Health and socioeconomic circumstances over three generations as predictors of youth unemployment trajectories

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Background: Youth unemployment is a critical life event, which may trigger other labour market-related disadvantages and detrimental health implications. To better understand the processes causing unemployment, we study how socioeconomic circumstances of successive generations and familial and health factors in adolescence predict youth unemployment trajectories between ages 16 and 28 in Finland from 2000 to 2009. Methods: We used survey data from 1979 to 1997 on 12- to 18-year-old Finns (n = 43 238) linked with 1970–2009 registry-based data of their grandparents, parents and themselves. Growth mixture modelling and multivariate logistic regression analyses were used. Results: Three latent youth unemployment trajectories emerged; low (46%), decreasing (38%) and high (16%) risk groups. Of adolescent factors, low school achievement was the most important predictor of youth unemployment followed by smoking, stress symptoms and poor self-rated health. Grandparents’ education predicted their grandchildren’s unemployment but the effects of other grandparental socioeconomic circumstances mediated through parents’ socioeconomic status (SES). Parents’ low SES and education, and long-term unemployment increased the risk of the child’s unemployment. Youth unemployment was related to low education at the age of 29. Conclusion: Grandparents’ education, family socioeconomic circumstances and adolescents’ health and school achievement predict the developmental trajectory of youth unemployment. Youth unemployment is also related to low education in early adulthood. Our findings suggest that the health selection of unemployment works already in adolescence.

Introduction

Young people are among those who bear the greatest brunt of unemployment.1–3 As a critical life event, youth unemployment may trigger other labour market disadvantages, such as long-term job insecurity, downward occupational mobility and a failure in getting an active role in the society.1–3 Unemployment may also have long-lasting effects on well-being6 and it is associated with mortality,4 poor mental health,5,6 alcohol abuse,7 smoking,4,9 other drug uses10,11 and poor physical health.5 Youth unemployment may even have stronger health implications than adult unemployment.12 On the other hand, unemployment is known to be related to socio-economic factors.13 In this article, we study relations between youth unemployment, health in adolescence and socioeconomic factors over three generations.

Two pathways have been suggested to explain the link between unemployment and health.4,15 Unemployment may deteriorate health and increase the risk of health-compromising behaviours like smoking or alcohol use; or poor health may affect a person’s labour market prospects and consequently increase the risk of unemployment.12–17 The latter is called health selection. Health selection among adults has been demonstrated, e.g. in a study, where smokers’ chances for re-employment were smaller than those of non-smokers.17 During the life course, health and unemployment may also intertwine.13,14

Adolescence is a stage in the life course where health selection to later unemployment trajectories may start due to the strong relations between health factors and educational achievements at that age. In adolescence, many health-compromising behaviours like smoking or drinking are adopted and educational paths are selected. Health-compromising behaviours and poorer health are associated with poorer school achievements and short education in adulthood.18–20 This may suggest that poor health-related factors in adolescence and poor school achievements in adolescence predict later unemployment. A study of the current trends of youth unemployment in European Union countries reported higher unemployment rates among persons with less than upper secondary school compared with their better-educated counterparts.19

Unemployment is associated with socioeconomic status (SES) to the disadvantage of those with low SES.13,21–25 It has also been shown that low SES during childhood increases the risk of later unemployment, and that low parental circumstances associate with the likelihood of unemployment of the child in early adulthood.22 Even if own SES in adolescence is not established, academic achievement in school is a strong predictor of a child’s education in adulthood. Further, even in welfare societies like Finland, parents’ education level and SES predict children’s academic achievements and choice of education tracks.26 A potential path to unemployment in later adolescence or adulthood can start even in childhood through the
family circumstances. No study has looked at the socioeconomic circumstances of grandparents in relation to their grandchildren’s unemployment. With the increasing life expectancy, adolescents’ have grandparents more often than earlier, which is why more interactions between grandparents and their grandchildren can be expected. This also implies that the socioeconomic circumstances of the grandparents may have a more direct influence on their grandchildren and their lifestyles above the mediating effects through parents now than in the past.21,28

We study here if health factors in adolescence, including health behaviours, predict unemployment in young adulthood and thus suggest a health selection effect. Further, we study if family socioeconomic factors are associated with youth unemployment. Here ‘family’ covers both parents and grandparents. The unemployment trajectories between ages 16 and 28 are studied in the cohorts, which were at that age between 2000 and 2009.

Methods

Study design and data

A longitudinal dataset was constructed by linking survey data from the Adolescent Health and Lifestyle Surveys (AHLS) with census and registry data from Statistics Finland concerning the survey participants and their parents and grandparents. In AHLS, the mailed surveys were conducted using comparable questions in 1979, 1985, 1987, 1991, 1993, 1995 and 1997 (n = 43,232) among nationally representative samples of 12-, 14-, 16- and 18-year-old drawn from the Population Register Centre.26 The overall response rate was 78.1% (n = 43,232), for girls 85.8% (n = 23,179) and 70.8% (n = 20,059) for boys.

Statistics Finland had constructed the family formation data to link generations. These data were drawn from national censuses collected every fifth year from 1970 to 1995 and annually through national registries from 2000 to 2009. Our dataset had information on all available six censuses and from 2000 onwards each year. That is why we were able to select, e.g. socioeconomic circumstances for parents and grandparents so that they matched the survey ages. Because censuses were every fifth year, we chose the nearest measurement to the adolescent’s age of 15 years. However, in the earlier censuses, families could not be formed, if children (in this study parents) were no longer living with their parents (in this study grandparents). This explains the large number of missing grandparents. The response rate in the AHLS was slightly higher among adolescents who had no grandparents (80.2%) compared with those who had at least one (78.6%). The proportion of youth unemployment was slightly lower among those with no grandparents compared with those who had at least one (P < 0.01).

Participation in the AHLS was voluntary. Statistics Finland linked the datasets in accordance with a contract specifying the rights and duties of both parties. The Institutional Review Board of Statistics Finland and the Data Protection Ombudsman approved the study protocol. Identification of the study participants was withheld from the investigators at all stages of the study. The Joint Commission on Ethics of the University of Turku and the Turku University Hospital stated that no human rights were violated in the research protocol and approved it.

Variables extracted from the statistics Finland registers

‘Youth Unemployment’ for each year from 2000 to 2009 was measured as the number of months of unemployment during year each calendar year. Less than 14 days of unemployment was coded as 0 months.

Socioeconomic circumstances

Six measures of socioeconomic circumstances were used for parents and grandparents using the classifications of Statistics Finland.29 Censuses or registry data within 5 years of the child’s 15th birthday, nearest to that were chosen. Grandparents’ information from paternal and maternal sides was combined. If both grandparents belonged to the same category of socioeconomic circumstances, this category was used. Otherwise, the higher category was selected.

SES was classified as upper white-collar, lower white-collar, blue-collar, agricultural entrepreneur, other (pensioners, students, those in military service) and unknown. For parents, the unknown category also included those who had died before the AHLS survey.

Education level

The education level of parents and grandparents was classified according to years of schooling: low (9 years or less), middle (10–12 years) and high education (over 12 years).

‘Material resources’ were measured by the ownership of the dwelling classified as owner-occupied, rented or unknown (no information/parents had died).

‘Father’s and mother’s unemployment’, measured every fifth year from 1970 to 1995 and yearly from 2000 to 2009, refer to the sum of unemployment months during the preceding 12 months from each measurement year. The coding was the same as in youth unemployment. The categories were: not unemployed, unemployed ≤1 year (short-term), >1 year (long-term).

‘Parents’ divorce’ within 5 years before or after the survey (yes/no) and ‘death of parent(s)’ by the time of the survey (yes/no) were used.

Education reached by age 29 for the survey participants was classified in the same way as for the parents and grandparents.

Variables from the AHLS

In the surveys, adolescents reported ‘family structure’: living with both parents (intact family) or not (non-intact). ‘Father’s and mother’s smoking’ were reported by their children: does not smoke, stopped smoking, or smokes.

‘School achievement’ was categorized as excellent, good, average, and poor. This was measured in the survey by asking the respondent’s self-assessment of his/her school performance in the latest end-of-term school report compared with the class average. This was used for 12- to 14-year-old while for 16- to 18-year-old the type of school was used in addition as follows: excellent (academic upper secondary school with better school performance), good (academic upper secondary school with poor or average school performance), average (vocational school) and poor (not in school).25 It was categorized from 12- to 14-year-old. In Finland, compulsory education ends at age 16, after which the adolescents can continue to academic or vocational upper secondary school or end their education.

‘Adolescent smoking’ was defined differently for each age group to reflect the process of smoking initiation in each age group; 12-year-old had smoked more than two cigarettes and 14-year-old more than 50 cigarettes in their lifetime; 16- to 18-year-old smoked daily. The 659 (1.2%) missing cases of smoking were excluded from the analysis. Of the smokers, 50.1% were girls.

‘Drunkenness’ described the alcohol intoxication habits of the respondents, categorized as never or does not drink alcohol, seldom or one to two times a month, and once a week.

‘Stress symptoms’ (stomach aches, tension or nervousness, irritability or outbursts of anger, trouble falling asleep or waking at night, headache, trembling of hands, feeling tired or weak, feeling dizzy), categorized as no symptoms, 1–3/week, and 4–8/week.

‘Self-rated health’ categorized as very good, good to average, poor.
Statistical analysis

We estimated the trajectories of youth unemployment over time using exploratory growth mixture modelling (GMM). GMM is used for simultaneous identification of different empirically driven post hoc developmental patterns over a series of measurement points. GMM is a special case of the growth mixture model, given the assumption of homogeneity of growth parameters within a latent subgroup.

We tested several trajectories and selected the most suitable solution using the Akaike information criterion (AIC) and the Bayesian information criterion (BIC) value as well as the theoretical understanding of the trajectories. We assessed the classification accuracy of the individuals by the value of entropy ranging between 0 and 1, where 1 is the best classification. We estimated one- to six-class solutions of youth unemployment. The BIC values for classes beyond six were small and the P-values in the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-LRT) were not statistically significant. We chose the three-class model because it was statistically the most optimal in terms of the entropy values and also has statistically significant values for the LMR-LRT (Supplementary table S1). Also, the BIC and AIC values were not significantly different from the proceeding classes or those beyond. Furthermore, the three-class model was empirically meaningful with respect to the distribution of the latent structure of youth unemployment and there are no theoretical constraints for selecting this model.

We used multinomial logistic regression analysis to study the associations of grandparental, parental and adolescent variables with youth unemployment trajectories. First, we studied the bivariate associations, separately for adolescents, parents and grandparents, adjusted for age at baseline, sex and duration of follow-up. Second, to investigate whether the associations between grandparents’ circumstances and youth unemployment trajectories were mediated through parental socioeconomic circumstances, we conducted a multivariate analysis involving parental and grandparental socioeconomic circumstances (Supplementary table S2). Third, multivariate models involving all variables, which were statistically significant at the bivariate analysis, were fitted to study the independent associations.

Table 1 ORs and their 99% CIs for the bivariate associations with youth unemployment trajectories and adolescent characteristics adjusted for age, sex and duration of follow-up

| Variable | n=43 238 | Decreasing risk group | High-risk group |
|----------|----------|-----------------------|-----------------|
| Family structure | | | |
| Intact family (33 386) | 1.00 | 1.00 |
| Non-intact family (9624) | 1.28 (1.20–1.37) | 1.99 (1.83–2.16) |
| Parents divorced | | | |
| No (32 583) | 1.00 | 1.00 |
| Yes (10 465) | 1.21 (1.13–1.29) | 1.76 (1.62–1.90) |
| Death of parent(s) | | | |
| No (41 316) | 1.00 | 1.00 |
| Yes (1922) | 1.18 (1.03–1.35) | 1.57 (1.33–1.85) |
| School achievement | | | |
| Excellent (9225) | 1.00 | 1.00 |
| Good (12 567) | 1.59 (1.47–1.72) | 2.15 (1.88–2.45) |
| Average (15 117) | 2.05 (1.90–2.21) | 4.78 (4.22–5.41) |
| Low (5840) | 2.37 (2.14–2.62) | 8.43 (7.33–9.70) |
| Education reached by age 29 | | | |
| High (14 638) | 1.00 | 1.00 |
| Middle (24 344) | 1.31 (1.24–1.39) | 3.23 (2.93–3.55) |
| Low (4256) | 1.35 (1.21–1.51) | 7.80 (6.85–8.87) |
| Smoking | | | |
| No (32 436) | 1.00 | 1.00 |
| Yes (10 180) | 1.39 (1.30–1.49) | 2.22 (2.04–2.41) |
| Drunkenness | | | |
| Never (21 474) | 1.00 | 1.00 |
| 1–2 times/month/seldom (19 997) | 1.23 (1.06–1.20) | 1.26 (1.15–1.37) |
| Once a week or more often (1300) | 1.62 (1.35–1.93) | 3.21 (2.63–3.91) |
| Chronic disease | | | |
| No (39 491) | 1.00 | 1.00 |
| Yes (3747) | 1.04 (0.94–1.15) | 1.24 (1.09–1.40) |
| Stress symptoms | | | |
| None (17 479) | 1.00 | 1.00 |
| 1–3/week (20 424) | 1.11 (1.05–1.18) | 1.34 (1.23–1.45) |
| 4–8/week (5335) | 1.21 (1.11–1.33) | 1.82 (1.63–2.05) |
| Self-rated health | | | |
| Very good (14 180) | 1.00 | 1.00 |
| Average or good (28 064) | 1.33 (1.07–1.65) | 2.45 (1.92–3.1) |
| Poor (809) | 1.17 (1.11–1.25) | 1.35 (1.25–1.47) |

The reference is trajectory of low-risk unemployment.

Figure 1 Proportions of youth unemployment trajectories in Finland from 2000 to 2009
between youth unemployment trajectories and adolescents’ parental and grandparental variables. The estimates of the multinomial logistic regression analyses were performed using the SPSS package, version 23 and are presented as odds ratios (ORs) with 99% CIs.

**Results**

The proportion of youth unemployment was lowest in 2007 (15.7%) and highest in 2000 (25.5%). We found three developmental classes (trajectories) of youth unemployment in Finland. The proportion of the youth in the first, second and third latent classes were 45.7% (\(n=19\ 779\)), 15.9% (\(n=6858\)) and 38.4% (\(n=16\ 601\)), respectively. Correspondingly, the estimated probabilities (posterior probabilities) of belonging to these trajectories were 98.4, 88.7 and 86.2%, with entropy of 0.784 (Supplementary table S1). Figure 1 presents the proportions (%) of unemployed persons in the three trajectories marked as low, high and decreasing unemployment risk groups. The risk of youth unemployment was <10% among the low-risk group throughout the period.

All adolescents’ own factors were statistically significantly associated with both decreasing and high-risk youth unemployment trajectories in the bivariate models. The only exception was chronic disease, which was statistically significantly associated with only the high-risk unemployment trajectory (table 1). Clear gradients were found in associations of youth unemployment trajectories with most of the adolescents’ own factors. School achievement in adolescence showed the strongest association with youth unemployment followed by education attainment at age 29. The odds for being in high-risk unemployment trajectory were nine times higher for those with poor school achievement compared with those with excellent achievement and eight times higher for low education attainment at age 29 compared with those who attained high at that age.

All grandparental variables were statistically significantly associated with unemployment in the bivariate models (table 2A).

The reference is trajectory of low-risk unemployment.

### Table 2

| Variable | Grandparents | Parental | Parental |
|---------|--------------|----------|----------|
|         | Decreasing risk group | High-risk group | Decreasing risk group | High-risk group |
| SES     |              |          |          |          |
| Upper white-collar | 1.00 | 1.00 | 1.00 | 1.00 |
| Lower white-collar | 1.09 (0.90–1.32) | 1.28 (0.98–1.66) | 1.37 (1.27–1.48) | 1.67 (1.48–1.88) |
| Blue-collar | 1.42 (1.21–1.66) | 0.91 (1.53–2.37) | 1.74 (1.59–1.90) | 2.90 (2.55–3.29) |
| Agricultural entrepreneurs | 1.33 (1.12–1.58) | 1.21 (0.95–1.55) | 1.42 (1.17–1.73) | 1.48 (1.23–1.78) |
| Others | 1.24 (1.06–1.42) | 1.16 (0.95–1.42) | | |
| Unknown | 0.99 (0.86–1.14) | | | |
| Education |              |          |          |          |
| High | 1.00 | 1.00 | 1.00 | 1.00 |
| Middle | 1.62 (1.42–1.85) | 2.30 (1.84–2.87) | 1.83 (1.66–2.02) | 2.90 (2.46–3.42) |
| Low | 1.88 (1.66–2.14) | 3.09 (2.50–3.81) | 1.88 (1.69–2.08) | 3.73 (3.15–4.42) |
| Unknown | 1.42 (1.25–1.61) | 2.28 (1.84–2.82) | | |
| Dwelling |              |          |          |          |
| Owner-occupied | 1.00 | 1.00 | 1.00 | 1.00 |
| Rented | 1.06 (0.99–1.14) | 1.41 (1.23–1.54) | 1.41 (1.23–1.54) | 2.24 (2.05–2.45) |
| Unknown/other | 0.83 (0.79–0.87) | 0.88 (0.82–0.93) | | |
| Unemployment |              |          |          |          |
| Not unemployed | 1.00 | 1.00 | 1.00 | 1.00 |
| ≤1 year | 1.29 (1.19–1.40) | 1.47 (1.33–1.63) | 1.29 (1.20–1.40) | 1.51 (1.36–1.67) |
| >1 year | 1.41 (1.31–1.52) | 1.98 (1.81–2.16) | 1.45 (1.36–1.56) | 2.31 (2.12–2.51) |
| Smoking |              |          |          |          |
| Does not smoke | 1.00 | 1.00 | 1.00 | 1.00 |
| Smokes/stopped smoking | 1.19 (1.13–1.26) | 1.52 (1.31–1.64) | 1.24 (1.17–1.32) | 1.73 (1.61–1.87) |
to be unemployed compared with the grandchildren of upper white-collar employees. Also the lower the educational level of adolescents’ grandparents, the higher the likelihood of them being unemployed. In addition, the odds of high-risk of unemployment were higher among adolescents whose grandparents lived in rented dwellings compared with those with grandparents living in dwellings they owned. However, the risk was lower for the offspring whose grandparents’ dwelling status was unknown or who had dwelling other than owner-occupied or rented. All parental socioeconomic circumstances had a bivariate association with youth unemployment trajectories and the associations were stronger in the high-risk unemployment group than in the decreasing risk group (table 2B). Furthermore, those youth whose parents experienced unemployment were more likely to be at risk of unemployment themselves; and youth whose parents were smokers or past smokers had higher likelihood of unemployment than those whose parents did not smoke.

In a multivariable model containing the parental and grandparental variables simultaneously, the associations of grandparental socioeconomic variables with youth unemployment were attenuated. Only the associations of maternal grandparental education and grandparental dwelling type with high-risk youth unemployment trajectories retained their statistical significance. This suggests that some of the effects of grandparents’ socioeconomic circumstances on youth unemployment are mediated through the parents’ (Supplementary table S2).

Final multivariate models with all parental, grandparental and adolescents’ own factors are presented in table 3A and B. These results showed that adolescents’ own factors had the strongest effects on youth unemployment trajectories, school achievement in adolescence

| Variable                     | Decreasing risk group (A) | High-risk group (A) | Decreasing risk group (B) | High-risk group (B) |
|------------------------------|---------------------------|---------------------|---------------------------|---------------------|
| School achievement           | 1.00                      | 1.00                | 1.00                      | 1.00                |
| Education reached by age 29  |                           |                     |                           |                     |
| High                         | 1.00                      | 1.00                | 1.00                      | 1.00                |
| Middle                       | 0.99 (0.92–1.06)          | 1.87 (1.67–2.08)    | 2.99 (2.55–3.50)          |                     |
| Low                          | 0.82 (0.72–0.94)          |                     |                           |                     |
| Smoking                      |                           |                     |                           |                     |
| No                           | 1.00                      | 1.00                | 1.00                      | 1.00                |
| Yes                          | 1.15 (1.07–1.24)          | 1.28 (1.16–1.41)    |                           |                     |
| Stress symptoms              |                           |                     |                           |                     |
| None                         | 1.00                      | 1.00                | 1.00                      | 1.00                |
| 1–3/week                     | 1.11 (1.04–1.18)          | 1.25 (1.14–1.37)    | 1.38 (1.21–1.58)          |                     |
| 4–8/week                     | 1.13 (1.02–1.25)          | 1.38 (1.21–1.58)    |                           |                     |
| Self-rated health            |                           |                     |                           |                     |
| Very good                    | 1.00                      | 1.00                | 1.00                      | 1.00                |
| Average or good              | 1.08 (1.01–1.15)          | 1.10 (1.00–1.21)    | 1.16 (0.90–1.45)          | 1.64 (1.25–2.17)    |

n.s., not statistically significant.

Multivariate logistic regression models adjusted for age, sex and duration of follow-up. The reference is trajectory of low-risk unemployment.

Table 3 ORs and their 99% CIs for the associations with youth unemployment trajectories and grandparents’ and parents’ (A), and adolescents’ (B) circumstances

| Variable                     | Decreasing risk group (A) | High-risk group (A) | Decreasing risk group (B) | High-risk group (B) |
|------------------------------|---------------------------|---------------------|---------------------------|---------------------|
| Education                    |                           |                     |                           |                     |
| High                         | 1.00                      | 1.00                | 1.00                      | 1.00                |
| Middle                       | 1.25 (1.04–1.51)          | 1.38 (1.01–1.90)    | 1.03 (0.86–1.24)          | 1.00 (0.99–1.02)    |
| Low                          | 1.32 (1.11–1.58)          | 1.55 (1.14–2.09)    | 1.03 (0.86–1.24)          | 1.00 (0.99–1.02)    |

Parents’ SES

| Variable                     | Decreasing risk group (A) | High-risk group (A) | Decreasing risk group (B) | High-risk group (B) |
|------------------------------|---------------------------|---------------------|---------------------------|---------------------|
| Education                    |                           |                     |                           |                     |
| High                         | 1.00                      | 1.00                | 1.00                      | 1.00                |
| Middle                       | 1.21 (1.10–1.34)          | 1.20 (1.01–1.43)    | 1.18 (1.04–1.34)          | n.s.                |
| Low                          | 1.18 (1.05–1.32)          | 1.19 (0.99–1.42)    | 1.08 (0.94–1.24)          |                     |

Unemployment

| Variable                     | Decreasing risk group (A) | High-risk group (A) | Decreasing risk group (B) | High-risk group (B) |
|------------------------------|---------------------------|---------------------|---------------------------|---------------------|
| Education                    |                           |                     |                           |                     |
| High                         | 1.00                      | 1.00                | 1.00                      | 1.00                |
| Middle                       | 1.10 (1.00–1.19)          | 1.07 (0.95–1.20)    | 1.13 (1.05–1.23)          | 1.10 (0.98–1.23)    |
| Low                          | 1.16 (1.07–1.26)          | 1.28 (1.15–1.42)    | 1.22 (1.13–1.32)          | 1.51 (1.36–1.67)    |
being the strongest one. The associations of youth unemployment with the parental and grandparental variables were attenuated considerably and most of them lost their statistical significance. Maternal grandparental education was associated with both decreasing and high-risk youth unemployment trajectories, while paternal education was associated with only the decreasing risk of youth unemployment trajectory. The association of parental SES, education, and duration of unemployment with youth unemployment trajectories remained statistically significant but weak.

Discussion

Our study revealed three developmental trajectories of youth unemployment in Finland, namely: low, decreasing and high-risk groups. The socioeconomic circumstances of grandparents, particularly education, predicted the youth unemployment trajectories of their grandchildren but some were mediated through parental socioeconomic circumstances. Low parental SES, education, and long-term unemployment were associated with the children’s youth unemployment. School achievement was the strongest predictor of youth unemployment trajectories, along with smoking, stress symptoms and self-rated health. Youth unemployment was also associated with low education at the age of 29.

This study provides new evidence that the socioeconomic circumstances of grandparents and their education in particular are independently associated with youth unemployment, although parental socioeconomic circumstances mediate some of the effects of the grandparents. This finding supports earlier findings that suggest a transmission of behavioural and life style factors across generations.\(^3\)\(^4\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\(^3\)\[^{\textit{Key points}}\]

- Lower education and weaker socioeconomic circumstances of parents and grandparents, and parents’ unemployment predict youth unemployment.
- Poorer school achievement in adolescence predicts youth unemployment, and attained education level by age 29 is associated with unemployment.
- Poor perceived health and health-compromising behaviours in adolescence predict your unemployment, which supports the health selection hypothesis.

Conflicts of interest: None declared.
● Our findings underscore the need to invest in adolescents’ education and welfare policies to support families in order to prevent youth unemployment and its associated health implications.

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