Social influences on health-related behaviour clustering during adulthood in two British birth cohort studies.

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Introduction

- Health-related behaviours (HRBs) are also known as ‘health habits’ ‘lifestyle behaviours’ or ‘lifestyle factors’.

- Four common HRBs in the United Kingdom are: Smoking, alcohol, diet and physical activity.

- Strong associations with mortality (Khaw et al, 2008; Kvaavik et al, 2010) and morbidity (Chow et al, 2010).
Introduction

• Clustering:

“Implies that they [HRBs] are not independent of each other and may therefore reflect an underlying causal or pathogenetic mechanism”

_Ebrahim et al (2004), pp 4._
Two systematic reviews of studies examining HRB clustering (Noble et al, 2015; Meader et al, 2016).

Included four negative HRBs: Smoking, poor diet, heavy alcohol consumption and physical inactivity.

Disadvantaged socio-economic position (SEP) = negative HRB cluster membership.

**BUT** what about childhood SEP and HRB clustering?
Research suggests disadvantaged SEP in childhood is associated with negative HRBs in adulthood \cite{Clouston2015, Wadsworth1997, Schooling2002, Blane1996}.

Some studies find this relationship is fully mediated by disadvantaged SEP in adulthood \cite{Kvaavik2012, Kestila2013, Paavola2004}.


Introduction
Introduction

- A Swedish study found disadvantage SEP in childhood and adulthood were together predictive of membership to clusters characterised by multiple negative HRBs (Falkstedt et al, 2016).

Gap in evidence: The role of childhood SEP on HRB clustering within a British context.
Research questions

• Does pre-adolescent SEP predict adulthood HRB cluster membership?

A. Does SEP at age 10/11 predict HRB cluster membership at age 33/34?

B. Does SEP at age 33/34 mediate the relationship between SEP at age 10/11 and HRB cluster membership at age 33/34?
NCDS data (born 1958)

**Notes**

a: Target sample - Excludes emigrants, refusals & deaths. Includes immigrants at NCDS1-3.
b: Achieved sample - At least on survey instrument partially completed
c: Mother - Could be Cohort Member or spouse/partner

Source: http://www.cls.ioe.ac.uk/
Notes
a: Achieved sample. NB: Target sample excluded emigrants, refusals & deaths; and included immigrants in 1975 & 1980.

Source: http://www.cls.ioe.ac.uk/
• Most likely cluster membership to one of three distinct HRB clusters:
  – Risky
  – Moderate Smokers
  – Mainstream

Mainstream cluster HRBs tend to be more beneficial for health (Mawditt et al, 2016).
‘Mainstream’

Men
1958 \( n = 3,818 \) (68.3%)
1970 \( n = 3,410 \) (73.9%)

Women
1958 \( n = 3,980 \) (68.8%)
1970 \( n = 3,866 \) (76.8%)

– Non-smokers (0 cigarettes daily).
– Light drinkers (lowest % drinking above recommended guidelines).
– Highest frequency of fruit and vegetables consumption.
– Highest frequency of leisure time physical activity.
– Lowest frequency of fried food consumption.
– BUT tended to have higher frequency of sweet food consumption.
Men
1958 n= 82 (1.5%)
1970 n= 79 (1.7%)

Women
1958 n= 515 (8.9%)
1970 n= 183 (3.6%)

- Daily smokers (20-40 cigarettes daily).
- Heaviest drinkers (highest % drinking above recommended guidelines).
- Lowest frequency of fruit and vegetables consumption.
- Highest frequency of fried food consumption.
- Lowest frequency of leisure time physical activity.
- BUT tend to have lower frequency of sweet food consumption.
‘Moderate Smokers’

Men
1958 n= 1,686 (30.2%)
1970 n= 1,124 (24.4%)

Women
1958 n= 1,292 (22.3%)
1970 n= 984 (19.6%)

- Daily smokers (12-17 cigarettes daily).
- Diet frequency consumption, alcohol consumption and leisure time physical activity frequency similar to Mainstream cluster.
Adequate model fit = CFI > 0.9, RMSEA < 0.05.
A higher score on the SEP construct = more disadvantaged SEP.
Ovals represent the latent variables. Rectangles represent the observed variables.
Direct and indirect effects

Total effect = \( ab + c \)

Adequate model fit = CFI > 0.9, RMSEA < 0.05.
Path \( a \times b \) = indirect path between pre-adolescent SEP and HRB cluster membership.
Path \( c \) = direct path between pre-adolescent SEP and HRB cluster membership.
Path \( ab + \) path \( c \) = total effect of pre-adolescent SEP on HRB cluster membership.
Ovals represent the latent variables. Rectangles represent the observed variables.
Results
NCDS MEN ('Risky' vs 'Mainstream' cluster membership).

Total effect = 0.25

Note: Standardised probit regression coefficients. Solid bold arrows represent tested pathways. Bold arrows represent significant paths (p≤0.01).
NCDS MEN (‘Moderate Smokers’ vs ‘Mainstream’ cluster membership).

Total effect = 0.21

Note: Standardised probit regression coefficients. Solid bold arrows represent tested pathways. Bold arrows represent significant paths (p≤0.01).
NCDS WOMEN (‘Risky’ vs ‘Mainstream’ cluster membership).

Total effect = 0.52

Note: Standardised probit regression coefficients. Solid bold arrows represent tested pathways. Bold arrows represent significant paths (p≤0.01). Red arrows represent non-significant paths (p>0.01).
NCDS WOMEN ('Moderate Smokers' vs 'Mainstream' cluster membership).

Total effect = 0.27

Note: Standardised probit regression coefficients. Solid bold arrows represent tested pathways. Bold arrows represent significant paths (p≤0.01). Red arrows represent non-significant paths (p>0.01).
BCS70 MEN (‘Risky’ vs ‘Mainstream’ cluster membership).

Total effect = 0.41

Note: Standardised probit regression coefficients. Solid bold arrows represent tested pathways. Bold arrows represent significant paths (p≤0.01). Red arrows represent non-significant paths (p>0.01).
BCS70 MEN ('Moderate Smokers' vs 'Mainstream' cluster membership).

Total effect = 0.21

Note: Standardised probit regression coefficients. Solid bold arrows represent tested pathways. Bold arrows represent significant paths (p≤0.01).
**BCS70 WOMEN** (‘Risky’ vs ‘Mainstream’ cluster membership).

**Total effect** = 0.44

Note: Standardised probit regression coefficients. Solid bold arrows represent tested pathways. Bold arrows represent significant paths (p≤0.01). Red arrows represent non-significant paths (p>0.01).
BCS70 WOMEN (‘Moderate Smokers’ vs ‘Mainstream’ cluster membership).

Total effect = 0.27

Note: Standardised probit regression coefficients. Solid bold arrows represent tested pathways. Bold arrows represent significant paths (p≤0.01). Red arrows represent non-significant paths (p>0.01).
Conclusions

• Adult SEP mediated the path between pre-adolescent SEP and adult HRB clusters.

• Adult lifestyles are not pre-determined by earlier social circumstances.

• Results were consistent across two cohorts, twelve years apart and by gender.
Policy Implications

• Optimism for interventions relevant to reducing social gradients in HRBs.
• Highlights a ‘chain of risk’ between pre-adolescent SEP and adult lifestyle.
• Consistent findings imply inequalities in lifestyle persist across time.
• ‘Upstream’ policies and interventions that address the social structure could break the link between SEP and adult HRBs.
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References (1)


References (2)


References (3)


Notes: Six correlations between indicator measurement errors not indicated for parsimony. One headed arrows between SEP latent constructs (oval) and observed indicator variables (rectangles) are statistically significant (p<0.001) standardised factor loadings. Two headed arrow between the SEP latent constructs is a Pearson r correlation (p<0.001).
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BCS70 MEN

Notes: Five correlations between indicator measurement errors not indicated for parsimony. One headed arrows between SEP latent constructs (oval) and observed indicator variables (rectangles) are statistically significant (p<0.001) standardised factor loadings. Two headed arrow between the SEP latent constructs is a Pearson r correlation (p<0.001).
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