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Original Research

Glasgow smiles better: An examination of adolescent mental well-being and the 'Glasgow effect'

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SUMMARY

Background: The existence of a negative 'Glasgow effect' on health has been much disputed. Previously, Glasgow's poor health was believed to be due to high levels of poverty. However, more recent studies investigating adult health outcomes have shown an effect over and above that of deprivation.

Objectives: To examine the existence of a 'Glasgow effect' on mental well-being and subjective health of an adolescent sample.

Study design: Data from the 2006 Health Behaviour in School-Aged Children cross-sectional survey were analyzed.

Methods: Data were modelled using multilevel logistic and linear modelling for the following outcomes: happiness, confidence, feeling left out, self-rated health, multiple health complaints (MHC), life satisfaction and health-related quality of life (KIDSCREEN-10). The models were further adjusted for family affluence and family status, as proxy measures of socio-economic status.

Results: The proportions of pupils that reported being very happy, always confident and never left out were greater among pupils in Glasgow compared with pupils in the rest of Scotland, as were mean life satisfaction and KIDSCREEN scores. Frequencies of MHC and subjective health were not significantly different in Glasgow compared with the rest of Scotland. Similar results were observed following the modelling procedures, adjusting for age, sex, grade and school type (state or independent), for all outcomes other than life satisfaction, and effect sizes increased further after adjustment for family affluence and family status. The odds of a pupil in Glasgow being very happy, for example, were 1.48 [credible interval (CI) 1.19–1.83] those of a pupil outside Glasgow. After adjustment for family affluence and family status, the odds were 1.59 (CI 1.28–1.98). An interaction term between Glasgow and grade was not significant for all mental well-being outcomes, although there was some suggestion that a negative Glasgow effect on self-rated health is emerging by Secondary 4.

Conclusions: The Glasgow effect may not be all bad. The findings suggest that mental well-being is more prevalent in Glasgow compared with the rest of Scotland during adolescence. Further research is recommended to investigate the Glasgow effect during this life stage.

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Introduction

For some time, the health of the Scottish population has come under scrutiny, with Scotland labelled the 'Sick Man of Europe'. Glasgow, Scotland's largest city, characterized by high levels of deprivation, has historically experienced particularly poor health, with high mortality rates and low life expectation.[1–3] A recent study revealed higher rates of adverse health-related behaviours, associated with mortality and morbidity, in Glasgow compared with the rest of Scotland.[4] Although there has been some improvement in health across Scotland in the last 40 years, Glasgow's relatively high rates of mortality and morbidity persist.[5] Previously, this has been explained by the disproportionately high rates of deprivation that exist in Glasgow.[6] However, more recent research has shown a 'Glasgow effect' over and above that of deprivation, apparent since the early 1970s.[3,7]

When compared with Liverpool and Manchester, industrial towns in England with similar socio-economic characteristics, health in Glasgow appears to be compromised for a number of outcomes.[8] However when analyzed by age group, Walsh *et al.*[8] found that childhood (0–15 years) mortality was significantly lower in Glasgow compared with Liverpool and Manchester. No other studies of the Glasgow effect have considered child or adolescent health, although Donnelly[9] recently raised the issue of adverse health effects being caused by difficult childhood circumstances, hypothesizing that this may be one possible factor in explaining the Glasgow effect.

Mortality and morbidity are relatively rare events in childhood and adolescence; therefore, health at this stage of life receives less attention nationally and internationally compared with adult and neonatal health. However, the life course literature highlights the importance of health in childhood and adolescence, not only during this life stage but as part of the cumulative health of individuals as they progress through life.[10,11] Health behaviour during this stage is a determinant of future health and health behaviour, tracking from adolescence into adulthood and impacting on health in later life.[12–14]

This study aimed to examine the existence of the Glasgow effect on adolescent mental well-being, also known as 'positive mental health'. Most studies of mental health focus on mental health problems such as depression, anxiety etc. However, recent studies have highlighted the importance of mental well-being[15] on morbidity, health symptoms, pain[16] and resilience.[17] Resilience is a particularly useful tool during adolescence as it enables young people to thrive in the face of challenges such as puberty and its accompanying physical and hormonal changes, family and school transitions, changing peer relations, as well as life circumstances not specific to adolescence such as low socio-economic status (SES).[18,19] A resilient sense of self-efficacy during adolescence has long-lasting effects, impacting on many dimensions of life such as career, health and relationships.[20]

Mental well-being is split into two streams: hedonic, the way in which people perceive their life, also known as 'emotional well-being'; and eudaimonic, the way in which people function in life, also known as 'psychological and social well-being'.[21,22] The hedonic stream is comprised of the presence of positive affects, the absence of negative affects and overall evaluation of quality of life. The current study investigated the hedonic well-being of young people in Scotland. Socio-economic inequalities in mental well-being have been shown previously,[23] and as Glasgow is home to most of the low-SES population in Scotland, the analyses will also adjust for SES and its effect on the relationship between living in Glasgow and mental well-being.

Methods

Study design

This study examined Scottish data from the 2006 Health Behaviour in School-aged Children (HBSC) survey. The research protocol was approved by the University of Edinburgh ethics committee. The population was stratified by education authority and school type, defined as either state or independent schools. A nationally representative sample of school years Primary 7 (P7), Secondary 2 (S2) and Secondary 4 (S4) was selected using systematic random sampling, representative of Scotland as a whole. The population was first stratified by education authority to achieve proportional representation. The sample selected within the Glasgow City authority, from 21 schools (10 primary and 11 secondary) across Glasgow, was uniquely large enough to be representative of Glasgow City, enabling comparisons to be made between Glasgow City and the rest of Scotland. The response rate for schools across Scotland was >75%, and the response rate for pupils was close to 90%. The questionnaire was completed anonymously in class under the supervision of a teacher. More information regarding sampling, recruitment and data collection, including the rationale for these methods, is available elsewhere.[24]

Data

Outcome variables

Five measures of mental well-being, two of positive affect (happiness and confidence), one of negative affect (feeling left out) and two of quality of life (life satisfaction[a] and KIDSCREEN-10[b]), were included in the study. Measures of happiness, confidence and feeling left out have been validated previously for use with adolescent samples, with good face validity and test–retest reliability showing moderate to high agreement, comparable with positive affect measures among adults and young people.[25] Continuous measures of life

[a] Life satisfaction was measured using the adapted Cantril Ladder.[26] Respondents were presented with a picture of a ladder numbered from 0 to 10, with the following text: 'Here is a picture of a ladder. The top of the ladder '10' is the best possible life for you and the bottom '0' is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment? Tick the box next to the number that best describes where you stand.'

[b] KIDSCREEN-10[27] was measured using a series of 10 statements about how young people have felt in the past week (e.g. 'Have you felt fit and well?'), with five optional responses ranging from 'not at all' to 'extremely'. These were coded 1–5 and summed as recommended.[27] A standardized version was also calculated using ridit transformation.