective: This paper describes and attempts to explain the association between occupational level of the father and high alcohol consumption among a cohort of New Zealand adolescents from age 11 to 21.

Design: Data were obtained from the longitudinal Dunedin multidisciplinary health and development study. At each measurement wave, those who then belonged to the quartile that reported the highest usual amount of alcohol consumed on a typical drinking occasion were categorised as high alcohol consumers. Potential predictors of high alcohol consumption included environmental factors, individual factors, and educational achievement measured at age 9, 11, or 13. Longitudinal logistic GEE analyses described and explained the relation between father's occupation and adolescent alcohol consumption.

Setting: Dunedin, New Zealand.

Participants: About 1000 children were followed up from birth in 1972 until adulthood.

Main results: A significant association between fathers' occupation and adolescent alcohol consumption emerged at age 15. Overall adolescents from the lowest occupational group had almost twice the odds of being a large consumer than the highest occupational group. The association between father's occupation and high alcohol consumption during adolescence was explained by the higher prevalence of familial alcohol problems and friends approving of alcohol consumption, lower intelligence scores, and lower parental attachment among adolescents from lower occupational groups.

Conclusions: Socioeconomic background affects adolescent alcohol consumption substantially. This probably contributes to cumulation of disadvantage. Prevention programmes should focus on adolescents from lower socioeconomic groups and make healthier choices the easier choices by means of environmental change.

Socioeconomic differences in unhealthy behaviour, such as excessive consumption of alcohol are one of the main pathways by which socioeconomic health differences develop. Attempts to explain socioeconomic differences in unhealthy behaviour have mainly focused on adults, while lifestyle patterns are largely developed and perpetuated during adolescence. Not much is known about the development of socioeconomic differences in unhealthy lifestyles during adolescence and even less about the determinants of this process. Such information, however, would facilitate the design of effective interventions to tackle the development of socioeconomic differences in behaviour at an early stage.

The objective of this paper is to study patterns and predictors of socioeconomic differences in adolescents' alcohol consumption. The longitudinal Dunedin multidisciplinary health and development study followed up a birth cohort of about 1000 individuals during their entire adolescence and hence provides the unique opportunity to describe and explain the relation between fathers' occupation and high alcohol consumption.

Literature review shows that adolescents of low socioeconomic backgrounds tend to consume more alcohol and consume alcohol more often than peers from higher socioeconomic groups do, although there are also studies that could not corroborate such a relation. Some of this inconsistency in the literature might be attributable to the failure to adequately conceptualise different dimensions of alcohol consumption, and in particular, to distinguish between frequency of consumption and quantities consumed. The association between parental socioeconomic status and adolescents' alcohol consumption might be explained by a higher prevalence of predictors of high alcohol consumption in lower socioeconomic groups compared with peers from higher socioeconomic backgrounds (fig 1). To date not many predictors of adolescents' alcohol consumption have been investigated for their relation with socioeconomic status and only rare studies have studied their contribution to the explanation of socioeconomic differences in high alcohol consumption.

Predictors of high adolescent alcohol consumption described in the literature can be roughly divided into environmental and individual factors. Important social environmental predictors derive from family socialisation processes, such as modelling, supervision, norms, and relationships. Adolescents whose parents drink alcohol are more inclined to drink themselves. Other familial processes that increase adolescents' alcohol consumption are inadequate parenting practices, poor parental monitoring and control, poor parental support, poor family cohesion or bonding, positive parental norms or tolerance of alcohol consumption, and familial alcohol problems or alcoholism.

Having friends that drink alcohol also increases the risk of high alcohol consumption as well as pressure or encouragement of friends to drink, with positive norms concerning alcohol, and even the idea that most peers drink alcohol.

In general, material environmental factors are considered important explanations for socioeconomic differences in health or related behaviour. Material factors, like financial strains or material deprivation reduce alcohol consumption during adolescence.

Individual characteristics that predict high adolescents' alcohol consumption are low self regulation, low self...
commitment, sample—with a one time low follow up rate of 82% at age 90% to 97% of the study members included in the baseline procedure resulted in very high follow up rates—that is, from locations (almost all of them were in Australia). This members living overseas, an interviewer travelled to these locations (including New Zealand, but outside of Dunedin, to maximise the number of study members living in New Zealand) in an attempt to explain the association between father’s occupation and frequency of alcohol consumption. We fitted logistic regression models, adjusted for sex, with the highest occupational group as a reference category, for each measurement wave separately. Next, we fitted logistic generalised estimating equation (GEE) model that takes into account the dependence between repeated measurements within the same individual, using the GENMOD procedure of SAS 8.0. We calculated occupational differences in large amounts of alcohol consumption in the period from age 11 to 21 with a GEE model including sex, age, and occupation of the father. At the second stage, we studied which variables longitudinally predicted high alcohol consumption in the period from age 11 to 21, by fitting GEE models containing sex, age, and one potential determinant successively. Variables were considered predictors of alcohol consumption when the GEE analyses showed significant χ² likelihood ratio test (p<0.05) and at least one significantly increased odds ratio. At the third stage, for those predictors that showed significantly increased odds of drinking large amounts of alcohol, we studied the distribution of categories of the predictor by occupational level of the father. Finally, at stage 4, we added significant predictors of alcohol consumption that were related to occupational level of the father, to the first GEE model (including sex, age, and occupation) in an attempt to explain the association between fathers’ occupation and drinking large amounts of alcohol consumption. The contribution of the predictor to the explanation of differences in alcohol consumption was expressed by the percentage reduction in significantly increased odds ratios of the different occupational groups (all significantly increased odds ratios of occupation of the father should decrease their value due to inclusion of predictor).

RESULTS
Stage 1
In this New Zealand cohort of adolescents, we found no relation between father's occupation and frequency of alcohol consumption among adolescents (results not shown). Significant cross sectional occupational differences in drinking larger amounts of alcohol emerged when the adolescents were aged 15 years (table 2). Adolescents from the lowest occupational groups, aged 15 years or older, had odds of about 2.5 times higher than the highest occupational groups to drink larger amounts of alcohol.

Longitudinal GEE analyses that take into account the whole adolescent period from age 11 until 21 confirmed a
### Table 1  Measurement of potential predictors of drinking large amounts of alcohol among adolescents

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Reported by</th>
<th>Age</th>
<th>Items</th>
<th>Answer categories</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social environmental factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol consumption mother</td>
<td>adolescent</td>
<td>9</td>
<td>1</td>
<td>yes/no</td>
<td></td>
</tr>
<tr>
<td>Alcohol consumption father</td>
<td>adolescent</td>
<td>9</td>
<td>1</td>
<td>yes/no</td>
<td></td>
</tr>
<tr>
<td>Alcohol problems in family noticeable to adolescent</td>
<td>parent</td>
<td>9</td>
<td>1</td>
<td>yes/no</td>
<td></td>
</tr>
<tr>
<td>Alcohol consumption friends</td>
<td>adolescent</td>
<td>11</td>
<td>1</td>
<td>yes/no</td>
<td></td>
</tr>
<tr>
<td>Attitude towards alcohol consumption in general in six different situations</td>
<td>parent</td>
<td>9</td>
<td>6</td>
<td>perfectly all right/usually all right/sometimes all right/never all right</td>
<td></td>
</tr>
<tr>
<td>Mother’s attitude towards alcohol consumption adolescent</td>
<td>adolescent</td>
<td>11</td>
<td>1</td>
<td>strongly approves/approves/does not mind/disapproves/strongly disapproves</td>
<td></td>
</tr>
<tr>
<td>Father’s attitude towards alcohol consumption adolescent</td>
<td>adolescent</td>
<td>11</td>
<td>1</td>
<td>strongly approves/approves/does not mind/disapproves/strongly disapproves</td>
<td></td>
</tr>
<tr>
<td>Friends’ attitude towards alcohol consumption adolescent</td>
<td>adolescent</td>
<td>11</td>
<td>1</td>
<td>strongly approves/approves/does not mind/disapproves/strongly disapproves</td>
<td></td>
</tr>
<tr>
<td>Have your parents told you anything about alcohol</td>
<td>adolescent</td>
<td>11</td>
<td>1</td>
<td>negative/neutral/positive/nothing</td>
<td></td>
</tr>
<tr>
<td>Has school told you anything about alcohol</td>
<td>adolescent</td>
<td>11</td>
<td>1</td>
<td>yes/no</td>
<td></td>
</tr>
<tr>
<td>Family relationships</td>
<td>parent</td>
<td>9</td>
<td>27</td>
<td>true/false</td>
<td>43, 44</td>
</tr>
<tr>
<td>Attachment to parents</td>
<td>adolescent</td>
<td>13</td>
<td>12</td>
<td>(almost) never/sometimes/often/(almost) always</td>
<td>45</td>
</tr>
<tr>
<td>Attachment to friends</td>
<td>adolescent</td>
<td>13</td>
<td>12</td>
<td>(almost) never/sometimes/often/(almost) always</td>
<td>45</td>
</tr>
<tr>
<td>I belong to organised groups, clubs or activities</td>
<td>adolescent</td>
<td>11</td>
<td>1</td>
<td>yes/no</td>
<td></td>
</tr>
<tr>
<td>Recalled number of pro-alcohol messages in media</td>
<td>adolescent</td>
<td>13</td>
<td>1</td>
<td>any number</td>
<td></td>
</tr>
<tr>
<td><strong>Material environmental factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child receives pocket money</td>
<td>parent</td>
<td>11</td>
<td>1</td>
<td>yes/no</td>
<td></td>
</tr>
<tr>
<td>Number of children in family</td>
<td>parent</td>
<td>11</td>
<td>1</td>
<td>number of children</td>
<td></td>
</tr>
<tr>
<td>Unemployment of the father in the past two years</td>
<td>parent</td>
<td>13</td>
<td>1</td>
<td>yes/no</td>
<td></td>
</tr>
<tr>
<td><strong>Individual factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self esteem</td>
<td>adolescent</td>
<td>11</td>
<td>10</td>
<td>strongly agree/agree/disagree/strongly disagree</td>
<td>46</td>
</tr>
<tr>
<td>Fearfulness</td>
<td>parent</td>
<td>11</td>
<td>5</td>
<td>doesn’t apply/appplies somewhat/certainly applies</td>
<td>47</td>
</tr>
<tr>
<td>Health locus of control</td>
<td>adolescent</td>
<td>13</td>
<td>6</td>
<td>strongly disagree/disagree/agree/strongly agree</td>
<td>48, 49</td>
</tr>
<tr>
<td>Behavioural problems</td>
<td>parent</td>
<td>11</td>
<td>77</td>
<td>doesn’t apply/appplies somewhat/certainly applies</td>
<td>50</td>
</tr>
<tr>
<td>Attitude towards alcohol consumption</td>
<td>adolescent</td>
<td>11</td>
<td>3</td>
<td>strongly agree/agree little/disagree little/strongly disagree</td>
<td></td>
</tr>
<tr>
<td>Attitude towards drunkenness</td>
<td>adolescent</td>
<td>11</td>
<td>7</td>
<td>strongly agree/agree little/disagree little/strongly disagree</td>
<td></td>
</tr>
<tr>
<td><strong>Achievement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance at school</td>
<td>parent</td>
<td>11</td>
<td>1</td>
<td>average/below average/above average</td>
<td></td>
</tr>
<tr>
<td>Intelligence (IQ)</td>
<td>adolescent</td>
<td>11</td>
<td></td>
<td>Wechsler Intelligence Scale for Children</td>
<td>51</td>
</tr>
</tbody>
</table>
that their mother or friends did not mind, or approved of them did predict high alcohol consumption. Adolescents that felt consumption. Several social environmental factors, however, Table 3 shows statistically significant predictors of high alcohol consumption during adolescence. Our results are among the first that combine the description of socioeconomic differences in health-related behaviour with an analyses of explanations for this association. We report that adolescents from lower occupational backgrounds more often drink larger amounts of alcohol, because they more often experience familial alcohol drinking alcohol, drank large amounts of alcohol more often. Adolescents who reported having talked about alcohol in a neutral or positive way with their parents were more likely to drink large amounts of alcohol compared with their peers who got negative messages or were not informed about alcohol at all. When parents reported noticeable alcohol problems within the family, their children were significantly more likely to consume large amounts of alcohol. Adolescents who experienced medium or low levels of attachment to their parents drank large amounts of alcohol more often compared with peers who experienced high levels of attachment to their parents. Next to these social determinants of alcohol consumption, also lower intelligence scores significantly predicted high alcohol consumption.

Stage 2

Table 3 shows statistically significant predictors of high alcohol consumption during adolescence. None of the material or individual factors predicted high alcohol consumption. Several social environmental factors, however, did predict high alcohol consumption. Adolescents that felt that their mother or friends did not mind, or approved of them drinking alcohol, drank large amounts of alcohol more often.

Table 2 Association between occupational level of the father and drinking large amounts of alcohol during adolescence

<table>
<thead>
<tr>
<th>Occupational level of father (frequency)</th>
<th>11 OR*</th>
<th>13 OR*</th>
<th>15 OR*</th>
<th>18 OR*</th>
<th>21 OR*</th>
<th>Longitudinal GEE adolescent period OR†</th>
</tr>
</thead>
<tbody>
<tr>
<td>higher professional, administrative (14%)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>lower professional, technical (14%)</td>
<td>1.39</td>
<td>1.04</td>
<td>1.70</td>
<td>1.42</td>
<td>1.46</td>
<td>1.37 (0.97 to 1.93)</td>
</tr>
<tr>
<td>clerical, highly skilled (26%)</td>
<td>0.84</td>
<td>0.83</td>
<td>1.50</td>
<td>1.98†</td>
<td>1.67</td>
<td>1.26 (0.92 to 1.73)</td>
</tr>
<tr>
<td>skilled (29%)</td>
<td>0.82</td>
<td>0.91</td>
<td>1.51</td>
<td>2.15§</td>
<td>1.89§</td>
<td>1.34 (0.99 to 1.82)</td>
</tr>
<tr>
<td>semi-skilled, unskilled (17%)</td>
<td>1.02</td>
<td>1.40</td>
<td>2.80‡</td>
<td>2.17§</td>
<td>2.49§</td>
<td>1.85 (1.32 to 2.60)</td>
</tr>
<tr>
<td>p value‡</td>
<td>0.3006</td>
<td>0.3804</td>
<td>0.0202</td>
<td>0.0139</td>
<td>0.0533</td>
<td>0.0106</td>
</tr>
<tr>
<td>Number of study members assessed</td>
<td>925</td>
<td>850</td>
<td>976</td>
<td>993</td>
<td>992</td>
<td></td>
</tr>
<tr>
<td>Number of study members interviewed on alcohol</td>
<td>794</td>
<td>734</td>
<td>844</td>
<td>915</td>
<td>900</td>
<td></td>
</tr>
</tbody>
</table>

*Odds ratio of logistic regression adjusted for sex. †Odds ratio of longitudinal GEE analyses including age 11 to 21 adjusted for sex. §p value of −2 log likelihood χ² test of occupational level of the father. ¶1.00 is not included in 95% confidence intervals of odds ratio.

Stage 3

We studied the relation between occupational level of the father and predictors of large amounts of alcohol consumption using cross tabulations (not tabulated). Only lower intelligence scores were clearly inversely related to fathers’ occupational level, whereas a few other predictors were more prevalent only in the lowest occupational group with no clear differences between the other groups—that is, friends approving of alcohol consumption, familial alcohol problems, and medium parental attachment.

Stage 4

Table 4 shows the predictors of high alcohol consumption that contributed to the explanation of the relation between occupational level of the father and high alcohol consumption. The occurrence of noticeable alcohol problems in the family explained almost 40% of the increased odds ratio for high alcohol consumption in offspring of the lowest occupational group. The higher prevalence of friends approving of alcohol, lower intelligence scores, and lower parental attachment in the lowest occupational group each explained about 20%. The four predictors together explained 60% of the significantly increased odds of high alcohol consumption in adolescents from the lowest occupational group, reducing it to non-significance.

DISCUSSION

The longitudinal Dunedin multidisciplinary health and development study on a birth cohort of about 1000 New Zealand children provided the unique opportunity to study possible explanations for socioeconomic differences in alcohol consumption during adolescence. Our results are among the first that combine the description of socioeconomic differences in health-related behaviour with an analysis of explanations for this association. We report that adolescents from lower occupational backgrounds more often drink larger amounts of alcohol, because they more often experience familial alcohol consumption.
problems, have friends who approve of alcohol consumption, have lower intelligence scores, and report lower parental attachment.

These New Zealand findings on explanations for occupational differences in high alcohol consumption apply probably to other adolescent populations as well, because we report comparable associations between parental socioeconomic status and adolescent alcohol consumption, as well as comparable predictors of high alcohol consumption to other studies. Before further elaboration on our results, we discuss methodological issues. Firstly, occupation of the father indicated socioeconomic status of the adolescent, in accordance to many other studies on socioeconomic differences during adolescence. One objection against occupational level indicating socioeconomic status is the possible variability over time. The correlation ($r>0.7$, $p=0.000$) between the four measurements of occupational level in this study (that is, from age 9 to 15) indicates that occupational ranking was fairly stable during the period studied. Secondly, to exclude all possible concerns about causality between predictors and alcohol consumption, we have chosen to include variables measured before or at age 13—that is, measured in the beginning of our longitudinal analyses. Some variables might have changed after the measurement at baseline, resulting in inaccurate estimations of the effect of these factors on adolescent alcohol consumption. This might apply specifically to factors with a comparatively short-term effect, as we considered a rather long period in our analyses. For example, we failed to find an effect of pocket money on high alcohol consumption, while cross sectional analyses on the present cohort found that at age 15, having more money to spend was associated with drinking larger amounts. Thirdly, alcohol consumption was self reported, which might have resulted in underestimation of the amount of alcohol consumed. We, however, believe that this does not substantially interfere with the relative rank of study members and hence the classification in the group drinking large amounts of alcohol.

Half of the explanation for the association between fathers’ occupational level and drinking large amounts of alcohol relates to the adolescents’ family situation—that is, parental attachment and familial alcohol problems. The latter might relate to the contribution of genetic factors to the development of alcohol consumption patterns. Otherwise, both generations might face similar social environments, not captured by variables available in the described analyses, and therefore lower socioeconomic adolescents are likely to drink more, irrespective of the actual drinking behaviour of their parents, because alcohol consumption serves certain purposes in these particular environments.

The lower level of intelligence of children from fathers with a lower occupational level also explained part of their higher alcohol consumption. Similarly, Wills et al found that academic competence explained part of socioeconomic differences in substance use during adolescence. Less intelligent adolescents might use alcohol consumption to counterbalance their lower academic success. Alternatively, adolescents with lower IQ scores might be ready to assume adult roles and behaviour earlier, because lower intelligence in itself decreases the opportunity to continue schooling and achieve higher occupational status.

Intelligence is likely to result not only from heredity, but from environmental influences as well. Studies on long term effects of early childhood education and day care have found persistent positive effects on academic achievement, as well as sometimes on IQ. Greater access to such facilities for lower socioeconomic groups might prevent high alcohol consumption.
Intervention programmes that aim to prevent high alcohol consumption should be designed appropriately for adolescents from lower socioeconomic backgrounds, as they are disproportionately exposed to potent predictors of high alcohol consumption.

It seems important for interventions to include the social environment of adolescents—that is, help parents with possible alcohol problems take into account the low parental attachment or try to improve it, and attempt to diminish positive attitudes towards excessive alcohol consumption among youth. The latter might be achieved by developing school-based interventions, for example in lower socioeconomic neighbourhoods.

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REFERENCES

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