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# Influence on Self-Rated Health of Socio-Demographic, Lifestyle and Affluence Factors: An Analysis of the Irish and International Health Behaviours among School-Aged Children (HBSC) Datasets 1998

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## Abstract

In this analysis we employed the International Health Behaviour Among School Aged Children (HBSC) 1998 data, comprising 8326 Irish children and 115,327 children in the International dataset, to examine influences on self reported health among young people. Factors were similar for both boys and girls and between countries. Daily smokers, those reporting intoxication at least once, those taking infrequent exercise and those reporting difficulty in making friends were all predictive of poor self-rated health in adjusted odds ratio models. Disposable means, as measured by the Family Affluence Score was also a significant predictor of self-rated health but not as influential as reported lifestyle. In a multi-level between country comparison of 15 OECD countries, individual health behaviours explained much, but not all of the variability in poor self reported health (0.26, SE 0.08), and of various ecological level indicators considered in the final model only % voting and % males with minimum 2<sup>nd</sup> level of male education in the population were influential factors, with between-country variations still not fully explained (0.10, SE 0.03).

## Introduction

Over the last decade interest in early life influences on health and well-being has intensified and there has been considerable focus in the health inequalities literature on the extent to which so-called psycho-social and neo-material life circumstances may play a role<sup>1,2</sup>. It has been proposed that factors across early life may be influential, at critical periods such as biological development in utero, or through cumulative or trajectory pathways across childhood that influence lifestyle choices, educational opportunities and hence long-term social position<sup>3,4</sup>.

In developed, highly industrialised societies particularly, the changes wrought to traditional family and social networks, to composition of neighbourhoods and communities has altered considerably how individuals function as part of wider society. These forces of social capital, as distinct from individual or economic capital may influence health and well-being also, through direct and indirect pathways. Whilst a number of analyses have been undertaken with adult population datasets that have attempted to de-construct the relative influence of deteriorating community or social capital on population health, particularly in disadvantaged communities, there is rather less work on this issue in children. The 1998 Health Behaviours among School-aged Children (HBSC) survey was conducted across 30 countries in Europe and included also the United States, Canada and Greenland<sup>5</sup>. That survey contained a question package on indicators associated with social capital. Our objective in this analysis, conducted especially for an associated workshop on health inequalities among children and young people held in Denmark in December 2002 as part of that country's European Union presidency<sup>6</sup>, was to assess the degree to which social variations in health expectancy in school-aged children might be explained by individual-level characteristics or by wider social forces characterising the composition or context of children's lives.

## Methods

The methodology for the HBSC surveys is well established and has been described previously<sup>5,7,8,9</sup>. All participating countries must follow the pre-agreed questionnaire protocol and must attain minimum required completion rates to satisfy criteria for inclusion in the International dataset, which is cleaned through a clearing-house procedure in Norway. The questionnaires are self-completed by schoolchildren aged 9-18 years in strict confidence under teacher supervision during late spring or early summer every 4 years. In 1998 data were available for 8326 children in the Republic of Ireland (48.8% male). In the international data set three age groups are considered, 11 year olds, 13 and 15 year olds.

As an outcome measure for this analysis we took self rated health, a well established proxy for objectively measured health status<sup>10</sup> in

the longitudinal literature and known to show socio-demographic variability. Respondents rate their health as very, quite or not very healthy and this was dichotomised for this analysis into very versus quite or not very healthy groups. Demographic variables for the Irish analysis only were father's social class from 1 to 6 in ordinal scale based on reported occupation and Family Affluence Scale derived from several variables including having an annual holiday, receiving pocket money and having one's own bedroom<sup>9,10</sup>. Health risk behaviours included were current smoker (at least one cigarette daily), reported alcohol intoxication at least once, regular exercise and excess TV watching (more than four hours daily), reported psychosomatic symptoms (headache or tummy ache), quality of life (excellent or very good versus fair or poor) and measures of social network including quality of relationship with parents (poor or not), difficulty or not of making friends, reported ever been bullied in last year or inadequate time spent with friends. The cross-national rates for these variables have been previously reported<sup>5</sup>. We performed a multivariate logistic regression analysis predicting poor health or not in the Irish respondent dataset, reporting adjusted statistically significant odds ratios in the final models for both girls and boys separately. We then categorised all the participating countries into one of three groups, Western Europe and EU countries, pre-accession and former Communist countries and North America. This was because a previous analysis had shown marked variations in smoking status according to gender and country group<sup>11</sup>. First in a multivariate model we examined predictors of poor or good health by region. Then we sub-categorised respondents again according to family affluence score from highest (4) to lowest quartile and examined odds of reporting very good or poor health, adjusted for the other factors.

Finally, for the 15 OECD countries in the dataset we obtained ecological level information from routine data sources of the following variables: that country's Gini coefficient which is a standard economic measure of dispersion of income, % gross domestic product on public spending, % voting in the last election, suicide rate in the population, % males and % females with a minimum of second level education in the population. We then performed a three stage multi-level analysis. This established first whether there was variability between countries in reported poor self rated health. In the next compositional step we added individual level information to the model to see how much of the variance was thus explained. In the final model we added the ecological level variables to see whether any variability still remained or not.

## Results

In Table 1 we present the findings separately for the Irish only school children and for the international HBSC dataset. In the Irish only group self reported life satisfaction was strongly related to

Table 1 Predictors of poor self-rated health in Irish Children and in all HBSC 1998 participating countries; Adjusted Odds Ratios from logistic models.

Variable	Ireland		International	
	M (n = 4063)	F (n = 4263)	M (n = 56,434)	F (n = 58,893)
Father's Social Class (5-6)	0.86	1.11	-	-
Low family affluence score (FAS)	1.63*	1.28	-	-
Daily smokers	4.61***	2.02***	1.83***	1.40***
Intoxicated at least once	1.67*	2.42*	1.41***	1.43***
Infrequent exercise	4.97***	2.86***	2.34***	1.82***
Psychosomatic symptoms	1.38	1.67**	2.50***	2.89***
Bullied $\geq 1$ least year	1.93***	0.78	1.71***	1.59***
Difficulty making friends	2.03***	2.15***	1.88***	1.58***
Low self-reported life satisfaction	5.47***	5.38***	-	-
Excess TV watching	1.58*	2.10***	-	-
Poor communication with parents	-	-	1.46***	1.56***
Frequent Truant	-	-	1.00	1.27**

(\*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001)

self-rated health, as were adverse lifestyle factors. In boys, reported bullying was significant and in both sexes family affluence score was more weakly associated. The International pattern was similar.

In Table 2 predictors of not being very healthy are examined according to economic jurisdiction. In both boys and girls the ranking of adjusted odds was similar across jurisdictions, with infrequent exercise or frequent somatic symptoms being generally most important. Conversely, measures of networks, though significant, were less strong influences. The most notable difference by jurisdiction was that reported alcohol intoxication at least once was a significant predictor only in the Western European children.

In Table 3 we present the odds of either very good or not very good health separately by jurisdiction and according to family affluence quartile. This mainly shows a graduated relationship from least to most affluent. However in the North American group, in the case of boys, the effect was confined to the most affluent group compared to the rest.

Table 4 summarises the findings of the multi-level analysis. Significant between country variation in reported poor self rated health was observed (0.24, SE 0.08), which was not fully accounted for by the individual level risk factors examined. Addition of the ecological level indicators attenuated the model, with level of male education and % voting being significant predictors but substantial unexplained between country variability remained.

#### Discussion

The HBSC dataset has real strength for international comparison because it uses a standardised instrument. Clearly there is variability in lifestyle behaviours, as demonstrated in detail in the main report of the 1998 surveys<sup>5</sup>. For instance, those reporting having been intoxicated more than once varies from 63% of Danish girls to 10% of girls in Israel. We were able to conduct an analysis of the determinants of self-rated health accounting for lifestyle, socio-economic and social capital indicators. Examination of the Irish dataset alone confirms that self-rated health varies considerably according to lifestyle and social circumstances, though lifestyle predominates as a predictor. This is perhaps not surprising given

Table 2 Predictors of poor self-rated health among boys and girls in HBSG countries grouped by economic status; Adjusted Odds ratios from logistic models

Variable	Western Europe/EU-15		CIS, Central and Eastern Europe		North America	
	M	F	M	F	M	F
Psychosomatic symptoms	2.43***	2.57***	2.81***	3.41**	1.83*	1.81*
Infrequent exercise	2.44***	1.89***	2.04***	1.36***	2.27***	2.16***
Daily smoker	2.24***	1.70***	1.42**	1.43***	1.78**	1.57***
Difficulty making friends	1.84***	1.60***	1.85***	1.64***	2.50***	1.57***
Intoxicated at least once	1.65**	1.77***	1.18	1.12	1.15	1.13
Bullied at least once last year	1.63***	1.43***	1.73***	1.53***	1.41*	1.62***
Poor communication parents	1.58***	1.69***	1.46***	1.61***	1.56**	1.68***
Little time with friends	1.04	1.13*	1.27**	1.13*	1.08*	1.00

\* P < 0.05, \*\* P < 0.01, \*\*\* P < 0.001

Table 3 Adjusted ODDS ratio for self-reporting either very good or poor health, categorised by country grouping and family affluence score (FAS) where 4 is highest and 1 is lowest

	Overall		Western Europe/EU-15		CIS, Central and Eastern Europe		North America	
	M	F	M	F	M	F	M	F
Very Good Health								
FAS 2	1.11***	1.12***	1.11*	1.09*	1.13*	1.13*	0.92	1.26*
3	1.26***	1.23***	1.28***	1.23***	1.19***	1.14*	1.06	1.33*
4	1.56***	1.45***	1.58***	1.46***	1.37***	1.31***	1.37***	1.48***
Poor Health								
FAS 3	1.04	1.23**	1.01	1.17*	0.99	1.13	1.05	1.17
2	1.33***	1.34***	1.31***	1.27***	1.21	1.22*	1.15	1.15
1	1.68***	1.99***	1.59***	1.60***	1.24*	1.58***	1.34	1.50*

\* = P < 0.05, \*\* = P < 0.01, \*\*\* = P < 0.001

Table 4 Multilevel model of determinates of poor self rated health combining individual and ecological level dates for 15 OECD countries (standard errors in brackets)

	Null Model	Model 2 (compositional)	Model 3
• Gini coefficient			0.07 (0.05)
• % GDP on Public Spending			0.06 (0.03)
• Divorce Rate/100 Marriages			-0.03 (0.06)
• % Voting			0.02* (0.01)
• Suicide Rate			-0.001 (0.02)
• % Males with Minimum 2 <sup>nd</sup> Level Education			0.03* (0.01)
• % Females with Minimum 2 <sup>nd</sup> level Education			-0.00 (0.01)
Between Country Variation	0.24 (SE 0.08)*	0.26 (SE 0.08)*	0.10 (SE 0.03)*

\*Denotes statically significant

the age group under study, in that peer influenced adoption of lifestyle behaviours is notably important at this age. In the Irish dataset, parental occupation is not a strong predictor, which may be partly for methodological reasons, as occupation tends to be under-reported.

The Family Affluence Score is appropriate as a proxy for immediate disposable income and reflects what is directly available to young people in material amenities. This appears to be quite strongly related to health status across the HBSC countries and establishes the importance of material affluence on health status. Notably the network and social support factors were not as strong an influence, and this was true in all economic jurisdictions. While clearly important as measures of social adjustment and predictors of well-being, these factors are not as influential as lifestyle patterns. This suggests at least two possible explanations, though we must be speculative since these are cross sectional data and directionality is not possible to assess. It is possible that the influence of networks is mediated through lifestyle choice which in turn influences health status, since both parental and peer influences are well established to be the predominant influences on uptake or not of smoking and of alcohol behaviours. It is also possible that at this age health status is more immediately influenced by symptomatology so that those who report psycho-somatic problems are more consciously aware of its impact on health and this is the case in this analysis.

It is striking how little variability in predictors of health status is seen between countries, contrary to what might have been predicted. The globalised nature of the teenage experience may be one explanation. We do however see variability in health status between countries. While both individual level and contextual or environmental characteristics are important, the variables included in this analysis do not account fully for the variability seen between countries. Other factors not assessed here, including health service provision may be contributing in part to this, meriting future investigation.

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