



11th Annual
Research
Conference
2019

Clustering of Health Behaviours among Young Adults in Ireland

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Background

- One third of burden of disease in developed countries is directly attributable to four health behaviours (smoking, excessive alcohol consumption, poor diet, lack of exercise) (WHO, 2002)
- Adolescence and young adulthood is a ‘critical period’ in the development of health behaviours (Shah *et al.*, 2019; Viner *et al.*, 2015, 2017)
- However, there is relatively limited research on how these health behaviours cluster together in the adolescent population....
- ...and the relative influence of individual, family and school-level factors in shaping these behaviours
- Timely examination in context of national strategies (Healthy Ireland, Better Outcomes Brighter Futures, *etc.*) and forthcoming schools’ wellbeing policies

Research Questions

- How do the four health behaviours cluster together in the adolescent population in Ireland?
- How are these clusters distributed across the adolescent population in Ireland?
- What is the role of the school (primary/secondary) in shaping these behaviours?

- GUI '98 Cohort
 - 8,568 children and families first surveyed when children were 9 years of age (2007/2008)
 - Sampling frame was the primary school system
 - Second wave carried out at age 13 (2011/2012)
 - Third wave carried out at age 17 (2015/2016)
 - Primarily use health behaviour data collected at wave 3 in this analysis
 - Supplemented with wave 1 and 2 information (e.g., school)

Behaviour	Description	% (mean)
Smoking	Daily	8.2
	Occasionally	12.3
	Never	79.5
Alcohol	2+ times per week	6.2
	2-4 times per month	35.7
	Monthly or less	43.2
	Never	14.9
Physical Activity	0 days of hard exercise in last month	14.5
	1-2 days	20.1
	3-5 days	26.6
	6-8 days	19.1
	9+ days	19.7
Diet	Dietary Quality Index (-9 to 17)	6.3

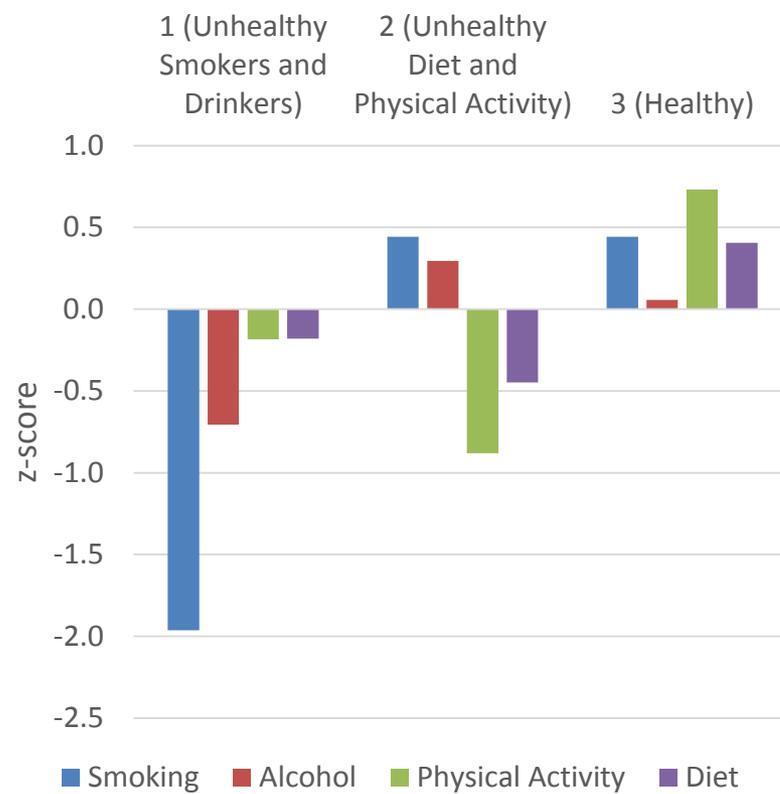
Methods

- Latent class analysis (LCA) used to classify adolescents into health behaviour groups
- Next, regress group membership on a variety of individual- and family-level characteristics
 - Today, present result of MNL model using characteristics measured at wave 3
- Finally, estimate cross-classified multilevel models to unpick the contribution of school-level factors to health behaviour group membership

Q1: Clusters of Health Behaviours

Class	Description	%
1	Unhealthy smokers and drinkers	20.5
2	Unhealthy diet and physical activity	36.3
3	Healthy	43.2

Distribution of Health Behaviours across Latent Classes



Q2: Distribution of Health Behaviour Clusters across Adolescents

	Class 1 (Unhealthy Smokers and Drinkers)	Class 2 (Unhealthy Diet and Physical Activity)
Female (ref: male)	1.575***	2.344***
Left school (ref: still in school)	2.086***	
Lone parent <=2 children (ref: two parents <=2 children)	1.467***	
Professional social class (ref: semi-/unskilled social class)	0.563***	
At least one parent smokes occasionally (ref: neither parent smokes)	1.761***	
One parent smokes daily (ref: neither parent smokes)	1.587***	

Notes:

1. Results are relative risk ratios from a multinomial logit model of health behaviour cluster membership (reference: class 3 'healthy')
2. Full set of controls: age, gender, still in school, family type, household income, PCG education, household social class, PCG migrant status, cognitive skills (numeracy), SDQ, TIPI personality, coping strategies inventory (CSI), peer attachment, opposition to authority, parental smoking, parental alcohol consumption
3. Only results statistically significant at 1% level or higher are presented (***) significant at 1% level; ** significant at 5% level)

Q2: Distribution of Health Behaviour Clusters across Adolescents

	Class 1 (Unhealthy Smokers and Drinkers)	Class 2 (Unhealthy Diet and Physical Activity)
SDQ Conduct	1.297***	0.906**
SDQ Hyperactivity	1.171***	
SDQ Peer		1.152***
Personality – extraversion		0.800***
Personality – conscientiousness	0.809***	0.881***
Personality – emotional stability		0.876***
CSI – problem solving	0.853***	
CSI – avoidance		1.116***
Peer attachment – alienation	1.180***	
Opposition to authority	1.832***	

Notes:

1. Results are relative risk ratios from a multinomial logit model of health behaviour cluster membership (reference: class 3 'healthy')
2. Full set of controls: age, gender, still in school, family type, household income, PCG education, household social class, PCG migrant status, cognitive skills (numeracy), SDQ, TIPI personality, coping strategies inventory (CSI), peer attachment, opposition to authority, parental smoking, parental alcohol consumption
3. Only results statistically significant at 1% level or higher are presented (*** significant at 1% level; ** significant at 5% level)

Q3: Role of the School

	Class 1 (Unhealthy Smokers and Drinkers)	Class 2 (Unhealthy Diet and Physical Activity)
<i>1. Null Model</i>		
Primary school between-school variance	0.014	0.048*
Secondary school between-school variance	0.130**	0.111***
<i>2. Controlling for social background</i>		
Primary school between-school variance	0.005*	0.027*
Secondary school between-school variance	0.152**	0.002
<i>3. Controlling for school profile</i>		
Primary school between-school variance	0.017	0.004
Secondary school between-school variance	0.174***	0.004

Notes:

1. Results of multilevel cross-classified multinomial logit model of cluster group membership (reference: class 3 'healthy')
2. Social background variables include: gender, PCG education, social class, household income, PCG migrant status, family structure
3. School profile variables include school social mix, gender mix and size

Q3: Role of the School

- What factors explain this variance across second-level schools in group membership?
 - School facilities/policies?
 - Perceived importance of PE/sports in primary school
 - Level of student involvement in the second-level school
 - *But not* principal perceptions of quality of PE/sport facilities, school healthy eating policy, parent and teacher involvement in school
 - School climate?
 - Liking school at ages 9 and 13 important
 - Negative interaction with teachers at age 13 is associated with membership of the ‘unhealthy smoking/drinking’ group
 - But lower interaction overall explains membership of the ‘unhealthy diet/physical activity’ group

Summary and Policy Implications

- LCA identified three broad groups of health behaviours
 - Unhealthy smokers and drinkers (21%)
 - Unhealthy diet and physical activity (36%)
 - Healthy (43%)
- Significant associations with gender, family social background, non-cognitive skills and parental health behaviours
- Controlling for social background and school social mix, membership varies across secondary schools
 - Largely explained by school climate, not facilities/policies
- Implications for development of school wellbeing policies (e.g., potential for positive spill-overs with positive school climate)
- Gender patterns highlight particular challenges for young women at this age/school stage