

Patterns of Poor Health among Junior and Senior High School Students in Sweden

Sven Trygged, PhD
Åsa Backlund, PhD
Stig Elofsson, PhD

Objective: We examined how students' self-perceived poor health is associated with social background, family, and school situation. **Methods:** Questionnaires distributed to 13,006 students in Sweden were examined using logistic regression analyses. The investigation focused on students reporting both poor self-rated health and subjective health complaints, referred to as self-perceived poor health. **Results:** Besides age and sex, we found associations between self-perceived poor health and family structure, relationship with parents, and school-related factors such as truancy, grades, and perceived school climate. **Conclusions:** Self-perceived poor health is related to both family and school related factors. Therefore, preventive health interventions need to include both school and family. Special attention should be given to truant students.

Key words: social background; family situation; self-perceived poor health; health complaints; self-rated health; school truancy
Health Behav Policy Rev.™ 2017;4(3):294-305
DOI: <https://doi.org/10.14485/HBPR.4.3.10>

Most young people in Sweden are generally in good physical health. However, reports have begun to appear of declining health among children. In the last decade, a growing number of children and youth, especially girls, have been reporting psychological complaints.¹⁻³ The subjective component of health is important as “health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”⁴ Compared to other Nordic countries, self-reported psychosomatic problems are more frequent among young people in Sweden even though self-reported poor mental health also has increased in Finland and Norway.⁵ These reports must be taken seriously. Somatic symptoms in adolescence may predict severe adult mental health disorders.⁶

Research that examines associations between health and external influences^{2,7-9} establishes that health is related to socioeconomic factors,¹⁰ among other things, but research about health in relation to socioeconomic factors among young people is limited and shows partly different results.¹¹⁻¹⁴ There seems to be a “socio-economic health equaliza-

tion” mechanism at work in youth, which means that the association between socioeconomic factors and health that can be seen among children and adults is reduced during adolescence.^{7,14,15} Studies also show different associations between socioeconomic factors and self-rated health for girls and for boys.^{14,15} Other studies show associations between health and family and school-related factors. For example, register-based studies found associations between school failure and health constraints among children.^{16,17}

The school situation is of great importance for students' health. It involves school performance, peer relationships, teacher competence and student-teacher relationships, and more. Previous studies have found that high performance in school is linked to positive self-image, whereas lack of academic success is linked to anxiety and depression.¹⁸ Bullying and a bad climate in class/school is associated with poor health.¹⁹⁻²¹

Moreover, self-rated health also has been linked to family structure and family relations, with somewhat disparate results for boys and girls.^{5,8,22}

*Sven Trygged, University of Gävle, Department of Social Work and Psychology. Åsa Backlund, University of Gävle, Department of Social Work and Psychology, and Stig Elofsson, University of Gävle, Department of Social Work and Psychology, Gävle, Sweden.
Correspondence Dr Trygged; sven.trygged@hig.se*

However, few studies have included all these factors (social background, family circumstances, and school situation) and there is a need for more knowledge about how these conditions are linked to poor health among young people,²¹ including the impact of sex, as boys and girls show different patterns of self-reported health.^{1,12}

Purpose and Issues

This investigation focuses on students who do not assess their health as good but report a high incidence of health complaints, a joint measure we refer to as *self-perceived poor health*. Overall, the aim is to describe and analyze how boys' and girls' health situation, with respect to age, can be linked simultaneously to social background, family circumstances, and school situation. Our principal research question was: *How is self-perceived poor health among school students associated with their social background, family, and school situation?*

The Swedish School System

Because the study was performed in Sweden we present a brief description of the Swedish school system. Sweden has a mixed system of 9-year compulsory (primary) school followed by optional schooling. Elementary school (*lägstadiet*) for years 1–3 (age 7 to 9) is followed by middle school (*mellanstadiet*) for years 4–6 and then lower secondary school (*högstadiet*) for years 7–9. Three-year upper secondary school (*gymnasium*), divided into so-called programs, is optional and free of charge. Almost all students who finish compulsory school (9th grade) start upper secondary school. Health-promoting schooling is emphasized in the Swedish national curriculum²³ and the Swedish Education Act.²⁴

METHODS

Participants

The study is based on surveys administered to students in lower and upper secondary school (in the following designated as junior and senior high school to correspond approximately with the norm in the United States), with 13,006 responses altogether: 7234 from junior high school students (3724 boys, 3510 girls) and 5772 from senior high school students (2941 boys, 2831 girls).

Procedure

The data used were derived from surveys concerning boys' and girls' living conditions in 7 Swedish municipalities in the period 2004–2013. These surveys were conducted during class with staff present to answer any questions. No name was written on any questionnaire nor was there coding on the sheets, which means that there are no personal data linking survey responses to any individual. Each municipality chose a random sample of all students in the school stages studied. The number of missing cases includes students who for various reasons (eg, illness) were absent from the lesson in question and amounts to approximately 15% in junior high schools and 15% to 20% in senior high schools. The selection of municipalities can be viewed as an accessibility sample dependent on municipal interest in carrying out the investigation.

Outcome Variables

Health measures. We combined 2 different subjective health measures: (1) self-rated health (SRH); and (2) health complaints. This combined measure we refer to as self-perceived poor health.

Students were asked to describe their health (“my health is...”) with the response alternatives *very good*, *good*, *neither good nor bad*, *poor*, and *very poor*. Previous studies have found that SRH is a robust predictor of future morbidity and mortality among adults.²⁵ However, knowledge is more limited regarding the extent to which this applies equally among children and youth, but it seems to be a reliable measure of their physical and emotional well-being.^{26–28}

The measure regarding health complaints is based on the students' own assessments of how often they have any or all the following 7 symptoms: headaches, stomach aches (excluding menstrual cramps), irritability/bad mood, extreme tiredness, difficulty falling asleep or sleeping poorly, feeling low, feeling uneasy. In this study, “oftentimes” = “at least once a week.” Such self-rated occurrence of symptoms has been used in several studies.^{1,8,29,30}

Independent Variables

Measures of social background. Social background refers to socioeconomic and sociodemographic conditions. We capture socioeconomic

background here using a material measure applied previously in other studies:^{31,32} type of housing and access to a car, a boat, and/or a summer house. An advantage of using this measure in comparison with, for example, parental education and employment, is that the number of internal missing cases is limited.³¹ Data on sociodemographic conditions include sex, age and native or immigrant background using 4 categories: (1) born in Sweden, both parents born in Sweden; (2) born in Sweden, one parent born abroad; (3) born in Sweden, both parents born abroad; and (4) born abroad with both parents born abroad.

Dimensions of family situation. Data on students' family situation are taken from 2 questions measuring family structure and relationship with parents: (1) What adults do you live with? Response alternatives: mother and father, only mother, only father, mother and another adult, father and another adult, sometimes mother/sometimes father, other adults, live alone. (2) Is there someone in whom you can confide? Among response alternatives are "a parent," "a teacher" (and some other alternatives not reported in this study) with the possibility of marking several alternatives. Marking "a parent" is categorized as confidence in parent. Not marking "a parent" is here understood as an indication of a more problematic emotional relationship with parents, because it can be expected that a good parent-child relationship includes trustful communication.

Measures of school situation. The students' school situation was measured through *self-reported truancy*, *self-estimated grades*, their ratings of *the climate in school/class*, and *relationships with teachers*.

Truancy was measured with the question: "Do you tend to be away from school without being sick or having another valid excuse?" with response alternatives of *never*, *on single occasions*, *once a month*, *2-3 days a month*, *4-8 days a month*, *more than 8 days per month*.

Self-estimated ratings of grades in some key school subjects in junior high included Swedish, English, mathematics, civics, sports and health, and crafts; in senior high, subjects included Swedish, English, mathematics, civics, sports, art). Poor grades were "very low" or "non-passing" grades (as the grading system was changed during the study period).

School/class climate was based on students' responses to 11 statements about the situation in the school/class with the item stem: "How do you experience your class at school?" The response options were: *agree completely*, *agree mostly*, *do not agree much*, and *disagree*.

- There is usually a good working atmosphere and quiet.
- There is a good, positive mood.
- There is good harmony/cohesion.
- There is bullying.
- Bad language/swearing is common.
- There is violence.
- There is xenophobia.
- I feel that I learn important things.
- There are good teachers.
- I get the support I need to succeed in school.
- I get the stimulation I need for school work.

An exploratory factor analysis showed that responses to these 11 items could be captured in 3 dimensions: (1) positive elements in school climate include good working atmosphere, positive overall mood, and cohesion; (2) negative elements, including incidences of bullying, bad language/swearing, xenophobia, and violence; and (3) a third dimension encompassing 3 statements – receiving the support and the stimulation they need, having good teachers, and thinking that what they learn in school is important. As measures of these dimensions the average of the responses to the questions included in each dimension was used, where *agree completely* was coded 1 and *disagree* was coded 4. This means that low values indicate a more positive situation for the positive elements of school climate and support/stimulation. In contrast, lower values for the negative elements in the school environment show the situation as worse. Note that we studied how the individual student perceived the climate in class, not how students as a group evaluated the school climate. The students' relationship with teachers at school is measured by their response to a question that parallels one noted above about parents – *Is there someone in whom you can confide?* – with a list of alternatives. Marking "a teacher" is interpreted as an indication of confidence based on teacher performance and relationship to the stu-

Table 1
Percentage of Youth Reporting Poor Health (SRH) and Frequent Health Complaints by School Level and Sex

	Jr High school		Sr High school	
	Boys	Girls	Boys	Girls
N =	3709	3502	2929	2822
SRH poor	11.2	15.9***	14.7	22.3***
Health complaints	7.0	17.3***	5.9	17.9***
SRH poor plus health complaints	1.4	3.9***	2.3	8.3***

*** p < .001

dent and not teacher competence only. The factor analysis with promax rotation explained 60% of the variance, factor 1 (34%), factor 2 (16%) and factor 3 (11%) with factors at 0.60 or higher.

Data Analysis

We used hierarchical binary logistic regression analyses in 2 models. In the first model the associations with social background and the family situation (living conditions and relationship with parents) were studied. The second model shows associations to the school situation and includes students' rating of the class climate and experience of relationships with teachers after controlling for social background. This model also includes self-reported truancy and self-ratings regarding some key school subjects. We computed analyses separately by sex (girls vs boys) and school level (junior high vs senior high). Data were analyzed with SPSS Version 21.

RESULTS

The results of the analyses are presented chronologically with the results for junior high school followed by those for senior high. We also report comparisons between boys and girls. In Table 1 the target group and outcome variables are shown, whereas Table 2 reports basic data and the distribution of the independent variables.

We did some separate data procedures dividing SRH and complaints (not shown) and found some variations in the different sub-groups, but the correlations for these 2 measures are similar. It may be that SRH refers to physical health, whereas complaints rather capture lack of mental well-being; however, confirming this was not possible to study

from this dataset.

As indicated earlier, there are 2 ways of expressing an unsatisfactory health situation. We decided to focus on the group reporting both low SRH and frequent health complaints as we assumed that this would be a group of students with the most severe health situation. Table 2 shows the distribution among independent variables and the percentage of students reporting poor health.

Girls report poorer SRH and more frequent health complaints than boys. A somewhat larger proportion of the students come from families with better material resources. Material resources seem to be associated with better health as the risk for poor health increases with weaker material resources.

The percentage of youth with first- or second-generation immigrant background (categories 4 and 3) amounts to 15% to 17% respectively. There was no obvious health difference between youth of immigrant background versus Swedish origin.

Reported poor health is clearly associated with *family structure* and *relationship with parents*. Most adolescents live with both their biological parents. Among junior high school girls, those who live with single mothers or mother and another adult (stepfather) rate their health lower. Among senior high school students, boys living with a single father or on their own, and girls living with single mothers, with mother and stepfather, or living on their own rate their health lower than those living with both parents. More than 80% report that they have confidence in a parent; however, a prominent result is that students who do not say they have confidence in a parent, to a lesser degree, report their health as good.

Table 2
Description of Independent Variables (Numbers, Means) and Associations with Perceived Poor Health (Percentage, Correlations) by School Level and Sex

	Distribution (N and %)				Students (%) with perceived poor health			
	Jr high		Sr high		Jr high		Sr high	
	N	%	N	%	Boys	Girls	Boys	Girls
Number of students	7234		5772		3724	3510	2941	2831
Total					1.4	3.9	2.3	8.3
Family material resources						*	***	**
Very large	822	11	601	10	1.8	4.8	1.9	6.1
Rather large	2386	33	1752	34	1.4	5.5	1.7	7.4
Average	2997	42	2316	40	2.4	4.9	2.1	8.1
Rather small	825	11	636	11	1.0	9.0	4.9	12.4
Small	181	3	271	5	4.8	8.5	4.3	13.2
Immigrant background								
Swedish origin	5261	72	4051	70	1.8	4.9	2.0	7.8
Born in Sweden, one parent born abroad	972	13	790	14	2.6	7.8	2.3	9.9
Born in Sweden, both parents born abroad	732	10	499	9	1.6	7.0	1.2	9.8
Born abroad, both parents born abroad	360	5	458	8	3.3	8.4	4.8	9.5
Family situation: live with					***	***	***	*
Both parents	5018	69	3610	63	1.5	4.2	1.9	7.6
Single mother	498	7	644	11	2.8	10.8	3.9	10.2
Single father	91	1	161	3	4.0	4.9	8.5	7.6
Alternate between parents	1210	17	693	12	2.7	5.7	1.6	8.3
Mother and stepfather	289	4	385	7	2.2	15.2	3.0	9.2
Father and stepmother	61	1	92	2	0.0	12.0	2.3	10.4
Live on my own			115	2			9.3	12.7
Confidence in parents					***	***	***	***
No	1170	16	1040	18	5.9	14.3	5.9	18.1
Yes	6110	84	4758	82	1.3	3.9	1.6	6.2
Confidence in teachers						**	*	
No	4353	60	3955	68	2.3	6.6	2.8	9.3
Yes	2927	40	1843	32	1.5	4.0	1.8	5.9
Truancy					***	***	***	***
Never	4747	69	2005	35	0.9	3.0	1.0	4.2
Single hours	1283	18	2111	37	2.8	6.8	1.6	7.2
One day per month	563	8	485	9	2.5	11.2	2.0	8.0
2-3 days per month	354	5	647	11	4.5	20.4	2.8	12.6
4-8 days per month	72	1	269	5	9.7	10.0	8.2	19.9
More than 8 days per month	87	1	145	3	26.9	26.5	12.3	38.0
Poor estimated grades					***	***	**	***
No	6166	92	5052	93	1.7	5.1	2.1	7.3
Yes	525	8	367	7	5.4	14.8	5.3	21.5
	Mean				Correlations with perceived poor health			
	Jr high school		Sr high school		Jr high school		Sr high school	
	Mean		Mean		p	F	p	F
School climate – positive	2.15		1.98		.12***	0.12***	.08***	0.12***
School climate – negative	2.65		2.88		-.04*	-0.07***	-.06**	-0.06**
School climate –support/stimulation	1.87		1.91		.11***	0.18***	.07***	0.16***

* p < .05, ** p < .01, *** p < .001

Table 3
Perceived Poor Health in Junior High by Sex (Results from Binary Logistic Regression Analyses) Including Odds Ratios with 95% Confidence Intervals and Level of Statistical Significance

	Boys		Girls	
	Model 1	Model 2	Model 1	Model 2
Number of students	3653	3235	3452	3122
Pseudo R² (Nagelkerke)	10.1	21.0	9.9	21.3
Family material resources				
Very large	0.83 (0.38-1.83)	1.28 (0.53-2.86)	1.20 (0.70-2.07)	1.23 (0.67-2.25)
Rather large	0.61 (0.34-1.11)	0.68 (0.35-1.33)	1.22 (0.70-2.07)	1.35 (0.91-2.01)
Average	1.00	1.00	1.00	1.00
Rather small	0.32 (0.11-0.92)	0.49 (0.17-1.45)	1.58 (1.02-2.47)	1.54 (0.96-2.49)
Small	1.27 (0.40-4.02)	1.86 (0.55-6.28)	1.07 (0.47-2.48)	0.95 (0.39-2.28)
Immigrant background				
Swedish origin	1.00	1.00	1.00	1.00
Born in Sweden, one parent born abroad	1.13 (0.57-2.22)	1.11 (0.51-2.45)	1.41 (0.94-2.11)	1.43 (0.91-2.23)
Born in Sweden, both parents born abroad	0.98 (0.40-2.40)	0.99 (0.38-2.60)	1.36 (0.85-2.19)	1.36 (0.88-2.36)
Born abroad, both parents born abroad	1.35 (0.51-3.57)	1.17 (0.38-3.63)	1.23 (0.66-2.29)	1.40 (0.76-2.80)
Family situation: live with				
	**		***	*
Both parents	1.00	1.00	1.00	1.00
Single mother	1.62 (0.64-4.10)	0.88 (0.29-2.73)	2.17 (1.37-3.45)	2.07 (1.26-3.39)
Single father	2.18 (0.49-9.67)	3.74 (0.89-16.7)	0.84 (0.20-3.58)	0.82 (0.18-3.80)
Alternate between parents	1.91 (1.05-3.45)	1.40 (0.72-2.70)	1.33 (0.88-2.01)	1.21 (0.77-1.91)
Mother and stepfather	1.26 (0.38-4.21)	0.71 (0.18-2.74)	3.28 (1.99-5.40)	2.18 (1.24-3.82)
Father and stepmother	0.00 (0.00-)	0.00 (0.00-)	2.71 (0.77-9.52)	1.78 (0.36-8.84)
Confidence in parents				
	***	***	***	***
No	4.29 (2.62-7.03)	2.65 (1.49-4.73)	3.73 (2.74-5.07)	2.64 (1.87-3.72)
Yes	1.00	1.00	1.00	1.00
School climate – positive				
		2.09 (1.38-3.16)		1.40 (1.07-1.87)
School climate – negative				
		1.08 (0.78-1.49)		1.08 (0.78-1.49)
School climate – support/stimulation				
		1.08 (0.73-1.60)		1.77 (1.39-2.25)
Confidence in teachers				
No		1.00		1.00
Yes		1.18 (0.65-2.15)		0.90 (0.63-1.31)
Truancy				
		***		***
Never		1.00		1.00
Single hours		2.47 (1.22-5.01)		1.73 (1.13-2.64)
One day per month		2.70 (1.10-6.64)		3.46 (2.13-5.61)
2-3 days per month		3.52 (1.36-9.11)		5.27 (3.25-8.55)
4-8 days per month		8.61 (1.77-42.0)		1.90 (0.60-6.01)
More than 8 days per month		13.0 (4.81-34.9)		3.99 (1.45-11.0)
Poor estimated grades				
No		1.00		1.00
Yes		1.74 (0.85-3.56)		1.52 (0.94-2.47)

* p < .05, ** p < .01, *** p < .001

Table 4
Perceived Poor Health in Senior High by Sex (Results from Binary Logistic Regression Analyses Including Odds Ratios with 95% Confidence Intervals and Level of Statistical Significance)

	Boys		Girls	
	Model 1	Model 2	Model 1	Model 2
Number of students	2908	2643	2810	2586
Pseudo R² (Nagelkerke)	10.3	18.1	6.0	15.3
Family material resources				
Very large	0.53 (0.16-1.81)	0.64 (0.18-2.25)	0.80 (0.46-1.40)	0.95 (0.53-1.70)
Rather large	1.00 (0.53-1.91)	1.20 (0.60-2.39)	0.97 (0.69-1.34)	1.10 (0.77-1.57)
Average	1.00	1.00	1.00	1.00
Rather small	1.83 (0.90-3.71)	2.02 (0.92-4.48)	1.50 (0.99-2.30)	1.21 (0.76-1.96)
Small	1.22 (0.42-1.89)	1.05 (0.31-3.64)	1.45 (0.83-2.53)	1.43 (0.77-2.66)
Immigrant background				
Swedish origin	1.00	1.00	1.00	1.00
Born in Sweden, one parent born abroad	0.89 (0.42-1.89)	0.73 (0.31-1.72)	1.24 (0.85-1.81)	1.16 (0.77-1.74)
Born in Sweden, both parents born abroad	0.43 (0.13-1.45)	0.49 (0.18-1.66)	0.94 (0.58-1.53)	0.72 (0.41-1.24)
Born abroad, both parents born abroad	1.43 (0.66-3.10)	1.32 (0.55-3.14)	0.89 (0.53-1.50)	0.92 (0.52-1.64)
Family situation: live with				
Both parents	**	*		
Single mother	2.36 (1.12-4.98)	2.10 (0.93-4.76)	1.14 (0.75-1.74)	0.92 (0.57-1.48)
Single father	5.67 (2.43-13.2)	4.78 (1.86-12.3)	0.86 (0.33-2.21)	0.69 (0.24-2.01)
Alternate between parents	1.22 (0.49-3.03)	1.04 (0.39-2.83)	1.13 (0.73-1.77)	1.14 (0.70-1.85)
Mother and stepfather	1.90 (0.70-5.11)	1.94 (0.70-5.42)	1.05 (0.63-1.74)	1.00 (0.58-1.71)
Father and stepmother	1.46 (0.19-11.3)	1.48 (0.18-2.08)	1.13 (0.43-2.97)	1.25 (0.46-3.41)
Live on my own	6.10 (1.95-19.1)	3.99 (1.10-14.5)	1.35 (0.64-2.86)	1.2 (0.58-2.79)
Confidence in parents				
No	***	***	***	***
Yes	2.88 (1.70-4.90)	2.81 (1.57-5.02)	3.21 (2.40-4.28)	2.61 (1.89-3.59)
School climate – positive				
		1.44 (0.95-2.18)		1.30 (1.03-1.65)
School climate – negative				
		0.76 (0.55-1.05)		0.88 (0.71-1.65)
School climate – support/stimulation				
		0.99 (0.67-1.45)		1.51 (1.20-1.91)
Confidence in teachers				
No		1.00		1.00
Yes		1.17 (0.63-2.18)		0.84 (0.59-1.11)
Truancy				
Never		**		***
Single hours		1.00		1.00
Single hours		1.21 (0.54-2.67)		1.50 (0.99-2.29)
One day per month		1.28 (0.40-4.16)		1.53 (0.84-2.80)
2-3 days per month		1.61 (0.61-4.27)		2.29 (1.38-3.78)
4-8 days per month		4.47 (1.72-11.6)		3.63 (2.05-6.42)
More than 8 days per month		6.95 (2.38-20.3)		5.86 (3.00-11.5)
Poor estimated grades				
No		1.00		1.00
Yes		1.02 (0.43-2.41)		2.15 (1.38-3.39)

* p < .05, ** p < .01, *** p < .001

Among school factors, health is related to truancy, grades, school climate (support and stimulation or lack thereof) and confidence in teachers. Between 32% and 40% of students report confidence in a teacher, a higher percentage among junior high students. As mentioned, the measure of confidence demanded an active choice from the respondent, which hence can be understood as a ‘strong’ indicator that captures an emotional dimension rather than absence of distrust. The association between confidence in teachers and students’ self-perceived health was moderate. There are clear sex differences – girls give a more negative picture regarding both positive and negative elements in the school climate. Concerning received support/stimulation, sex differences are limited, but girls in junior high school indicate somewhat less support. The incidence of truancy is far more common in senior than in junior high school. In both cases, there is clear indication that girls are truant more often than boys.

To analyze patterns of poor health further, Tables 3 and 4 present 2 statistical models showing the relationship between poor health and social background, family situation (model 1), and school situation (model 2). In the models, results are separated for boys and girls. Table 3 shows the results for students in junior high school and Table 4 shows the results for students in senior high school.

Because associations with family resources and immigrant ties were weak, these factors seemed to play a minor role regarding students’ health. However, family structure, and especially, confidence in parents, were linked clearly to perceived state of health. Regarding school situation, “positive” elements as well as the availability of support are linked to better health whereas the link to “negative” elements here is weak. Perceived poor health is associated with both truancy and poor grades.

The overall pattern in senior high school is similar to what we see among junior high school students. Family situation seems to be more related to poor health among girls than among boys in junior high, whereas the reverse seems to be the case in senior high. For boys in senior high school, poor health is related to living with a single mother, but is even more associated with living with a single father or living on one’s own. Just as in junior high school, the link with confidence in teachers is weak. It becomes clear that the greater the occurrence of

truancy, the poorer the self-perceived health in senior high school.

DISCUSSION

We investigated how self-perceived poor health is associated with social background and family and school situation, and focuses on students reporting self-perceived poor health, ie, less favorable self-rated health (SRH) along with frequent health complaints. This group of students needing special attention was small, but most likely, a vulnerable group. In line with previous findings, girls generally reported more health problems than boys^{1,5} and the same pattern also appears among those with self-perceived poor health.

Social Background

The results show an association between socioeconomic conditions and poor health but only in bivariate analyses (Table 2). There is a weak association for girls who live with a single mother, and perhaps because of this, more often have access to fewer resources; however, these differences are limited. In the literature, the relationship between socioeconomic background and health gives inconsistent results for this category of young people.¹³ To untangle the relationship between socioeconomic conditions and health further, we made some separate analyses. We found a clear association between socioeconomic background and academic achievement – better self-reported grades with better economy and vice versa (not shown) which is in line with previous research.²³ This indicates that academic achievement could be an important intervening variable in associations between health and socioeconomic factors among young people.

Regarding immigrant background and health in students, no clear patterns were found in either junior or senior high school. Previous studies show somewhat disparate results for the association between immigrant background and health among Swedish youth. For example, in one study, immigrant background was associated with more health complaints among girls;³³ in another, immigrant background was a protective health factor for girls.¹⁵

Family

Self-perceived poor health was related to fam-

ily structure and relationship with parents. Living with a single parent, in new family constellations or sometimes on their own may reflect conflicts or strained relations within the family. A previous study also found that the group of students who consistently report psychological complaints are those who indicate that they do not live with either of their parents.³⁴ However, it is important to remember that the relationship to parents has a greater impact on outcomes than family structure, for example, whether parents are separated or live together. There was a strong link between students not reporting confidence in a parent and self-perceived poor health. A previous study also highlighted the relationship between youth and their parents during the teenage years.³⁵

School

There was an obvious relationship between truancy and poor health – the more truancy, the poorer the health. There was also a relationship between poor grades and poor health, but not as obvious, and mostly among girls (Table 4). Previous studies have shown a connection between school performance and poor mental health, and how a mutual causal relationship between these factors can be a vicious circle.³⁶ The difference in means for estimated grades between girls and boys was surprisingly small as girls tend to have better grades than boys.^{37,38} Even looking at the proportion of students not achieving grades in all subjects, the differences between the sexes was slight. This may reflect socially accepted behavior and sex roles; eg, that girls underestimate their academic performance whereas boys overestimate theirs. This may be reinforced if girls relate to other girls and boys to other boys, and if so, this might help explain why the relationship between poor grades and poor health was not that obvious.

Both truancy and poor grades are clear indicators of students' lack of well-being.^{1,7} School failure puts a lot of stress on students, as acceptable grades in junior high increase the possibility of choosing among different programs in senior high. In senior high school, it is necessary to get a passing grade in enough subjects to graduate. Older students reported more complaints than younger. Many who fail in senior high school face negative consequences in self-esteem as well as job opportunities.

Passing grades are also a key to gaining access to post-secondary programs.

Among school factors, poor health was also related to what we interpret as a lack of positive school climate and teacher support. In senior high, lack of support seems to be even more important among girls than for boys. However, the relationship with "negative" elements (perceived prevalence of violence and bullying) appears to have limited significance for self-rated health. This seems surprising, but suggests that it is rather the absence or lack of positive elements in the school environment and not specific negative factors that is more important. An established fact is that a poor working environment among adults may lead to reduced health. Because adolescents spend so much time in school, school is their "working environment" and the school climate is part of this. This suggests that a good, stimulating school situation can serve as a health-promoting factor. What may be referred to as *school connectedness* is "the belief held by students that adults and peers in the school care about their learning as well as about them as individuals."³⁹ Even though there is considerable inconsistency in the concept, school connectedness is important to youth wellness;^{22,40,41} young people who feel connected to their school are less likely to engage in many risk behaviors, to have better school attendance, and consequently, to have better academic success.

Strengths and Limitations

The material makes it possible to study links between health and background variables with a high level of detail, eg, regarding family situation. It seems reasonable that the results are relevant for all of Sweden, except for some rural areas, because no rural schools were included in the sample. The generalizability of results to other times and countries is unclear, although some results such as sex differences may be similar in many other countries as well.⁴²

The question about material resources only measures one dimension of socioeconomic position (SEP), but has been done in previous studies^{11,31,32,43} as it seems to be a reliable and simple construct to which students can respond. Other SEP measures, such as parents' occupation or education level, garnered through students' self-report,

may be less trustworthy as students may not be able to give accurate answers.

Regarding the measure of confidence in the questionnaires, most likely “to confide in a teacher” captures an emotional dimension and not just teacher competence. Because we could not scrutinize this point further, we used the construct sparingly when interpreting our results.

The use of questionnaires may capture students not actively reporting poor health to school staff, but in the interpretation of results, it is important to remember that the data come from cross-sectional studies; thus, it is not possible to approach issues of causality. Although there are some repeated studies of the same grade levels in several of the municipalities, there is no follow-up of the same students over time. The discussion, the directions, and the effects of different associations build on theoretical or logical grounds, which cannot be tested by the material used. Another limitation is that there is no possibility of comparing the responses with clinical data. Also, no lifestyle indicators such as sports, drinking, and smoking were included. Regarding missing cases, about 15% to 20%, there was no further information beyond that of students not attending school on that day. If there is any tendency in the missing cases, this most likely would be youngsters with invalid absences; in that case, it might indicate a risk of underestimate in our results for truancy and poor health. What also needs to be considered when dealing with self-reported data is that children and adolescents sometimes report poorly, particularly younger, and lower-performing children, who are more likely to report their grades and attendance inaccurately.⁴⁴

Conclusion

Self-perceived poor health among students in junior and senior high school was related to not having confidence in parents, living with single parents, living in reconstructed families, or living on their own. Among school factors, self-perceived poor health was related to truancy, low grades, lack of a positive school climate, and lack of adult support. School authorities need to address the findings relating to school factors. One concrete example would be to make sure truant students meet supportive staff because repeated truancy is a strong marker of poor health.

IMPLICATIONS FOR HEALTH BEHAVIOR OR POLICY

These results show that it is important to pay attention in health-promoting and preventive work to social factors related both to students’ family and school situations. Strategically, health-promoting work in school should include systematic evaluation of students’ perception of school climate and received support. It is particularly important to investigate the situation of truant students. To offer social support to children and families with strained relations schools may need to cooperate with social services and other organizations. This includes close cooperation between school health personnel and school social workers/school counselors in both operative and strategic work. The results could be summarized in 3 policy/practice recommendations:

- It is important to promote a good school climate where adults and peers care about students’ learning as well as about them as individuals
- It is also important to find strategies to support students having strained relationships with parents – particularly essential in the case of students who live with single parents, in reconstructed families, or live separated from their parents.
- Special attention should be paid to the health status of truant students.

Acknowledgements

The Clas Groschinsky Memorial Fund and the University of Gävle Faculty of Health and Occupational Studies funded this project. The authors thank Bo Vinnerljung, Stockholm University, for comments on a draft version.

Human Subjects Approval Statement

Investigations were conducted by the municipalities in collaboration with researchers Ulf Blomdahl, Stockholm Municipality, and Stig Elofsson, Department of Social Work at Stockholm University and University of Gävle, who have been permitted from Fritidsförvaltningen (the relevant Stockholm Municipality department) to use collected data for research.

Conflict of Interest Disclosure Statement

The authors report no conflicts of interest.

References

1. Nygren K. Adolescent self-reported health in the Umeå region. *Associations with behavioral, parental and school factors*. [Doctoral Dissertation]. Umeå, Sweden: Department of Social Work, Umeå University; 2012.
2. The (Swedish) National Board of Health and Welfare and the Centre for Health Equity Studies. *Skolans betydelse för barns och ungas psykiska hälsa – en studie baserad på den nationella totalundersökningen i årskurs 6 och 9 hösten 2009*. [The school's impact on children's and young people's mental health]. Stockholm, Sweden: Swedish National Board of Health; 2012.
3. The (Swedish) National Board of Health and Welfare and Folkhälsoinstitutet *Folkhälsan Sverige Årsrapport 2013* [Public health in Sweden. Annual review 2013]. Stockholm, Sweden: Swedish National Board of Health; 2013.
4. World Health Organization. WHO Definition of Health. 2014. Available at: <http://www.who.int/about/definition/en/print.html>. Accessed November 15, 2015.
5. Hagqvist C. *Skolelevers psykiska hälsa*. [School children's psychic health] Stockholm, Sweden: Nordens välfärdscenter. [The Nordic Centre for Welfare and Social Issues]; 2015.
6. Bohman H, Jonsson U, Päären A, et al. Prognostic significance of functional somatic symptoms in adolescence: a 15-year community-based follow-up study of adolescents with depression compared with healthy peers. *BMC Psychiatry*. 2012;12:90.
7. Vinnerljung B, Berlin M, Hjern A. Skolbetyg, utbildning och risker för ogynnsam utveckling hos barn. Stockholm: Sweden Socialstyrelsen *Social Rapport 2010*. [The (Swedish) National Board of Health and Welfare Social Report 2010]; 2010.
8. Brodin Låftman S, Östberg V. The pros and cons of social relations: an analysis of adolescents' health complaints. *Soc Sci Med*. 2006;63(3):611-623.
9. Olsson E. The role of relations: do disadvantaged adolescents benefit more from high-quality social relations? *Acta Sociologica*. 2009;52(3):263-286.
10. World Health Organization (WHO). *2015 Global Reference List of 100 Core Health Indicators*. Geneva, Switzerland: WHO; 2015. Available at: http://apps.who.int/iris/bitstream/10665/173589/1/WHO_HIS_HSI_2015.3_eng.pdf?ua=1&u=1. Accessed June 23, 2016.
11. Currie C, Hurrelmann K, Settertobulte W, et al. eds. *Health and Health Behaviour among Young People: Health Behaviour in School-aged Children*. Copenhagen, Denmark: World Health Organization; 2000.
12. Jerdén L, Burell G, Stenlund H, et al. Gender differences and predictors of self-rated health development among Swedish adolescents. *J Adolesc Health*. 2011;48(2):143-150.
13. Reiss F. Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. *Soc Sci Med*. 2013;90:24-31.
14. West P, Sweeting H. Evidence on equalisation in health in youth from the west of Scotland. *Soc Sci Med*. 2004;59(1):13-27.
15. Hutton K, Nyholm M, Nygren JM, Svedberg P. Self-rated mental health and socio-economic background: a study of adolescents in Sweden. *BMC Public Health*. 2014;14:394.
16. Gauffin K, Vinnerljung B, Hjern A. School performance and alcohol-related disorders in early adulthood: a Swedish national cohort study. *Int J Epidemiol*. 2015;44(3):919-927.
17. Ringbäck Weitoft G, Hjern A, Batljan I, Vinnerljung B. Health and social outcomes among children in low-income families and families receiving social assistance – a Swedish national cohort study. *Soc Sci Med*. 2008;66(1):14-30.
18. Petersen S, Bergström E, Cederblad M, et al. *Barns och ungdomars psykiska hälsa i Sverige. En systematisk litteraturöversikt med tonvikt på förändringar över tid*. [Child and adolescent mental health in Sweden. A systematic literature review with emphasis on changes over time]. Stockholm, Sweden: The Royal Swedish Academy of Sciences; 2010.
19. Anvik C. Unge, psykisk helse og utenforskap, en norsk kontekst. In Olsen, Terje og Jenny Tägtström, eds. *For det som vokser. Unge, psykisk uhelse og tidlig uførepensjonering i Norden*. [For what is growing. Youth, psychic ill-health and disability pension in the Nordic countries]. Stockholm, Sweden: The Nordic Centre for Welfare and Social Issues; 2013:97-119.
20. Due P, Damsgard MT, Lund R, Holstein BE. Is bullying equally harmful for rich and poor children? A study of bullying and depression from age 15 to 27. *Eur J Public Health*. 2009;19(5):464-469. Available at: <https://academic.oup.com/eurpub/article/19/5/464/512855/Is-bullying-equally-harmful-for-rich-and-poor>. Accessed March 19, 2017.
21. Beckman L, Hagqvist C. *Hur mår barn och ungdomar i Sverige? Analys av den officiella bilden, mediebilderna och bilden från forskningen*. [How are children and adolescents in Sweden? Analysis of the official image, the media image and the image of the research]. Karlstad, Sweden: Karlstad University; 2010.
22. Oldfield J, Humphrey N, Hebron, J. The role of parental and peer attachment relationships and school connectedness in predicting adolescent mental health outcomes. *Child Adolesc Ment Health*. 2015;21:21-29.
23. Swedish National Agency for Education. *Vad påverkar resultaten i svensk grundskola? Kunskapsöversikt om betydelsen av olika faktorer* [What affects the results of the Swedish elementary school? Systematic review of the importance of different factors]. Stockholm, Sweden: Swedish National Agency for Education; 2009.
24. SFS 2010:800 Skollag. [Swedish Educational Act] Sveriges riksdag, Utbildningsdepartementet. Available at: https://www.riksdagen.se/sv/Dokument-Lagar/Lagar/Svenskforfattningssamling/Skollag-2010800_sfs-2010-800/. Accessed February 5, 2016.
25. Idler EL, Benyaamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *J Health Soc Behav*. 1997;3(1):21-37.
26. Boardman JD. Self-rated health among U.S. adolescents. *J Adolesc Health*. 2006;38(4):401-408.
27. Fosse NE, Haas SA. Validity and stability of self-reported

- health among adolescents in a longitudinal, nationally representative survey. *Pediatrics*, 2009;123(3):e496-e501.
28. Richter M, Rathman, K, Gabhainn Saoirse N, et al. Welfare state regimes, health and health inequalities in adolescence: a multilevel study in 32 countries *Sociol Health Illn*. 2012;34(6):858-879.
 29. Danielsson M. *Svenska skolbarns hälsövanor 2001/02. Grundrapport 2003:50*. [Report on Swedish school children's health 2001/02]. Stockholm, Sweden: Statens folkhälsoinstitut; 2003. Available at: <https://www.folkhalsomyndigheten.se/pagefiles/13920/svenska-skolbarns-halsövanor-2001-2002.pdf>. Accessed March 19, 2017.
 30. Danielsson M. *Svenska skolbarns hälsövanor 2005/2006. Grundrapport*. [Report on Swedish school children's health 2005/06]. Stockholm, Sweden: Statens folkhälsoinstitut; 2006.
 31. Blomdahl U, Elofsson S. Hur många motionerar/idrottar för lite och vilka är dom? [How many do too little physical activity/sports and who are they]. Idrottsförvaltningen Stockholms stad och Stockholms universitet, [Stockholm municipality and Stockholm university] Stockholm, Sweden: Stockholm University; 2007.
 32. Larsson B. Ungdomarna och idrotten tonåringars idrottande i fyra skilda miljöer [Youth and sport: adolescent sportsmen in four distinct environments]. Pedagogiska institutionen, Stockholms universitet. [Doctoral Dissertation]. Stockholm, Sweden: Stockholm University; 2008.
 33. Carlerby H, Viitasara E, Knutsson A, Gillander Gådin K. Subjective health complaints among boys and girls in the Swedish HBSC study: focusing on parental foreign background. *Int J Public Health*. 2011;56:457-464.
 34. Statens folkhälsoinstitut. *Kartläggning av psykisk hälsa bland barn och unga. Resultat från den nationella totalundersökningen i årskurs 6 och 9 hösten 2009* [Survey of mental health among children and young people. Results of the national survey in grades 6 and 9]. Östersund, Sweden: Statens folkhälsoinstitut; 2011.
 35. Pihlblad M, Åberg G. *Att främja barns och ungdomars psykiska hälsa - Vägledning*. [To promote child and adolescent mental health – Guidance]. Stockholm, Sweden: Karolinska Institutets folkhälsoakademi; 2011. Available at: http://dok.slso.sll.se/CES/FHG/Psykisk_halsa_och_ohalsa/Rapporter/att-framja-barns-och-ungas-psykiska-halsa-vagledning.2011_22.pdf. Accessed November 15, 2015.
 36. Gustafsson J-E, Allodi M, Westling A, et al. *School, Learning and Mental Health: A Systematic Review*. Stockholm, Sweden: The Royal Swedish Academy of Sciences; 2010.
 37. SOU 2009:64 [Swedish official investigations] *Flickor och pojkar i skolan: hur jämställt är det?* [Girls and boys in school - how equal is that?] Delbetänkande från Delegationen för jämställdhet i skolan. Stockholm, Sweden: Swedish Ministry of Education; 2009
 38. Björnsson M. *Kön och skolframgång Tolkningar och perspektiv* [Gender and school success Interpretations and perspectives]. Myndigheten för skolutveckling Rapport 13, Stockholm, Sweden; 2005. Available at: https://www.bing.com/search?q=k%C3%B6n+och+skolfram%C3%A5ng+tolknningar+och+perspektiv&form=EDGEAR&q_s=PF&cvid=619c0306749e4da9a66f3174a21aba5a&pq=k%C3%B6n+och+skolfram%C3%A5ng+tolknningar+och+perspektiv&cc=US&setlang=en-US&PC=DCTE. Accessed March 19, 2017.
 39. US Centers for Disease Control and Prevention (CDC). School connectedness. 2015. Available at: http://www.cdc.gov/healthyyouth/protective/school_connectedness.htm. Accessed November 12, 2015.
 40. Chung JJ, Goebert DA, Chang JY, Hamagani F. Developing a comprehensive school connectedness scale for program evaluation. *J Sch Health*. 2015;85(3):179-188.
 41. McNeely C, Falci C. School connectedness and the transition into and out of health-risk behavior among adolescents: a comparison of social belonging and teacher support. *J Sch Health*. 2004;74(7):284-292.
 42. Ottova V, Erhart M, Vollebergh W, et al. The role of individual- and macro-level social determinants on young adolescents' psychosomatic complaints *J Early Adolesc*. 2012;32(1):126-158.
 43. Richter M, Moor I, van Lenthe JF. Explaining socioeconomic differences in adolescent self-rated health: the contribution of material, psychosocial and behavioural factors. *J Epidemiol Community Health* 2012;66(8):691-697.
 44. Cleveland Teye A, Peaslee L. Measuring educational outcomes for at-risk children and youth: issues with the validity of self-reported data. *Child Youth Care Forum*. 2015;44(6):853-873.