HEALTH INEQUITIES AMONG ADOLESCENTS IN THREE TYPES OF WELFARE STATES

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Master's project Social Policy and Public Health
June 28th, 2021
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Wordcount: 7970

Abstract

Health inequities are a problem across the globe, both for adults and young people. Despite technological advancements in health care and the rollout of extensive welfare states, health outcomes are for many related to their socioeconomic position. This is considered one of the greatest disappointments of public health. The present study examined to what extent different types of welfare states succeed in diminishing health inequities among adolescents. In all welfare state types, a higher socioeconomic status was significantly associated with better health outcomes. Furthermore, it was found that in the conservative welfare regime the association between socioeconomic status and adolescent health is smallest, followed by the social democratic welfare regime and the liberal welfare regime. Together, these findings might suggest that countries with a conservative welfare regime are in the best position to reduce health inequities among adolescents, whereas the liberal regime is least successful.

Keywords: health inequities, welfare state, welfare state regime, adolescents, adolescent health, socioeconomic status

Introduction

Problem statement

Health inequities remain a problem in societies. Numerous studies show that health is largely socially determined (Mackenbach, 2006; Marmot et al., 2012). Still, one's health habits and health outcomes are related to socioeconomic factors such as income, education and employment. Worryingly, health inequities have even increased in some countries between 1980 and 2010 (Mackenbach et al., 2016; Hu et al., 2016). These inequalities in health can be considered avoidable and are thus socially unjust, therefore these inequalities are referred to as health inequities.

Special interest in the field of health inequities goes to the group of young people. Adolescents are in a critical phase of their life in which health habits and outcomes for the rest of their lives are determined (Alberga et al., 2012; Raphael, 2013). Health inequities that are prominent in the early life phase are likely to accumulate further over time, which causes the socioeconomic gap in health between groups to become unbridgeable.

To address the issue of health inequities, welfare states have emerged over the course of the 20th century. Welfare states aim to reduce inequities and increase overall population health and wellbeing through welfare provisions and services. Interestingly, welfare states have not yet succeeded in fully eliminating health inequities (Mackenbach, 2012).

The foregoing points to a societal urgency to research the issue of health inequities among adolescents in relation to design of welfare states. Existing research on the topic, however, points in different directions. Whereas some lines of evidence suggest that larger and universal welfare state provisions are related to smaller health inequities (Borrell et al., 2009), other scholars have proven the opposite (Mackenbach et al., 2008; Eikemo et al., 2008). The topic deserves especially scholarly attention as welfare states are dynamic and political-economic circumstances have caused welfare provisions to be pulled back or expanded the years after the 2008 financial recession (Mladovsky et al., 2012).

This study will address the need for novel welfare state research by assessing and comparing the three most well-established welfare state types, namely the social democratic welfare regime (present in Scandinavian countries), the conservative welfare regime (present in west and central European countries) and the liberal welfare regime (present in Anglo-Saxon countries). Both for academic and societal purposes, it is valuable to assess welfare state types and gain insights in effective policy approaches for reducing health inequities among adolescents.

Existing research

Social determinants of health

Individual health is largely shaped by socioeconomic circumstances (Marmot et al., 2012). Such beneficial or detrimental circumstances are called social determinants of health. The World Health Organization described social determinants of health as: "the conditions in which people are born, grow, live, work and age. The conditions in which people live and die are, in turn, shaped by political, social, and economic forces" (WHO, 2008, p. 1). Among other factors, examples of social determinants of health are employment status, education, income, housing and living environment and health services (Wilkinson & Marmot, 2003).

A similar picture unveils itself for adolescents. The major social determinants of adolescent health are national income, economic equality and accessible education (Spencer, 2010; Viner et al., 2012). Less pronounced but relevant factors are social support of families and friends, and safe and supportive schools (Viner et al., 2012). When favorable, all these factors help young people to make a fruitful transition into adulthood and achieve good health.

Health and welfare state types

Social determinants of health are often the result of political influences and agendas, and therefore political climate can indirectly be linked to health. Navarro et al. (2006) for example found an empirical link between politics, social policies and health outcomes. Their study found that several health indicators such as infant mortality and life expectancy are affected by welfare state and labour market policies, which in turn are influenced by a country's political climate. More specifically, countries governed by parties with egalitarian ideologies have more redistributive policies and thus had higher and more equal health outcomes (Navarro et al., 2006).

Scholars have extended research on the role of politics and political traditions as a mediator of social determinants of health. This area of research is often referred to as welfare state research. Welfare state research reflects a deeper debate on the role of market versus state in capitalist economies.

It is well established from a variety of studies that public health outcomes differ across countries and welfare state types, proving that indeed it makes sense to investigate population health on the basis of welfare state type (Bambra, 2007; Eikemo et al., 2008; Pförtner et al., 2019). Most of these studies have shown that population health is highest in countries with more generous and universal welfare provisions, most notably the Scandinavian countries. Bambra (2007) for instance showed that Scandinavian countries with a social democratic welfare regime have lowest infant mortality rates. In accordance with these results, Muntaner et al. (2011) found, in a literature study, prove that population health is better in countries with a social democratic welfare state regime. Whereas Scandinavian countries are characterized by egalitarian policies which is reflected in higher overall population health, Wilkinson and Pickett (2009) found that Anglo-Saxon countries with a liberal welfare regime have highest economic inequities in the OECD zone. They also found that this is in turn is related to negative health outcomes such as lower life expectancy, drug addiction, obesity and a wide array of mental health issues.

Health inequities and welfare state type

Although the picture for overall population health across welfare state types seems clear, the situation for health inequities is more diffuse and complex. Navarro et al. (2006) found an empirical link between economic inequities and health inequities, thereby proving that health inequities are indeed smaller in the social democratic welfare regime. In later studies, similar favorable results for the social democratic welfare regime were found by Guarnizo-Herreño et al. (2014) and by Vahid Shahidi et al. (2016).

There is, however, a large body of literature pointing in a different direction. Mackenbach et al. (1997) early showed counter-intuitive evidence that whereas social democratic countries have smallest economic inequities, they do not have smallest health inequities. Multiple successive studies also found that social democratic welfare regimes have highest population health but are inconsistently related to inequality in health (Mackenbach, 2008; Eikemo et al., 2008; Muntaner et al., 2011). In scholarly research this phenomenon is referred to as the Scandinavian welfare paradox (Hurrelmann et al., 2010). Several lines of research suggest that, instead, the conservative welfare states of West and Central Europe are most effective in combatting health inequities (Eikemo et al., 2008; Hurrelmann et al., 2010). The overall picture for the relationship between health inequities and welfare state types, therefore, remains undecisive as studies are not abundant and evidence in this research area is ambiguous.

Health inequities among adolescents and welfare state types

The picture for health inequities among young people is just as unclear as it is for adults. Whereas multiple scholars have found evidence for differences in adolescent health outcomes across different welfare state types, only a small body of research exists on the relationship between welfare states types and health inequities among adolescents. Zambon et al. (2006)

were among the pioneers of welfare state research in relation to adolescent health inequities and found lowest associations between adolescent health and socioeconomic status in the conservative and social democratic welfare regime, thereby pointing to smallest health inequities in these welfare state types. Later studies, however, showed no regime-specific pattern when comparing health inequities among adolescents across different countries in Europe (Richter et al., 2012; Rathmann et al., 2015).

Overall, the presented literature show that although there is a relationship between types of welfare state and health outcomes as well as health inequities, the strength and direction of this relationship remains somewhat a puzzle. Also, research focusing especially on adolescents has been scarce. Furthermore, the above findings date from some time back. Against the background of retrenchment of the welfare state and the mixed impact of the financial recession of 2008 in different countries, new research on the topic is desired.

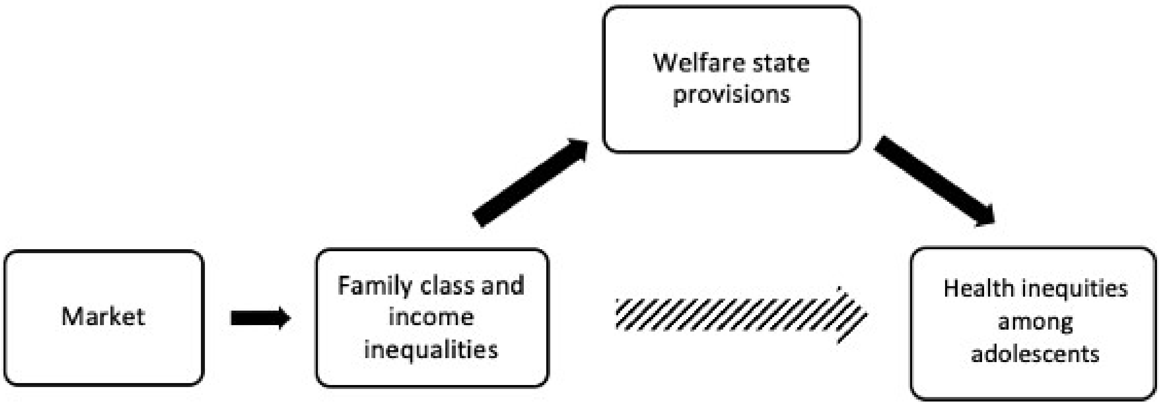
Theoretical model

Theoretical foundations for the present study lie in the ideas of Esping-Andersen (1990), who posed that welfare states are in essence created to decrease the dependency of people on the market. This is referred to as *decommodification*. Esping-Andersen's ideas are thereby based on the commodification principle posed by Karl Marx in 1857. He stated that in a capitalist society, one's wealth is largely dependent on market position and especially one's labour market position (Marx, 1857). Labour status, or income, has thereby become a commodity.

When applying this theory to health inequities, the following can be explicated. The free market economy creates inequalities in labour position and income. This in turn causes inequities in health status, as people with socioeconomic advantages live healthier, have better access to healthcare and are less exposed to health risks (Adler & Ostrove, 1999; Evans & Kim, 2010). Esping-Andersen (1990) defined welfare states' primary objective to ensure everyone can maintain a reasonable level of living, despite socioeconomic rank. They are a means to decommodify. Decommodification can thus be explained as the extent to which an individual or a family maintains a reasonable level of living, independently from their market position, through the use of welfare state services. Income distribution for instance, can be considered a political instrument in the context of welfare states, that governments use to decommodify. High taxes for the rich and extensive social security for the poor guarantee, to some extent, that the disadvantaged in society do not fully rely on their market position but can maintain a reasonable level of living and wellbeing.

The foregoing process of decommodification is visualized in figure 1 and will function as the dominant theoretical foundation of the present study. The model is partly derived from the works of Bambra (2006). This framework is interdisciplinary by nature as it operates on multiple levels and crosses through disciplines: it combines macroeconomic and macropolitical factors (market and welfare state provisions respectively), with determinants in the sociological domain (family wealth and class), as well as psychosomatic health outcomes on the individual level (health status and health inequities). With a strong focus on adolescents this study also has roots in the pedagogical discipline. In the following sections the important conceptualizations of the theoretical model will be elaborated upon.

Figure 1. *Role of welfare state provisions in health inequities.*



Health inequities among adolescents

Conceptualizations and causes of health inequities vary across scientific publications. Considering the social determinants of adolescent health, mentioned earlier in this study, one can assume that health inequities within societies exist when adolescent health is to greater or lesser extent determined by their family wealth and employment status, educational attainment and neighbourhood of residence (Spencer, 2010; Viner et al., 2012). Pathways that possibly mediate this relationship for adolescents are better material and social resources and more knowledge for adolescents to reach their full potential and achieve good health outcomes.

In the present study it is argued that socioeconomic status (SES) can be considered a reliable aggregate of the abovementioned social determinants of adolescent health and therefore addresses the different pathways through which health inequities arise. Health inequities are the extent to which adolescents have to rely upon their family's SES and indirectly upon the market to live a healthy life.

Welfare state provisions

Health inequities occur when adolescents are raised in families that have to rely strongly on the market, i.e. their employment status and the associated income. Welfare state services and provisions such as benefits, health care and education, can intervene between SES and health outcomes, and thereby facilitate decommodification of people, families and adolescents from their employment status and socioeconomic background. A stronger relationship between SES and health, implies a higher degree of health inequities. Following this line of reasoning, this study will test the relationship between SES of adolescents and their health outcomes in three types of welfare states, that all have distinct approaches and means to guarantee social security and reasonable levels of adolescent health.

Welfare state types

An important part of the theoretical model is the welfare state provision, and the ways in which different welfare state types differ in offering these provisions. Esping-Andersen categorized three main types of welfare states based on their policies and welfare state design (1990). In this typology, countries can be assigned to a social democratic, conservative or liberal welfare regime. Note that the following explications are ideal types, and country specific nuances exist.

First, the *social democratic welfare regime* or Nordic model of welfare is most progressive and universalistic. It is largely focused on achieving high levels of equality and supports high levels of decommodification. Social spending per head are highest in the Scandinavian countries of the social democratic welfare regime (OECD, 2017). Second, the *conservative welfare states* are often countries in Western and Central Europe that largely rely on traditional family values and will foremost support a male-breadwinner model. Welfare provisions and services in countries under the conservative welfare regime are reactive by nature and often start acting when a family is not able anymore to generate a reasonable level of living. The very basis of the conservative welfare state is reciprocity and merit. Lastly, the *liberal welfare regime* is characterized by strict entitlements and minimal supports, largely relying on market solutions for social problems. This type is frequent in Anglo-Saxon countries. Social spending per head is lowest in the liberal welfare regime (OECD, 2017).

Although Esping-Andersen’s typology is deeply rooted, it is not uncriticized (Bambra, 2004). For instance, it is argued that the categorization disregards gender and that some borderline countries do not fit in one of the categories, but rather contain elements of multiple welfare regimes (Arts & Gelissen, 1999). Also, other scholars have found new types of welfare state types, most notably the Mediterranean welfare regime and the New-Memberstate welfare regime, referring to novel EU member states (Arts & Gelissen, 1999). Despite debates around the typology of Esping-Andersen, this typology will be directive in the present study as it is still considered a robust and valid typology, and the only typology that has thus far withstood the test of time (Bambra, 2007).

Research question and hypotheses

This research aims to assess and compare different welfare state types on the basis of their decommodifying power. It will test to what extent different welfare approaches are effective in achieving lower health inequities among adolescents. This leads to the following comparative research questions:

RQ: To what extent do different welfare state types succeed in reducing health inequities among adolescents?

SQ 1: How strong is the relationship between SES and health outcomes among adolescents in countries situated in the social democratic welfare regime?

SQ 2: How strong is the relationship between SES and health outcomes among adolescents in countries situated in the conservative welfare regime?

SQ 3: How strong is the relationship between SES and health outcomes among adolescents in countries situated in the liberal democratic welfare regime?

Following the theoretical model and the existing research posed earlier, it is expected that significant relationships between SES and health outcomes can still be found across all welfare state types. Countries and welfare regimes with more extensive welfare state provisions, redistributive power and higher social spending, are expected to have lowest health inequities. This is reflected in weaker relationships between SES and health outcomes in the social democratic welfare regime, respectively followed by the conservative and liberal welfare regimes. Therefore, the hypotheses are:

H 1: Health inequities among adolescents persist in all welfare state types.

H 2: Health inequities among adolescents are lowest in the social democratic welfare states.

H 3: Health inequities are highest in the liberal welfare states.

Methods

Participants and procedures

Data for this study were gathered from the WHO Health Behaviour in School-aged Children (HBSC) survey. The HBSC study is an international survey that collects health-related information of adolescents in fifty countries (Europe and North America). Data was collected from the 2013-2014 wave of the survey. For the present study a sample of adolescents from eleven European countries were used. Representativeness was ensured using a clustered sampling design. Adolescents were asked to complete a standardized questionnaire in their own language. To enable a cross-national comparison and ensure international consistency, HBSC data were collected using the strict HBSC standardized study protocol (Currie et al. 2014). The schools involved and legal guardians of the adolescents have given approval. Participation in the study was voluntary.

Of the original +/- 220 000 adolescents that participated in the 2013-2014 HBSC wave, 36 994 adolescents were included in the final sample. 19 050 (51.5%) adolescents were girls, ensuring a gender balance within the sample. Respondents were aged from 10 to 17 years old (M_{age} 13.63 years ±1.65). Adolescents that contained missing values on the crucial variables were excluded from the sample. Table 1 shows demographics and the distribution of the sample across the three welfare state types. Grouping was based on the welfare state typology of Esping-Andersen (1990). Of the original sample, subsamples of Flemish and Walloon communities were merged into the single category of Belgium, hence the relatively large samples size of Belgian respondents. Differences in welfare state design between these communities were not large enough to consider them separately (Pacolet & De Wispelaere, 2015). By contrast, Wales, England and Scotland were treated as separate samples instead of one category, as especially the latter has slight differences in the design of welfare state provisions (Bradshaw & Bennett, 2018).

Table 1. *Demographics of the sample (n=36 994).*

	Total sample	Social democratic welfare regime	Conservative welfare regime	Liberal welfare regime
Country	36 994	12 277 (33.2% of total)	12 347 (33.4% of total)	12 343 (33.4% of total)
Denmark	3 161 (8.5%)	3 161 (25.7%)	n.a.	n.a.
Norway	2 754 (7.4%)	2 754 (22.4%)	n.a.	n.a.
Sweden	6 362 (17.2%)	6 362 (51.8%)	n.a.	n.a.
Belgium	4 874 (13.1%)	n.a.	4 874 (39.4%)	n.a.
France	2 662 (7.2%)	n.a.	2 662 (21.5%)	n.a.
Germany	2 802 (7.2%)	n.a.	2 802 (22.6%)	n.a.

The Netherlands	2 036 (5.5%)	n.a.	2 036 (16.5%)	n.a.
England	2 887 (7.8%)	n.a.	n.a.	2 887 (23.4%)
Ireland	2 388 (6.5%)	n.a.	n.a.	2 388 (19.3%)
Wales	3 209 (8.7%)	n.a.	n.a.	3209 (26.0%)
Scotland	3 859 (10.4%)	n.a.	n.a.	3 859 (31.3%)
Sex				
Boy	19 944 (48.5%)	5 840 (47.6%)	6 200 (50.1%)	5 904 (47.8%)
Girl	19 050 (51.5%)	6 437 (52.4%)	6 174 (49.9%)	6 439 (52.2%)
Age (years)				
Mean	13.63	13.64	13.54	13.71
STD	1.65	1.68	1.66	1.62

Note. n.a. means not applicable

Measures

Socioeconomic status was measured using the Family Affluence Scale (FAS). The FAS assesses family wealth in six items. For instance, pupils are asked to indicate how many cars are owned by their family (0 = *no*; 1 = *yes, one*; 2 = *yes, two or more*), how often they have gone on family holiday in the last year (0 = *not at all*, 1 = *once*, 2 = *twice*, 3 = *more than twice*) and how many bathrooms are in their house (0 = *none*, 1 = *one*, 2 = *two*, 3 = *more than two*). A single score was computed by summing the scores on the foregoing items, resulting in a scale ranging from 0 to 13. Validity of the FAS was proven in previous studies (Hobza et al., 2017).

Health of adolescents was measured in two items that question respondents self-reported wellbeing and health: life satisfaction and self-rated health. 'Life satisfaction' was measured using Cantril's ladder (Cantril, 1965). Respondents were asked to pick a number on the 'ladder', that runs from 0 to 10 (0 = *worst possible life* to 10 = *best possible life*). This method has been widely recognized as a valid and reliable instrument for assessing wellbeing among children (Levin & Currie, 2014). Health of adolescents was furthermore measured using the variable 'self-rated health' was used to assess health using the question: *your health is…* (1 = *poor*, 2 = *reasonable*, 3 = *good*, 4 = *excellent*).

Analysis

All analyses were carried out using SPSS, version 25. To test whether having a high SES does in fact increase chances on having high perceived wellbeing and overall health (H1), binary logistic regression analyses were performed. To be suitable for logistic regression analyses, the scale and ordinal variables of family affluence, perceived health and life satisfaction were transformed into categorical variables. To test H2 and H3, Pearson and Spearman's rho analyses were done to compute correlation scores for every country that was included in the analysis. Mean scores were computed for every welfare regime type. Fisher's Z-transformations were carried out to compare correlation scores and rank welfare state regimes accordingly. Fisher's Z-transformations convert correlation scores in standardized Z-scores, in order to compare correlation scores of independent samples with one another. This method can be used both for Pearson and Spearman's rank correlation scores. Methods for this r-to-Z transformation were derived from Eid, Gollwitzer and Schmitt (2011). Throughout all analyses, values were considered significant at the 0.05 level (two-tailed).

Results

Adolescents were generally satisfied with their life with a mean life satisfaction of 7.50 ± 1.84 on a ten-point-scale and a good perceived health of 3.18 ± 0.70 on a four-point-scale. Family affluence was rated generally high (M_{FAS} 9.00 ± 2.15). Table 2 shows comparative scores on the key variables across the welfare regimes types.

Table 2. *Descriptive statistics for the sample (n=36 994).*

Welfare state type	Minimum	Maximum	Mean	STD
Social democratic				
Family affluence	0	13	9.36	1.90
Life satisfaction	1	10	7.55	1.78
Perceived health	1	4	3.25	.65
Conservative				
Family affluence	0	13	8.75	2.13
Life satisfaction	1	10	7.42	1.90
Perceived health	1	4	3.19	.73
Liberal				
Family affluence	0	13	8.89	2.34
Life satisfaction	1	10	7.54	1.83
Perceived health	1	4	3.11	.70

H1 was initially tested by executing a binary logistic regression analysis. Table 3 shows logistic odds ratios for the effect of socioeconomic background on dependent variables life satisfaction and perceived health, across the three welfare regimes. It can be seen from the data that in every welfare regime having a higher socioeconomic background results in significantly higher odds for having a high life satisfaction when compared to the reference category (low affluence).

Highest odds ratios for the impact of high family affluence on high life satisfaction exist in the social democratic welfare regime (OR = 3.052) and the liberal welfare regime (OR = 2.953). Medium and high family affluence resulted in significantly high OR's for self-rated health in the conservative welfare regime and the liberal welfare regime and partly in the social democratic welfare regime.

Table 3. *Logistic odds ratios for family affluence and life satisfaction and perceived health.*

	High life satisfaction			High perceived health		
	OR	95% CI	P	OR	95% CI	P
Social democratic						
Low affluence (ref)	1.000			1.000		
Medium affluence	1.805	1.054 – 3.092	.035	1.306	.679 – 2.510	.424
High affluence	**3.052**	1.787 – 5.213	< .05	**1.963**	1.024 – 3.762	<.05
Conservative						
Low affluence (ref)	1.000			1.00		
Medium affluence	**1.932**	1.318 – 2.830	< .05	**2.764**	1.932 – 3.954	<.05
High affluence	**2.447**	1.671 – 3.583	< .05	**3.864**	2.702 – 5.526	<.05
Liberal						
Low affluence (ref)	1.000			1.000		
Medium affluence	**1.787**	1.258 – 2.540	<.05	**1.881**	1.338 – 2.645	<.05
High affluence	**2.953**	2.078 – 4.197	<.05	**2.876**	2.047 – 4.042	<.05

Note. Significant results are indicated with bold OR values.

In order to rank welfare regime types on the basis of their decommodifying power (H2 and H3), multiple correlation analyses were performed (table 4). Although correlation scores between SES and life satisfaction and health are generally small in every welfare regime, they are all significant. This means that health and wellbeing for adolescents is related to their SES or family wealth. Correlations were strongest in countries with a liberal welfare regime (r=.137; r=.138), whereas correlations in countries with a conservative welfare state regime type were weakest (r=.064; r=.093).

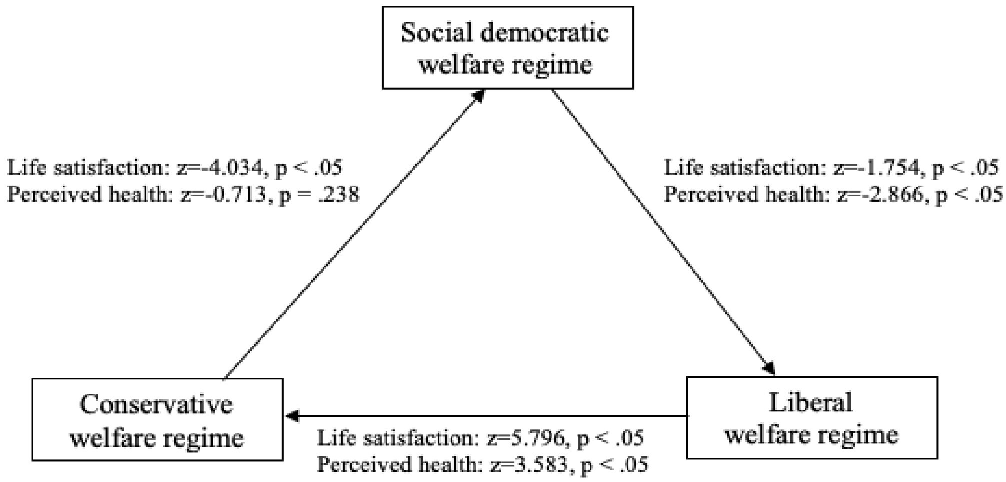
Table 4. *Correlations between family affluence and life satisfaction and perceived health.*

Country	Life satisfaction	Health
Denmark	.115	.122
Norway	.131	.069
Sweden	.087	.099
Social-democratic (n=12 277)	.115	.102

Country	Life satisfaction	Health
Belgium	.049	.101
France	.081	.078
Germany	.075	.068
The Netherlands	.079	.125
Conservative (n=12 347)	.064	.093
England	.094	.112
Ireland	.163	.117
Wales	.134	.156
Scotland	.168	.164
Liberal (n=12 343)	.137	.138

Next, Fisher's r-to-Z transformations were done to test whether the different r-scores were significant and thereby rank the three welfare states types accordingly. Figure 2 shows the Z-scores and P-values testing significant differences between the aforementioned correlation scores. Following the analyses, it can be concluded that all correlation scores for FAS and life satisfaction are significantly different from one another. Correlation scores for FAS and perceived health in the conservative and social democratic welfare regime were not statistically different from one another.

Figure 2. *Fisher's Z-scores and P-values to test for significant differences in correlations.*



Note. A positive Z-score means that r_1 is larger than r_2, whereas a negative z score means that r_1 is smaller than r_2. Significant P-values are significant differences in correlation scores.

Discussion

General findings

The present study was designed to test the relationship between SES and adolescent health in multiple European countries, categorized by their welfare state type. It was hypothesized that welfare states with larger and more universal welfare state provision, achieve lowest levels of health inequities among adolescents.

The most obvious finding to emerge from the analysis is that, in accordance with expectations, family wealth is related to health outcomes among adolescents. For every welfare state type, significant odds ratios and significant correlations were observed, pointing to clear associations between SES and adolescent health. It can hence be concluded that despite efforts of policymakers to increase overall public health and decrease socioeconomic dependency through welfare provisions, the relationship between SES and wellbeing and perceived health still exists, also for young people. This conclusion is in accordance with multiple previous findings (Mackenbach, 2012; Elgar et al., 2015).

Following on from the aforementioned results, the three welfare state types were ranked on the basis of their decommodifying power. Correlation scores proved that the conservative welfare regime showed smallest relationship between SES and both dependent variables, whereas liberal welfare regime countries showed strongest correlations. This finding was partly unexpected and suggests that countries with a conservative welfare regime are better able to reduce socioeconomic dependency among adolescents, more so than social democratic countries. Given the findings, it can be concluded that the present study finds strong evidence for H1 and H3, whereas H2 is not supported.

Scientific perspective

Conservative welfare state

Although the above findings are only partly in line with the hypotheses of this study, there are several lines of research that have found similar results in the past. Eikemo et al. (2008a; 2008b) found smallest health inequities in the bismarckian (conservative) welfare regime. This study, however, did not use SES as dependent variable but educational attainment and focused on adults instead of adolescents. Lowest health inequities in the conservative welfare regime were also witnessed in a number of other studies, most notably by Van Doorslaer and Koolman (2004), Bambra et al. (2010) and Guarnizo-Herreño et al. (2014). Other studies have ranked the conservative welfare regime equivalent to the social democratic welfare regime in terms of health inequities (Niedzwiedz et al., 2014).

In the original classification of the welfare states by Esping-Andersen (1990), the conservative welfare regime was described as having a strong focus on employment status. Health insurances are oftentimes work-based, making welfare benefits employment dependent. A heavy reliance on employment status could imply a lack of social mobility and thus larger health inequalities, especially among youngsters. In light of these thoughts, the results of the current study are especially interesting. Either, the proposition that conservative welfare states are too narrowly focused on employment status does not stand up, or the proposition is outdated.

In the original works of Esping-Andersen (1990) and a number of subsequent publications on the topic (Bambra et al., 2010; Hurrelmann et al., 2010), another characteristic of the conservative welfare state was put forward that might explain why these countries show lowest health inequalities among adolescents. A strong focus on employment status is often paired with a strive of conservative welfare states to secure traditional care-structures and a heavy reliance on social capital such as relatives, networks, associations and unions. With the family being the cornerstone of many welfare policies, it might very well be the case that especially adolescents reap the benefits from this policy approach. Families form a strong protective and decommodifying structure for children, more so than the universal welfare state provisions that are prominent in the social democratic welfare regime.

Social democratic welfare regime

The present found evidence for the so-called Scandinavian welfare paradox of health (Bambra, 2011; Bergqvist et al., 2013). Multiple studies have shown that despite the egalitarian character of social democratic welfare states and their ability to provide generous and extensive welfare provision, health inequalities are not necessarily smallest in these countries. Findings of these studies suggest that there is only a slight association between the generousness of welfare states and levels of health equalities.

One hypothesis that could explain this phenomenon is that of upwards social mobility (Mackenbach, 2012). The social democratic welfare states have lowered barriers for members of the lowest social strata to make upwards steps on the socioeconomic ladder. Welfare state provisions, education and benefits have caused significant intergenerational social mobility, making the lower social groups more homogeneous and containing relatively more people with personal characteristics that favor poor health, such as low cognitive ability, unhealthy behaviour and lack of social capital.

Another reason for the surprising finding that conservative welfare states outperform social democratic welfare states in terms of lowest health inequities, could be the influx of non-western migrants in the past decade. Immigrant children are strongly overrepresented in poverty numbers, especially so in Denmark and Sweden (Galloway et al., 2015; Gustafson & Österberg, 2018). Given the high levels of public health and prosperity in Scandinavian countries, it might very well be the case that the absolute gap in health status between native and non-native adolescents has widened, more so than in other welfare states. The influx of non-western migrants that struggle integrating successfully could result in poorer health and low levels of SES among a significant portion of the Scandinavian adolescent population.

Liberal welfare regime

A less surprising result of the current study is the relative strong association between SES and adolescent health in countries that fare under the liberal welfare state regime type. This finding is in accordance with recent studies indicating that countries with more income inequality and with a neoliberal political and economic climate show higher levels of health inequities and stronger associations between SES and health. These findings apply for adults (Wilkinson & Pickett, 2009; Hurrelmann et al., 2010), as well as for young people and adolescents (Rathmann et al., 2015).

This study therefore adds to a large amount of literature linking Anglo-Saxon countries to large income inequalities and by doing so to health inequities. Liberal welfare regimes have a relatively large share of privatized care and believe in the self-corrective mechanisms of the free market. Following this line of reasoning, liberal welfare states are exposed to high income and economic inequalities, that in turn produce and exacerbate health inequities in all phases of life (Schrecker, 2016). Besides lack of material resources to access decent health care, there are multiple other pathways that potentially explain this relationship. Possibly, neoliberal policies lead to a lack of feelings of financial security and more perceived competitiveness and thus mental distress among deprived populations (Marmot & Sapolsky, 2014).

Another interesting observation that lies largely beyond the scope of welfare state research but is worth mentioning, is the link between neoliberal policies and the consumption of fast food. Strong associations have been found between the amount of foreign investments from the United States and the consumption of unhealthy foods that are considered highly profitable but also damaging for health of adolescents (Stuckler et al., 2012). Similar associations were found between investments from or trade-agreement with the United States, and alcohol and tobacco consumption (Moodie et al., 2013). These findings could imply that in Anglo-Saxon countries with liberal welfare regimes, the poor are more vulnerable to poor health habits and frequently exposed to the power and tactics multinationals that seek to sell high-profit consumption goods.

Strengths and limitations

The present study has found regime-specific patterns concerning health inequities among adolescents. This work contributes to existing knowledge of welfare state research by providing a novel methodology to investigate health inequities across welfare state regimes. Correlation analysis has in this study proved to be a reliable manner for revealing associations between SES and health outcomes. Furthermore, this study is among the first to assess welfare states on the basis of health inequities among adolescents, whereas previous studies have almost exclusively used adults as target population. Lastly, this study used a large and representative sample, and used two indicators of health, which gives the study more credibility concerning validity and reliability of the results.

The major limitation of this study is lack of predicting power that follows from a correlational analysis. A correlation score shows an association but not necessarily a situation of causality. Therefore, this study proves a relationship between SES and health outcomes among adolescents but does not prove any predictive power of SES on adolescent health. However, a large amount of literature that was presented in this study make it plausible that this relationship was indeed causal (Zambon et al., 2006; Richter et al., 2012). Another limitation has been the use of self-reported measures to estimate adolescent health status. This could have harmed the results' reliability and analysis outcomes, as these variables are arguably not objective measures of health. A final possible weakness of this study was the typology for welfare state regime types by Esping-Andersen (1990). This classification and its validity have been disputed by several scholars (Arts & Gelissen, 2002; Bambra, 2006). Novel typologies have been proposed over the years, for instance by Ferrera (1996) and Bonoli (1997) and these were not included in the present study.

Future research and recommendations

Considerably more work will need to be done to determine how different welfare state types perform in terms of minimalizing health inequities. The current study has shown that health inequities exist for adolescents. It could be interesting to investigate how health inequities develop throughout the lifespan, to see whether health inequities vary across different life phases. Another interesting direction of research could be to explore exactly what mechanisms explain the relationship between SES and health outcomes. It is assumed that generous welfare state arrangements, such as accessible health care, education and high benefits are related to better health outcomes. There might, however, be other factors at play here that mediate the relationship between welfare state regime type and health, such as psychosocial factors, trust in governments or family social support. Another possibility for future research is a renewed interest in the welfare state regime typology. As mentioned earlier, this classification is highly debated. Instead of a theoretical approach, an empirical study on the differences between welfare state types would help us to establish a greater degree of accuracy on this matter.

The findings of this study have a number of important implications for future practices. First, it is recommended that government focus attention on diminishing health inequities on different life phases, most notably on the period of adolescence. This study has shown that health inequities are for many rooted in their youth and adolescent years. Formulating policies and interventions that especially target young people is desired as health inequities are omnipresent for this group and health inequities are likely to accumulate over the years. Targeting this issue at a young age is therefore likely to tackle health inequities for future generations in society. Second, this study has shown that conservative welfare states perform best in terms of tackling health inequities. Policymakers can learn from the family-based and social network welfare approach that characterizes the conservative welfare regime and formulate policies accordingly.

Conclusion

The present study showed that adolescents in all welfare states are exposed to health inequities. Family wealth and socioeconomic status are relevant factors that contribute to adolescent health. The conservative welfare regime that is common in Western and Central Europe seem to perform best in weakening the relationship between family socioeconomic status and adolescent health. Anglo-Saxon welfare states with a liberal welfare states seem to perform worst, whereas the Nordic countries with a social democratic welfare regime hold a middle position. The conservative welfare state policies, that take the family as cornerstone and have a strong focus on social capital and employment status, can therefore carefully be considered as a successful welfare approach. Yet, more research and policy efforts are desired as the existence of health inequities among adolescents, remain cause for concern, especially in light of the 2020-2021 global pandemic.

Literature

Adler, N. E., & Ostrove, J. M. (1999). Socioeconomic status and health: what we know and what we don't. *Annals of the New York academy of Sciences*, 896(1), 3-15. Retrieved from: https://bit.ly/3j9zRiA

Alberga, A. S., Sigal, R. J., Goldfield, G., Prud'Homme, D., & Kenny, G. P. (2012).

Overweight and obese teenagers: why is adolescence a critical period?. *Pediatric obesity*, *7*(4), 261-273. doi: 10.1111/j.2047-6310.2011.00046.x

Arts, W., & Gelissen, J. (1999). Verzorgingsstaten in soorten: Op zoek naar ideaal en reële typen. *Mens en maatschappij*, *74*(2), 143-165. Retrieved from: https://ugp.rug.nl/MenM/article/view/18576/16052

Arts, W., & Gelissen, J. (2002). Three worlds of welfare capitalism or more? A state-of-the-art report. *Journal of European social policy*, *12*(2), 137-158. doi: 10.1177/0952872002012002114

Bambra, C. (2004). The worlds of welfare: illusory and gender-blind? *Social policy and society.*, *3*(3), 201-212. doi: 10.1017/S147474640400171X

Bambra, C. (2006). Health status and the worlds of welfare. *Social policy and society*, *5*(1), 53-62. doi: 10.1017/S1474746405002721

Bambra, C. (2006). Research Note: Decommodification and the worlds of welfare revisited. *Journal of European Social Policy*, *16*(1), 73-80. doi: 10.1177/0958928706059835

Bambra, C. (2007). Going beyond the three worlds of welfare capitalism: regime theory and public health research. *Journal of Epidemiology & Community Health*, *61*(12), 1098-1102. doi: 10.1136/jech.2007.064295

Bambra, C., Netuveli, G., & Eikemo, T. A. (2010). Welfare state regime life courses: the development of western European welfare state regimes and age-related patterns of educational inequalities in self-reported health. *International Journal of Health Services*, *40*(3), 399-420. doi: 10.2190/HS.40.3.b

Bambra, C. (2011). Health inequalities and welfare state regimes: theoretical insights on a public health 'puzzle'. *Journal of Epidemiology & Community Health*, *65*(9), 740-745. doi: 10.1136/jech.2011.136333

Bergqvist, K., Yngwe M.A., & Lundberg, O. (2013). Understanding the role of welfare state characteristics for health and inequalities - an analytical review. *BMC Public Health*. *13*, 1234. doi: 10.1186/1471-2458-13-1234

Borrell, C., Espelt, A., Rodríguez-Sanz, M., Burström, B., Muntaner, C., Pasarín, M. I., & Navarro, V. (2009). Analyzing differences in the magnitude of socioeconomic inequalities in self-perceived health by countries of different political tradition in Europe. *International Journal of Health Services*, *39*(2), 321-341. doi: 10.2190/HS.39.2.f

Bradshaw, J. R., & Bennett, F. (2018). Scotland moves away from the UK in social security policy. London, UK: European Social Policy Network. Retrieved from: http://eprints.whiterose.ac.uk/140306/1/Flash_report_on_Scotland_clean_10_dec.docx

Bonoli, G. (1997). Classifying Welfare States: a Two-Dimension Approach. *Journal of Social Policy, 26*(3): 351–372. doi: 10.1017/S0047279497005059

Boyce, W., Torsheim, T., Currie, C., & Zambon, A. (2006). The family affluence scale as a measure of national wealth: validation of an adolescent self-report measure. Social Indicators Research, 78, 473-487. doi: 10.1007/s11205-005-1607-6

Bruggink, J. W., Uiters, E., Plasmans, M., Stoeldraaijer, L., Knoops, K., & Willems, R. (2020). *Gezonde levensverwachting naar onderwijsniveau*. CBS. Retrieved from: https://www.cbs.nl/nl-nl/longread/diversen/2020/gezonde-levensverwachting-naar-onderwijsniveau

Cantril, H. (1965). The pattern of human concerns. New Brunswick, NJ: Rutgers University Press.

Currie, C., Inchley, J., Molcho, M., Lenzi, M., Veselska, Z., & Wild, F. (2014). *Health Behaviour in School-aged Children (HBSC) study protocol: Background, Methodology and Mandatory items for the 2013/2014 survey*. St. Andrews, UK: CAHRU. Retrieved from: http://www.hbsc.org/methods/

Coburn, D. (2004). Beyond the income inequality hypothesis: class, neo-liberalism, and health inequalities. *Social science & medicine*, 58(1), 41-56. doi: 10.1016/S0277-9536(03)00159-X

Doorslaer, E. V., & Koolman, X. (2004). Explaining the differences in income-related health inequalities across European countries. *Health economics*, *13*(7), 609-628. doi: 10.1002/hec.918

Eikemo, T. A., Huisman, M., Bambra, C., & Kunst, A. E. (2008). Health inequalities according to educational level in different welfare regimes: a comparison of 23 European countries. *Sociology of health & illness*, *30*(4), 565-582. doi: 10.1111/j.1467-9566.2007.01073.x

Eikemo, T. A., Bambra, C., Judge, K., & Ringdal, K. (2008). Welfare state regimes and differences in self-perceived health in Europe: a multilevel analysis. *Social science & medicine*, *66*(11), 2281-2295. doi: 10.1016/j.socscimed.2008.01.022

Eid, M., Gollwitzer, M., & Schmitt, M. (2011). Statistics and research methods. Weinheim, Austria: Beltz Verlag. [Statistical formula executed through: https://www.psychometrica.de/correlation.html]

Elgar, F. J., Pförtner, T. K., Moor, I., De Clercq, B., Stevens, G. W., & Currie, C. (2015).

Socioeconomic inequalities in adolescent health 2002–2010: a time-series analysis of 34 countries participating in the Health Behaviour in School-aged Children study. *The Lancet*, *385*(9982), 2088-2095. doi: 10.1016/S0140-6736(14)61460-4

Esping-Andersen, G. (1990). *The Three Worlds of Welfare Capitalism*. Princeton, NJ: Princeton University Press

Evans, G. W., & Kim, P. (2010). Multiple risk exposure as a potential explanatory mechanism for the socioeconomic status–health gradient. *Annals of the New York Academy of Sciences*, 1186(1), 174-189. doi: 10.1111/j.1749-6632.2009.05336.x

Ferrera, M. (1996). The 'Southern Model' of Welfare in Social Europe. *Journal of European Social Policy, 6*(1): 17–37. doi: 10.1177/095892879600600102

Galloway, T. A., Gustafsson, B., Pedersen, P. J., & Österberg, T. (2015). Immigrant child poverty–the Achilles heel of the Scandinavian welfare state. In *Measurement of poverty, deprivation, and economic mobility*. Emerald Group Publishing Limited. doi: 10.1108/S1049-258520150000023006

Guarnizo-Herreño, C. C., Watt, R. G., Pikhart, H., Sheiham, A., & Tsakos, G. (2014). Inequalities in oral impacts and welfare regimes: analysis of 21 E uropean countries. *Community dentistry and oral epidemiology*, *42*(6), 517-525. doi: 10.1111/cdoe.12119

Gustafsson, B., & Österberg, T. (2018). How are immigrant children in Sweden faring? Mean income, affluence and poverty since the 1980s. *Child indicators research*, *11*(1), 329-353. doi: 10.1007/s12187-016-9416-9

Hobza, V., (2017). The Family Affluence Scale as an indicator for socioeconomic status: validation on regional income differences in the Czech Republic. *International journal of environmental research and public health, 14*(12*),* 1540. doi: 10.3390/ijerph14121540

Hu, Y., et al. (2016) Trends in socioeconomic inequalities in self-assessed health in 17 European countries between 1990 and 2010. J Epidemiol Community Health 70: 644–652. doi: 10.1136/jech-2015-206780

Hurrelmann, K., Rathmann, K., & Richter, M. (2010). Health inequalities and welfare state regimes: a research note. *Journal of Public Health, 19*(1), 3-13. doi: 10.1007/s10389-010

Levin, K. A., & Currie, C. (2014). Reliability and validity of an adapted version of the Cantril Ladder for use with adolescent samples. *Social Indicators Research*, *119*(2), 1047-1063. doi: 10.1007/s11205-013-0507-4

Mackenbach, J. P., Kunst, A. E., Cavelaars, A. E., Groenhof, F., Geurts, J. J., & EU Working Group on Socioeconomic Inequalities in Health. (1997). Socioeconomic inequalities in morbidity and mortality in western Europe. *The lancet*, *349*(9066), 1655-1659. doi: 10.1016/S0140-6736(96)07226-1

Mackenbach, J.P. (2006). *Health Inequalities: Europe in Profile*. London, UK: Department of Health.

Mackenbach, J. P. (2012). The persistence of health inequalities in modern welfare states: the explanation of a paradox. *Social science & medicine*, *75*(4), 761-769. doi: 10.1016/j.socscimed.2012.02.031

Mackenbach, J. P., Kulhánová, I., Artnik, B., Bopp, M., Borrell, C., Clemens, T., & de Gelder, R. (2016). Changes in mortality inequalities over two decades: register based study of European countries. *BMJ*, *353*. doi: 10.1136/bmj.i1732

Marmot, M., Allen, J., & Bell, R. (2012). WHO European review of social determinants of health and the health divide. *The Lancet*, *380,* 1011–29. doi: 10.1016/S0140-6736(12)61228-8

Marmot, M. G., & Sapolsky, R. (2014). Of baboons and men: Social circumstances, biology, and the social gradient in health. In M. Weinstein & M. A. Lane (Eds.), *Sociality, Hierarchy, Health: Comparative Biodemography: Papers from a Workshop.* Washington, DC: National Academies Press.

Marx, K. (1857) *Grundrisse*. [English edition published 1973]. Harmondsworth, UK: Penguin. Retrieved from: https://bit.ly/3qr6o59

Mladovsky, P., Srivastava, D., Cylus, J., Karanikolos, M., Evetovits, T., & Thomson, S. (2012). *Health policy responses to the financial crisis in Europe.* Copenhagen, Denmark: WHO Regional Office for Europe

Moodie, R., Stuckler, D., Monteiro, C., Sheron, N., Neal, B., Thamarangsi, T., & Lancet NCD Action Group. (2013). Profits and pandemics: prevention of harmful effects of tobacco, alcohol, and ultra-processed food and drink industries. *The lancet*, *381*(9867), 670-679. doi: 10.1016/S0140-6736(12)62089-3

Muntaner, C., Borrell, C., Ng, E., Chung, H., Espelt, A., Rodriguez-Sanz, M., ... & O'Campo, P. (2011). Politics, welfare regimes, and population health: controversies and evidence. *Sociology of health & illness*, *33*(6), 946-964. doi: 10.1111/j.1467-9566.2011.01339.x

Navarro, V., Muntaner, C., Borrell, C., Benach, J., Quiroga, Á., Rodríguez-Sanz, M., & Pasarín, M. I. (2006). Politics and health outcomes. *The Lancet*, *368*(9540), 1033-

1037. doi: 10.1016/S0140-6736(06)69341-0

Niedzwiedz, C. L., Katikireddi, S. V., Pell, J. P., & Mitchell, R. (2014). Socioeconomic inequalities in the quality of life of older Europeans in different welfare regimes. *The European Journal of Public Health*, *24*(3), 364-370. doi: 10.1093/eurpub/cku017

Organisation for Economic Cooperation and Development (OECD). (2017). *OECD Social Expenditure Database (SOCX).* Retrieved from: https://stats.oecd.org/Index.aspx?DataSetCode=SOCX_AGG

Pacolet, J., & De Wispelaere, F. (2015). De staat van de verzorgingsstaat in België omstreeks 2015. *Belgisch Tijdschrift voor Sociale Zekerheid, 4,* 725-766. Retrieved from: https://lirias.kuleuven.be/retrieve/412795

Pförtner, T. K., Pfaff, H., & Elgar, F. J. (2019). The role of welfare state characteristics for health and inequalities in health from a cross-national perspective: a critical research synthesis. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, *71*(1), 465-489. doi: 10.1007/s11577-019-00606-

Raphael, D. (2013). Adolescence as a gateway to adult health outcomes. *Maturitas*, *75*(2), 137-141. doi: 10.1016/j.maturitas.2013.03.013

Rathmann, K., Ottova, V., Hurrelmann, K., de Looze, M., Levin, K., Molcho, M., & Richter, M. (2015). Macro-level determinants of young people's subjective health and health inequalities: A multilevel analysis in 27 welfare states. *Maturitas*, *80*(4), 414-420. doi: 10.1016/j.maturitas.2015.01.008

Richter, M., Rathmann, K., Gabhainn, S. N., Zambon, A., Boyce, W., & Hurrelmann, K. (2012). Welfare state regimes, health and health inequalities in adolescence: a multilevel study in 32 countries. *Sociology of health & illness*, *34*(6), 858-879. doi: 10.1111/j.1467-9566.2011.01433.x

Schrecker, T. (2016). Neoliberalism and health: the linkages and the dangers. *Sociology compass, 10*(10), 952-971. doi: 10.1111/soc4.12408

Spencer, N. (2010). Child health inequities. *Paediatrics and Child Health*, *20*(4), 157-162. doi: 10.1016/j.paed.2009.11.002

Stuckler, D., McKee, M., Ebrahim, S., & Basu, S. (2012). Manufacturing epidemics: the role of global producers in increased consumption of unhealthy commodities including processed foods, alcohol, and tobacco. *PLoS Med*, *9*(6), e1001235. doi: 10.1371/journal.pmed.1001235

Taylor-Gooby, P., Leruth, B., & Chung, H. (2017). Where next for the UK welfare state? In

P. Taylor-Gooby, B. Leruth, & H. Chung (Eds.), *After austerity: Welfare state transformation in Europe after the great recession*. Oxford, UK: Oxford University Press. Retreived from: https://bit.ly/3y1Ydz5

Vahid Shahidi, F., Siddiqi, A., & Muntaner, C. (2016). Does social policy moderate the impact of unemployment on health? A multilevel analysis of 23 welfare states. *The European Journal of Public Health*, *26*(6), 1017-1022. doi: 10.1093/eurpub/ckw050

Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *The lancet*, *379*(9826), 1641-1652. doi: 10.1016/S0140-6736(12)60149-4

WHO. (2014). Health Behaviour in School-aged Children (HBSC) Data Portal. [Dataset: HBSC-2013/14, ed.1.1]. Access to portal via http://hbsc-nesstar.nsd.no/webview/

WHO. (2008). *Closing the gap in a generation: health equity through action on the social determinants of health*. Geneva, Switzerland: Commission on the Social Determinants of Health, World Health Organization. Retrieved from: http://whqlibdoc.who.int/publications/2008/9789241563703_eng.pdf

Wilkinson, R. G., & Marmot, M. (Eds.). (2003). *Social determinants of health: the solid facts*. Geneva, Switzerland: World Health Organization.

Wilkinson, R.G. & Pickett, K. (2009). *The Spirit Level: Why More Equal Societies Almost Always Do Better.* London, UK: Penguin

Zambon, A., Boyce, W.F., Currie, C., Cois, E., Lemma, P., Dalmasso, P., Borraccino, A. and Cavallo, F. (2006). Do welfare regimes mediate the effect of SES on health in adolescence? A cross-national comparison in Europe, North America and Israel. *International Journal of Health Services, 36*(2), 309–29. doi: 10.2190/AAWX-184J-88HR-L0QL

Appendices

Appendix I: SPSS syntax

```
* Encoding: UTF-8.
#save file.
SAVE OUTFILE="hbscdataset.sav".

#filter out countries that are excluded from analysis.
FILTER OFF.
USE ALL.
SELECT IF (COUNTRYno = 56001 OR COUNTRYno = 56002 OR COUNTRYno = 276000
OR COUNTRYno = 250000 OR
   COUNTRYno = 528000 OR COUNTRYno = 208000 OR COUNTRYno = 752000 OR
COUNTRYno = 246000 OR COUNTRYno =
   578000 OR COUNTRYno = 826001 OR COUNTRYno = 826003 OR COUNTRYno =
826002 OR COUNTRYno = 372000).
EXECUTE.

#delete irrelevant variables.
DELETE VARIABLES SEQNO HBSC REG_NO ClassID id1 id2 id3 id4 month year adm
grade
monthbirth breakfastwd breakfastwe fruits vegetables sweets softdrinks m11 m12 ondiet
thinkbody bodyweight bodyheight MBMI toothbr physact60.
timeexe hourexce tvwd tvwe playgamewd playgamewe compusewd compusewe smokltm
smok30d_2
smoking agecigarette alcltm alc30d_2 beer wine spirits alcopops othalc1 othalc2 othalc3 othalc
alcquant drunk drunk30d agealco agedrunk cannabisltm_2 cannabis30d_2 cannabisage hadsex
contraceptcondom contraceptpill contraceptnat contraceptother agesex injured12m injurtreat
injurplace injuract
fight12m bulliedothers beenbullied cbullmess cbullpict motherhome1 fatherhome1
stepmohome1 stepfahome1
grandmohome1 grandfahome1 fosterhome1 elsehome1 brothershome1 sistershome1 talkfather
talkstepfa
```

talkmother talkstepmo m78 m79 m80 m81 famhelp famsup famtalk famdec friendhelp friendcounton friendshare
friendtalk m90 m90a m90as m91 m91a m91as m92 m92a m92as m93 m93a m93as m94 m94a m94as
m95 m95a m95as m96 m96a m96as likeschool schoolpressure acachieve studtogether studhelpful studaccept
teacheraccept teachercare teachertust employfa employnotfa employmo employnotmo m136 m136a m136b m136C
M137 m133 m134 m135.

#filter out cases with missing values on crucial variables.
FILTER OFF.
USE ALL.
SELECT IF (headache >= 1 AND stomachache >= 1 AND backache >= 1 AND feellow >= 1 AND irritable
   >= 1 AND nervous >= 1 AND sleepdificulty >= 1 AND dizzy >= 1 AND health >= 1).
EXECUTE.

FILTER OFF.
USE ALL.
SELECT IF (lifesat >= 1).
EXECUTE.

FILTER OFF.
USE ALL.
SELECT IF (fasfamcar >= 1 AND fasbedroom >= 1 AND fascomputers >= 1 AND fasbathroom >= 1 AND
   fasdishwash >= 1 AND fasholidays >= 1 AND welloff >= 1).
EXECUTE.

#compute psychosomatic complaints variable (high score is high frequency of complaints).
RECODE headache stomachache backache feellow irritable nervous sleepdificulty dizzy (1=5) (2=4) (3=3) (4=2) (5=1).
EXECUTE.

```
COMPUTE
psycho_compl=MEAN(headache,stomachache,backache,feellow,irritable,nervous,sleepdificult
y,
   dizzy).
EXECUTE.

#compute Family Affluence Scale variable.
RECODE fasfamcar (1=0) (2=1) (3=2).
EXECUTE.

RECODE fasbedroom fasdishwash (1=0) (2=1).
EXECUTE.

RECODE fascomputers fasbathroom fasholidays (1=0) (2=1) (3=2) (4=3).
EXECUTE.

COMPUTE fasindex=fasfamcar + fasbedroom + fascomputers + fasbathroom + fasdishwash +
fasholidays.
EXECUTE.

#check new variables.
MEANS TABLES=fasindex psychosom_complaints BY COUNTRYno
  /CELLS=MEAN COUNT STDDEV MIN MAX.

#recode Health variable (high scores correspond to high perceived health).
RECODE health (1=4) (2=3) (3=2) (4=1).
EXECUTE.

#create welfare regime variable.
RECODE COUNTRYno (56001=2) (56002=2) (276000=2) (250000=2) (528000=2)
(208000=1) (752000=1)
   (246000=1) (578000=1) (826001=3) (826002=3) (826003=3) (372000=3) INTO
Welfare_regime.
```

```
EXECUTE.

#check new variables and check sample distribution across countries and welfare regimes.
DATASET ACTIVATE DataSet2.
FREQUENCIES VARIABLES=COUNTRYno Welfare_regime
  /ORDER=ANALYSIS.
```

#to make analyses better suitable for cross-national comparisons, dataset was split and merged to ensure equal and representative samples across welfare regimes (no syntax available). Cases were ranked according to their welfare state type. Next, using the select cases if command, approximately 12 000 cases were randomly picked from all cases of every regime. A new file was created pasting the three new samples.

```
#save file.
SAVE OUTFILE="hbsc_new.sav".

#gather sample descriptives to check sample.
MEANS TABLES=lifesat health fasindex AGE sex BY Welfare_regime
  /CELLS=MEAN COUNT STDDEV.

MEANS TABLES=AGE BY Welfare_regime
  /CELLS=MEAN COUNT STDDEV.

CROSSTABS
  /TABLES=sex BY Welfare_regime
  /FORMAT=AVALUE TABLES
  /CELLS=COUNT COLUMN TOTAL
  /COUNT ROUND CELL.

FREQUENCIES VARIABLES=sex AGE
  /ORDER=ANALYSIS.

CROSSTABS
  /TABLES=COUNTRYno BY Welfare_regime
```

```
  /FORMAT=AVALUE TABLES
  /CELLS=COUNT COLUMN TOTAL
  /COUNT ROUND CELL.

DATASET ACTIVATE DataSet1.
MEANS TABLES=health lifesat fasindex BY Welfare_regime
  /CELLS=MEAN COUNT STDDEV.

#compute dichotomos FAS, health and life satisfaction variable for (binary) logistic regression analysis.
#DV.
RECODE fasindex (0=1) (1=1) (2=1) (3=1) (5=2) (6=2) (7=2) (8=2) (10=3) (11=3) (12=3)
(13=3) (9=3)
   (4=2) INTO fasindex_group.
EXECUTE.

#IV.
RECODE health (1=1) (2=1) (3=2) (4=2) INTO health_dicho.
EXECUTE.

RECODE lifesat (1=1) (2=1) (3=1) (4=1) (5=1) (6=2) (7=2) (8=2) (9=2) (10=2) INTO
lifesat_dicho.
EXECUTE.

#execute logitic regression of full sample.
LOGISTIC REGRESSION VARIABLES Lifesat_dicho
  /METHOD=ENTER fasindex_group
  /CONTRAST (fasindex_group)=Indicator(1)
  /PRINT=CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

LOGISTIC REGRESSION VARIABLES health_dicho
  /METHOD=ENTER fasindex_group
  /CONTRAST (fasindex_group)=Indicator(1)
```

```
  /PRINT=CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

#execute logistic regression for social democratic sample.
USE ALL.
COMPUTE filter_$=(Welfare_regime = 1).
VARIABLE LABELS filter_$ 'Welfare_regime = 1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

LOGISTIC REGRESSION VARIABLES Lifesat_dicho
  /METHOD=ENTER fasindex_group
  /CONTRAST (fasindex_group)=Indicator(1)
  /PRINT=CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

LOGISTIC REGRESSION VARIABLES health_dicho
  /METHOD=ENTER fasindex_group
  /CONTRAST (fasindex_group)=Indicator(1)
  /PRINT=CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

#execute logistic regression for conservative sample.
USE ALL.
COMPUTE filter_$=(Welfare_regime = 2).
VARIABLE LABELS filter_$ 'Welfare_regime = 2 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

LOGISTIC REGRESSION VARIABLES Lifesat_dicho
```

```
  /METHOD=ENTER fasindex_group
  /CONTRAST (fasindex_group)=Indicator(1)
  /PRINT=CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

LOGISTIC REGRESSION VARIABLES health_dicho
  /METHOD=ENTER fasindex_group
  /CONTRAST (fasindex_group)=Indicator(1)
  /PRINT=CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

#execute logistic regression for liberal sample.
USE ALL.
COMPUTE filter_$=(Welfare_regime = 3).
VARIABLE LABELS filter_$ 'Welfare_regime = 3 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

LOGISTIC REGRESSION VARIABLES Lifesat_dicho
  /METHOD=ENTER fasindex_group
  /CONTRAST (fasindex_group)=Indicator(1)
  /PRINT=CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

LOGISTIC REGRESSION VARIABLES health_dicho
  /METHOD=ENTER fasindex_group
  /CONTRAST (fasindex_group)=Indicator(1)
  /PRINT=CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

#correlation analyses (Spearmans rho for FAS ~ Health and Pearson for FAS ~ life
satisfaction).
```

```
CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for social-democratic welfare regime.
USE ALL.
COMPUTE filter_$=(Welfare_regime = 1).
VARIABLE LABELS filter_$ 'Welfare_regime = 1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for conservative welfare regime.
USE ALL.
COMPUTE filter_$=(Welfare_regime = 2).
VARIABLE LABELS filter_$ 'Welfare_regime = 2 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
```

```
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for liberal welfare regime.
USE ALL.
COMPUTE filter_$=(Welfare_regime = 3).
VARIABLE LABELS filter_$ 'Welfare_regime = 3 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for DK.
DATASET ACTIVATE DataSet1.
USE ALL.
COMPUTE filter_$=(COUNTRYno = 208000).
VARIABLE LABELS filter_$ 'COUNTRYno = 208000 (FILTER)'.
```

```
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for NO.
USE ALL.
COMPUTE filter_$=(COUNTRYno = 578000).
VARIABLE LABELS filter_$ 'COUNTRYno = 578000 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for SE.
USE ALL.
```

```
COMPUTE filter_$=(COUNTRYno = 752000).
VARIABLE LABELS filter_$ 'COUNTRYno = 752000 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for BE.
USE ALL.
COMPUTE filter_$=(COUNTRYno = 56001 OR COUNTRYno = 56002).
VARIABLE LABELS filter_$ 'COUNTRYno = 56001 OR COUNTRYno = 56002 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
```

```
#correlation for FR.
USE ALL.
COMPUTE filter_$=(COUNTRYno = 250000).
VARIABLE LABELS filter_$ 'COUNTRYno = 250000 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for DE.
USE ALL.
COMPUTE filter_$=(COUNTRYno = 276000).
VARIABLE LABELS filter_$ 'COUNTRYno = 276000 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
```

```
  /MISSING=PAIRWISE.

#correlation for NL.
USE ALL.
COMPUTE filter_$=(COUNTRYno = 528000).
VARIABLE LABELS filter_$ 'COUNTRYno = 528000 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for EN.
USE ALL.
COMPUTE filter_$=(COUNTRYno = 826001).
VARIABLE LABELS filter_$ 'COUNTRYno = 826001 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
```

```
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for IE.
USE ALL.
COMPUTE filter_$=(COUNTRYno = 372000).
VARIABLE LABELS filter_$ 'COUNTRYno = 372000 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for WS.
USE ALL.
COMPUTE filter_$=(COUNTRYno = 826003).
VARIABLE LABELS filter_$ 'COUNTRYno = 826003 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
```

```
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#correlation for SC.
USE ALL.
COMPUTE filter_$=(COUNTRYno = 826002).
VARIABLE LABELS filter_$ 'COUNTRYno = 826002 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

CORRELATIONS
  /VARIABLES=fasindex lifesat health
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.
NONPAR CORR
  /VARIABLES=fasindex lifesat health
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

#No SPSS function available to do fishers transformation and test. See Eid, Gollwitzer & Schmidt (2011).
```

Appendix II: SPSS output

Sample description

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Boy	17944	48.5	48.5	48.5
	Girl	19050	51.5	51.5	100.0
	Total	36994	100.0	100.0	

Report

Age

Welfare_regime	Mean	N	Std. Deviation
social-democratic	13.640251	12199	1.6794421
conservative	13.542816	12289	1.6613008
liberal	13.707503	12240	1.6171135
Total	13.630062	36728	1.6541475

Gender * Welfare_regime Crosstabulation

			Welfare_regime			
			social-democratic	conservative	liberal	Total
Gender	Boy	Count	5840	6200	5904	17944
		% within Welfare_regime	47.6%	50.1%	47.8%	48.5%
		% of Total	15.8%	16.8%	16.0%	48.5%
	Girl	Count	6437	6174	6439	19050
		% within Welfare_regime	52.4%	49.9%	52.2%	51.5%
		% of Total	17.4%	16.7%	17.4%	51.5%
Total		Count	12277	12374	12343	36994
		% within Welfare_regime	100.0%	100.0%	100.0%	100.0%
		% of Total	33.2%	33.4%	33.4%	100.0%

Country/WHO Region * Welfare_regime Crosstabulation

			Welfare_regime			
			social-democratic	conservative	liberal	Total
Country/WHO Region	Belgium (Flemish)	Count	0	2089	0	2089
		% within Welfare_regime	0.0%	16.9%	0.0%	5.6%
		% of Total	0.0%	5.6%	0.0%	5.6%
	Belgium (French)	Count	0	2785	0	2785
		% within Welfare_regime	0.0%	22.5%	0.0%	7.5%
		% of Total	0.0%	7.5%	0.0%	7.5%
	Denmark	Count	3161	0	0	3161
		% within Welfare_regime	25.7%	0.0%	0.0%	8.5%
		% of Total	8.5%	0.0%	0.0%	8.5%
	France	Count	0	2662	0	2662
		% within Welfare_regime	0.0%	21.5%	0.0%	7.2%
		% of Total	0.0%	7.2%	0.0%	7.2%
	Germany	Count	0	2802	0	2802
		% within Welfare_regime	0.0%	22.6%	0.0%	7.6%
		% of Total	0.0%	7.6%	0.0%	7.6%
	Ireland	Count	0	0	2388	2388
		% within Welfare_regime	0.0%	0.0%	19.3%	6.5%
		% of Total	0.0%	0.0%	6.5%	6.5%
	Netherlands	Count	0	2036	0	2036
		% within Welfare_regime	0.0%	16.5%	0.0%	5.5%
		% of Total	0.0%	5.5%	0.0%	5.5%
	Norway	Count	2754	0	0	2754
		% within Welfare_regime	22.4%	0.0%	0.0%	7.4%
		% of Total	7.4%	0.0%	0.0%	7.4%
	Sweden	Count	6362	0	0	6362
		% within Welfare_regime	51.8%	0.0%	0.0%	17.2%
		% of Total	17.2%	0.0%	0.0%	17.2%
	England	Count	0	0	2887	2887
		% within Welfare_regime	0.0%	0.0%	23.4%	7.8%
		% of Total	0.0%	0.0%	7.8%	7.8%
	Scotland	Count	0	0	3859	3859
		% within Welfare_regime	0.0%	0.0%	31.3%	10.4%
		% of Total	0.0%	0.0%	10.4%	10.4%
	Wales	Count	0	0	3209	3209
		% within Welfare_regime	0.0%	0.0%	26.0%	8.7%
		% of Total	0.0%	0.0%	8.7%	8.7%
Total		Count	12277	12374	12343	36994
		% within Welfare_regime	100.0%	100.0%	100.0%	100.0%
		% of Total	33.2%	33.4%	33.4%	100.0%

Report

Welfare_regime		Health	Life satisfaction	fasindex
social-democratic	Mean	3.25	7.55	9.3558
	N	12277	12277	12277
	Std. Deviation	.653	1.781	1.90325
	Minimum	Excellent	1	.00
	Maximum	Poor	10, best possible life	13.00
conservative	Mean	3.19	7.42	8.7546
	N	12374	12374	12374
	Std. Deviation	.730	1.901	2.13061
	Minimum	Excellent	1	.00
	Maximum	Poor	10, best possible life	13.00
liberal	Mean	3.11	7.54	8.8897
	N	12343	12343	12343
	Std. Deviation	.702	1.831	2.33622
	Minimum	Excellent	1	.00
	Maximum	Poor	10, best possible life	13.00
Total	Mean	3.18	7.50	8.9992
	N	36994	36994	36994
	Std. Deviation	.698	1.839	2.14651
	Minimum	Excellent	1	.00
	Maximum	Poor	10, best possible life	13.00

Binary logistic regression analyses for all welfare state types

Logistic regression analysis for social democratic welfare regime: life satisfaction and perceived health as IV respectively.

Categorical Variables Codings

		Frequency	Parameter coding (1)	(2)
fasindex_group	low FAS	67	.000	.000
	middle FAS	3525	1.000	.000
	high FAS	8685	.000	1.000

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	97.698	2	<.001
	Block	97.698	2	<.001
	Model	97.698	2	<.001

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	fasindex_group			101.744	2	<.001			
	fasindex_group(1)	.591	.275	4.626	1	.031	1.805	1.054	3.092
	fasindex_group(2)	1.116	.273	16.693	1	<.001	3.052	1.787	5.213
	Constant	.927	.271	11.691	1	<.001	2.526		

a. Variable(s) entered on step 1: fasindex_group.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	43.841	2	<.001
	Block	43.841	2	<.001
	Model	43.841	2	<.001

Categorical Variables Codings

		Frequency	Parameter coding (1)	Parameter coding (2)
fasindex_group	low FAS	67	.000	.000
	middle FAS	3525	1.000	.000
	high FAS	8685	.000	1.000

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	95% C.I.for EXP(B) Upper
Step 1[a]	fasindex_group			45.334	2	<.001			
	fasindex_group(1)	.267	.334	.639	1	.424	1.306	.679	2.510
	fasindex_group(2)	.674	.332	4.130	1	.042	1.963	1.024	3.762
	Constant	1.627	.330	24.351	1	<.001	5.091		

a. Variable(s) entered on step 1: fasindex_group.

Logistic regression analysis for conservative welfare regime: life satisfaction and perceived health as IV respectively.

Categorical Variables Codings

		Frequency	Parameter coding (1)	Parameter coding (2)
fasindex_group	low FAS	135	.000	.000
	middle FAS	5290	1.000	.000
	high FAS	6949	.000	1.000

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	36.498	2	<.001
	Block	36.498	2	<.001
	Model	36.498	2	<.001

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	95% C.I.for EXP(B) Upper
Step 1[a]	fasindex_group			38.320	2	<.001			
	fasindex_group(1)	.658	.195	11.413	1	<.001	1.932	1.318	2.830
	fasindex_group(2)	.895	.195	21.164	1	<.001	2.447	1.671	3.583
	Constant	.937	.191	23.978	1	<.001	2.553		

a. Variable(s) entered on step 1: fasindex_group.

Categorical Variables Codings

		Frequency	Parameter coding (1)	Parameter coding (2)
fasindex_group	low FAS	135	.000	.000
	middle FAS	5290	1.000	.000
	high FAS	6949	.000	1.000

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	80.632	2	<.001
	Block	80.632	2	<.001
	Model	80.632	2	<.001

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	95% C.I.for EXP(B) Upper
Step 1[a]	fasindex_group			85.945	2	<.001			
	fasindex_group(1)	1.017	.183	30.983	1	<.001	2.764	1.932	3.954
	fasindex_group(2)	1.352	.183	54.832	1	<.001	3.864	2.702	5.526
	Constant	.563	.179	9.878	1	.002	1.755		

a. Variable(s) entered on step 1: fasindex_group.

Logistic regression analysis for liberal welfare regime: life satisfaction and perceived health as IV respectively.

Categorical Variables Codings

			Parameter coding	
		Frequency	(1)	(2)
fasindex_group	low FAS	162	.000	.000
	middle FAS	4969	1.000	.000
	high FAS	7212	.000	1.000

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	112.151	2	<.001
	Block	112.151	2	<.001
	Model	112.151	2	<.001

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	fasindex_group			114.151	2	<.001			
	fasindex_group(1)	.581	.179	10.486	1	.001	1.787	1.258	2.540
	fasindex_group(2)	1.083	.179	36.501	1	<.001	2.953	2.078	4.197
	Constant	.956	.175	29.673	1	<.001	2.600		

a. Variable(s) entered on step 1: fasindex_group.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	94.564	2	<.001
	Block	94.564	2	<.001
	Model	94.564	2	<.001

Categorical Variables Codings

			Parameter coding	
		Frequency	(1)	(2)
fasindex_group	low FAS	162	.000	.000
	middle FAS	4969	1.000	.000
	high FAS	7212	.000	1.000

Variables in the Equation

								95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	fasindex_group			97.002	2	<.001			
	fasindex_group(1)	.632	.174	13.212	1	<.001	1.881	1.338	2.645
	fasindex_group(2)	1.056	.174	37.056	1	<.001	2.876	2.047	4.042
	Constant	.806	.170	22.483	1	<.001	2.240		

a. Variable(s) entered on step 1: fasindex_group.

Correlation scores for countries and welfare state types
Pearson and Spearman's correlation scores for the social democratic welfare regime

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.107**	.102**
		Sig. (2-tailed)	.	<.001	<.001
		N	12277	12277	12277
	Life satisfaction	Correlation Coefficient	.107**	1.000	.386**
		Sig. (2-tailed)	<.001	.	.000
		N	12277	12277	12277
	Health	Correlation Coefficient	.102**	.386**	1.000
		Sig. (2-tailed)	<.001	.000	.
		N	12277	12277	12277

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.115**	.096**
	Sig. (2-tailed)		<.001	<.001
	N	12277	12277	12277
Life satisfaction	Pearson Correlation	.115**	1	.390**
	Sig. (2-tailed)	<.001		.000
	N	12277	12277	12277
Health	Pearson Correlation	.096**	.390**	1
	Sig. (2-tailed)	<.001	.000	
	N	12277	12277	12277

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson and Spearman's correlation scores for the conservative welfare regime

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.064**	.102**
	Sig. (2-tailed)		<.001	<.001
	N	12374	12374	12374
Life satisfaction	Pearson Correlation	.064**	1	.327**
	Sig. (2-tailed)	<.001		<.001
	N	12374	12374	12374
Health	Pearson Correlation	.102**	.327**	1
	Sig. (2-tailed)	<.001	<.001	
	N	12374	12374	12374

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.055**	.093**
		Sig. (2-tailed)	.	<.001	<.001
		N	12374	12374	12374
	Life satisfaction	Correlation Coefficient	.055**	1.000	.344**
		Sig. (2-tailed)	<.001	.	.000
		N	12374	12374	12374
	Health	Correlation Coefficient	.093**	.344**	1.000
		Sig. (2-tailed)	<.001	.000	.
		N	12374	12374	12374

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson and Spearman's correlation scores for the liberal welfare regime

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.137**	.137**
	Sig. (2-tailed)		<.001	<.001
	N	12343	12343	12343
Life satisfaction	Pearson Correlation	.137**	1	.385**
	Sig. (2-tailed)	<.001		.000
	N	12343	12343	12343
Health	Pearson Correlation	.137**	.385**	1
	Sig. (2-tailed)	<.001	.000	
	N	12343	12343	12343

**. Correlation is significant at the 0.01 level (2-tailed).

NONPAR CORR

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.133**	.138**
		Sig. (2-tailed)	.	<.001	<.001
		N	12343	12343	12343
	Life satisfaction	Correlation Coefficient	.133**	1.000	.372**
		Sig. (2-tailed)	<.001	.	.000
		N	12343	12343	12343
	Health	Correlation Coefficient	.138**	.372**	1.000
		Sig. (2-tailed)	<.001	.000	.
		N	12343	12343	12343

**. Correlation is significant at the 0.01 level (2-tailed).

Country specific correlations

Denmark

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.115**	.122**
	Sig. (2-tailed)		<.001	<.001
	N	3161	3161	3161
Life satisfaction	Pearson Correlation	.115**	1	.435**
	Sig. (2-tailed)	<.001		<.001
	N	3161	3161	3161
Health	Pearson Correlation	.122**	.435**	1
	Sig. (2-tailed)	<.001	<.001	
	N	3161	3161	3161

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.108**	.122**
		Sig. (2-tailed)	.	<.001	<.001
		N	3161	3161	3161
	Life satisfaction	Correlation Coefficient	.108**	1.000	.420**
		Sig. (2-tailed)	<.001	.	<.001
		N	3161	3161	3161
	Health	Correlation Coefficient	.122**	.420**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	3161	3161	3161

**. Correlation is significant at the 0.01 level (2-tailed).

Norway

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.131**	.063**
	Sig. (2-tailed)		<.001	<.001
	N	2754	2754	2754
Life satisfaction	Pearson Correlation	.131**	1	.319**
	Sig. (2-tailed)	<.001		<.001
	N	2754	2754	2754
Health	Pearson Correlation	.063**	.319**	1
	Sig. (2-tailed)	<.001	<.001	
	N	2754	2754	2754

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.118**	.069**
		Sig. (2-tailed)	.	<.001	<.001
		N	2754	2754	2754
	Life satisfaction	Correlation Coefficient	.118**	1.000	.320**
		Sig. (2-tailed)	<.001	.	<.001
		N	2754	2754	2754
	Health	Correlation Coefficient	.069**	.320**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	2754	2754	2754

**. Correlation is significant at the 0.01 level (2-tailed).

Sweden

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.087**	.093**
	Sig. (2-tailed)		<.001	<.001
	N	6362	6362	6362
Life satisfaction	Pearson Correlation	.087**	1	.408**
	Sig. (2-tailed)	<.001		<.001
	N	6362	6362	6362
Health	Pearson Correlation	.093**	.408**	1
	Sig. (2-tailed)	<.001	<.001	
	N	6362	6362	6362

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.079**	.099**
		Sig. (2-tailed)	.	<.001	<.001
		N	6362	6362	6362
	Life satisfaction	Correlation Coefficient	.079**	1.000	.402**
		Sig. (2-tailed)	<.001	.	<.001
		N	6362	6362	6362
	Health	Correlation Coefficient	.099**	.402**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	6362	6362	6362

**. Correlation is significant at the 0.01 level (2-tailed).

Belgium

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.049**	.120**
	Sig. (2-tailed)		<.001	<.001
	N	4874	4874	4874
Life satisfaction	Pearson Correlation	.049**	1	.261**
	Sig. (2-tailed)	<.001		<.001
	N	4874	4874	4874
Health	Pearson Correlation	.120**	.261**	1
	Sig. (2-tailed)	<.001	<.001	
	N	4874	4874	4874

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.047**	.101**
		Sig. (2-tailed)	.	.001	<.001
		N	4874	4874	4874
	Life satisfaction	Correlation Coefficient	.047**	1.000	.293**
		Sig. (2-tailed)	.001	.	<.001
		N	4874	4874	4874
	Health	Correlation Coefficient	.101**	.293**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	4874	4874	4874

**. Correlation is significant at the 0.01 level (2-tailed).

France

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.081**	.068**
	Sig. (2-tailed)		<.001	<.001
	N	2662	2662	2662
Life satisfaction	Pearson Correlation	.081**	1	.333**
	Sig. (2-tailed)	<.001		<.001
	N	2662	2662	2662
Health	Pearson Correlation	.068**	.333**	1
	Sig. (2-tailed)	<.001	<.001	
	N	2662	2662	2662

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.072**	.078**
		Sig. (2-tailed)	.	<.001	<.001
		N	2662	2662	2662
	Life satisfaction	Correlation Coefficient	.072**	1.000	.347**
		Sig. (2-tailed)	<.001	.	<.001
		N	2662	2662	2662
	Health	Correlation Coefficient	.078**	.347**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	2662	2662	2662

**. Correlation is significant at the 0.01 level (2-tailed).

Germany

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.075**	.073**
	Sig. (2-tailed)		<.001	<.001
	N	2802	2802	2802
Life satisfaction	Pearson Correlation	.075**	1	.406**
	Sig. (2-tailed)	<.001		<.001
	N	2802	2802	2802
Health	Pearson Correlation	.073**	.406**	1
	Sig. (2-tailed)	<.001	<.001	
	N	2802	2802	2802

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.062**	.068**
		Sig. (2-tailed)	.	<.001	<.001
		N	2802	2802	2802
	Life satisfaction	Correlation Coefficient	.062**	1.000	.386**
		Sig. (2-tailed)	<.001	.	<.001
		N	2802	2802	2802
	Health	Correlation Coefficient	.068**	.386**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	2802	2802	2802

**. Correlation is significant at the 0.01 level (2-tailed).

The Netherlands

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.079**	.135**
	Sig. (2-tailed)		<.001	<.001
	N	2036	2036	2036
Life satisfaction	Pearson Correlation	.079**	1	.410**
	Sig. (2-tailed)	<.001		<.001
	N	2036	2036	2036
Health	Pearson Correlation	.135**	.410**	1
	Sig. (2-tailed)	<.001	<.001	
	N	2036	2036	2036

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.060**	.125**
		Sig. (2-tailed)	.	.006	<.001
		N	2036	2036	2036
	Life satisfaction	Correlation Coefficient	.060**	1.000	.415**
		Sig. (2-tailed)	.006	.	<.001
		N	2036	2036	2036
	Health	Correlation Coefficient	.125**	.415**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	2036	2036	2036

**. Correlation is significant at the 0.01 level (2-tailed).

England

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.094**	.104**
	Sig. (2-tailed)		<.001	<.001
	N	2887	2887	2887
Life satisfaction	Pearson Correlation	.094**	1	.354**
	Sig. (2-tailed)	<.001		<.001
	N	2887	2887	2887
Health	Pearson Correlation	.104**	.354**	1
	Sig. (2-tailed)	<.001	<.001	
	N	2887	2887	2887

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.095**	.112**
		Sig. (2-tailed)	.	<.001	<.001
		N	2887	2887	2887
	Life satisfaction	Correlation Coefficient	.095**	1.000	.345**
		Sig. (2-tailed)	<.001	.	<.001
		N	2887	2887	2887
	Health	Correlation Coefficient	.112**	.345**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	2887	2887	2887

**. Correlation is significant at the 0.01 level (2-tailed).

Ireland

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.163**	.120**
	Sig. (2-tailed)		<.001	<.001
	N	2388	2388	2388
Life satisfaction	Pearson Correlation	.163**	1	.366**
	Sig. (2-tailed)	<.001		<.001
	N	2388	2388	2388
Health	Pearson Correlation	.120**	.366**	1
	Sig. (2-tailed)	<.001	<.001	
	N	2388	2388	2388

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.151**	.117**
		Sig. (2-tailed)	.	<.001	<.001
		N	2388	2388	2388
	Life satisfaction	Correlation Coefficient	.151**	1.000	.353**
		Sig. (2-tailed)	<.001	.	<.001
		N	2388	2388	2388
	Health	Correlation Coefficient	.117**	.353**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	2388	2388	2388

**. Correlation is significant at the 0.01 level (2-tailed).

Wales

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.134**	.153**
	Sig. (2-tailed)		<.001	<.001
	N	3209	3209	3209
Life satisfaction	Pearson Correlation	.134**	1	.398**
	Sig. (2-tailed)	<.001		<.001
	N	3209	3209	3209
Health	Pearson Correlation	.153**	.398**	1
	Sig. (2-tailed)	<.001	<.001	
	N	3209	3209	3209

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.134**	.156**
		Sig. (2-tailed)	.	<.001	<.001
		N	3209	3209	3209
	Life satisfaction	Correlation Coefficient	.134**	1.000	.389**
		Sig. (2-tailed)	<.001	.	<.001
		N	3209	3209	3209
	Health	Correlation Coefficient	.156**	.389**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	3209	3209	3209

**. Correlation is significant at the 0.01 level (2-tailed).

Scotland

Correlations

		fasindex	Life satisfaction	Health
fasindex	Pearson Correlation	1	.168**	.167**
	Sig. (2-tailed)		<.001	<.001
	N	3859	3859	3859
Life satisfaction	Pearson Correlation	.168**	1	.427**
	Sig. (2-tailed)	<.001		<.001
	N	3859	3859	3859
Health	Pearson Correlation	.167**	.427**	1
	Sig. (2-tailed)	<.001	<.001	
	N	3859	3859	3859

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			fasindex	Life satisfaction	Health
Spearman's rho	fasindex	Correlation Coefficient	1.000	.158**	.164**
		Sig. (2-tailed)	.	<.001	<.001
		N	3859	3859	3859
	Life satisfaction	Correlation Coefficient	.158**	1.000	.410**
		Sig. (2-tailed)	<.001	.	<.001
		N	3859	3859	3859
	Health	Correlation Coefficient	.164**	.410**	1.000
		Sig. (2-tailed)	<.001	<.001	.
		N	3859	3859	3859

**. Correlation is significant at the 0.01 level (2-tailed).