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Abstract

The study examined the extent to which students' perceptions of the psychosocial school environment are associated with self-rated health, life satisfaction, and subjective health complaints. Students' perceptions were associated with one or more indicators of subjective health. Perceived health was better in direct proportion to positive perceptions. Student relations and school strain were the factors that stood out in both genders, with regard to all the health indicators. School engagement, parental support, and educational aspiration were found to be important for overall perceived health of the students. This study indicates the importance of the psychosocial school environment for students' health.

Key words: Psychosocial school environment, school perceptions, subjective health, self-rated health, life satisfaction, subjective health complaints

Background

Promoting and supporting students' health and well-being in schools have increasingly become an interest of researchers and are being regarded as important goals for schools. In Finland, objectives of creating a healthy and safe learning environment, safeguarding mental health, preventing exclusion, and promoting the wellbeing of the students and the entire school community have been added to the National Core Curriculum (2016). Adolescents spend a notable amount of their time in schools, in which both academic and social learning takes place (Linnakylä & Malin, 2008). School and education give young people a starting point for their future; hence, one should not ignore the ways in which adolescents perceive their school environment and schoolwork, and how these perceptions might be associated with their health and wellbeing.

The school environment consists of physical factors (buildings, the yard, surroundings, services, etc.) and psychosocial factors such as engagement, autonomy, demands, social support, and relationships. The school environment is often referred to as a working environment for adolescents (e.g. Samdal 1998; Hjern et al. 2008). This view is based on a theoretical model developed by Karasek and Theorell (1990), within which job satisfaction, a lower prevalence of health-compromising behaviours, and higher subjective well-being are positively associated with a reasonable level of demands, good social support, and a sense of autonomy and control. Similar findings have been obtained within the school setting (Samdal 1998).

Based on an exhaustive literature review, the school environment seems to have both positive and negative effects on students' well-being and health (e.g. Thapa et al. 2013; Upadyaya et al. 2013; John-Aikonola et al 2015; Inchley et al. 2016) - although a wide range of different indicators and definitions of the psychosocial school environment, health, health complaints and health behaviours have been used, studies have shown that these factors are connected. Freeman et al. (2012) studied school climate, peer support and their value for health complaints, school satisfaction, and academic achievement. According to the study, school climate was positively related to students' mental health (Freeman et al. 2012). In turn, a study by Salmela-Aro et al. (2008) showed that negative school climate was related to school burnout. In the research of Eriksson et al. (2012) the term 'social capital' was used to study the perceptions of the social climate in different settings. According to their studies, higher school social capital resulted in higher levels of subjective well-being and lower levels of subjective health complaints

(Eriksson et al. 2012). Further, Nielsen et al. (2015) stated that school social capital can reduce mental health problems. Psychosocial environment was also found to be an important predictor of students' health complaints in among Swedish adolescents (Sonmark & Modin 2017) and in a Finnish study of adolescents' health compromising behaviors; more negative perceptions of the school environment were associated with more health-compromising behaviours (Haapasalo et al. 2012). Similar results have been reported by Bonnell et al. (2017) in their study on school belonging, commitment and risk behavior.

Research has shown that supportive teachers (Modin and Östberg 2009), peers, and parents (Eriksson et al. 2012; Plenty et al. 2014; Moore et al. 2018) in the school have a positive effect on students' health. Moreover, better subjective health is reported by students who like school, have higher achievement, and are not pressured by schoolwork (Ravens-Sieberer et al. 2004). Conversely, psychosomatic symptoms and psychological complaints (Hjern et al. 2008) have been linked to school stressors, such as harassment by peers, schoolwork pressure (Modin et al. 2011; Plenty et al 2014), and being treated poorly by teachers (Hjern et al. 2008). A longitudinal study by Gillander Gådin and Hammarström (2003) indicated that in the long-term classmate problems had the most negative effect on students' health.

Subjective health complaints are very common among young people. The most common symptoms are headache, shoulder and neck pains, stomachache, backache, feeling low, bad temper, feeling nervous, dizziness, and difficulties in getting to sleep (e.g. Cavallo et al. 2006; Luopa et al. 2014). Compared to boys, girls report a higher number and frequency of symptoms. Gender differences and health complaints tend to increase by age. (Torsheim et al. 2004; Konu and Lintonen 2006; Torsheim et al. 2006; Dey et al. 2015; Ottová-Jordan 2015). These complaints refer to symptoms ranging from occasional to clinical manifestations, and they create limitations to daily functioning. Research indicates that the development of health complaints may be aggravated by behavioural and social context factors. (Ottová-Jordan 2015). Health complaints reflect individual burdens and personal experience related to negative life events in the social context of the family, school, and peers; thus they are an important indicator for the measurement of subjective well-being. (Inchley et al. 2016)

In adolescence children undergo many physical, social, and psychological changes (Hendry and Kloep, 2012; Blackmore & Mills 2014). Health is an important resource, and good health helps them to face a variety of challenges. In recent years, public health researchers have become more interested in

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9 indicators of subjective health, alongside the objective measurement of medical outcomes. (Currie et al.
10 2010). Studies on indicators of subjective health (which include self-ratings of health, life satisfaction,
11 and health complaints) have shown that the majority of school-aged children rate their health as good,
12 but that there are a consistent minority who report poorer health. (Torsheim et al. 2004; Cavallo et al.
13 2015b; Vieno 2013). Thus, a better understanding of the school-related factors connected to
14 adolescents' health is important, not only for the future health of the students, but for the development
15 of the school itself.
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20 For the most part, previous studies have focused on single indicators of subjective health, or on only
21 some dimensions of psychosocial school environment. The present study aimed to take a broader view
22 of students' subjective health and to examine to what extent perceptions of psychosocial school
23 environment are associated with indicators of subjective health, looking also at whether these
24 associations differ between boys and girls. The study also included perceived family affluence,
25 educational aspiration, and age, seeking thus to gain a more comprehensive view of the associations in
26 question.
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31 **Methods**

32 **Data**

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34 The data in this study were drawn from the Finnish part of the *Health Behaviour in School-aged Children*
35 (HBSC) 2014 study. The HBSC Study is an international study conducted in collaboration with WHO. The
36 study aims to gain an improved understanding of adolescent health behaviours, health, and lifestyles
37 within their social context. The data were collected through school-based surveys, using anonymous,
38 voluntary, and standardized questionnaires based on the international procedure of HBSC Study. The
39 samples were chosen from the national school register (Statistics Finland) using random cluster
40 sampling. Sampling was adjusted to take into account the province, the municipalities, and the size of
41 the school. The participating class was randomly selected in each school. The HBSC protocol ensures
42 that the sample is nationally representative of the target population (Schnohr et al. 2015; Currie et al
43 2011; Roberts et al. 2009). There were in total 5925 respondents (2914 boys, 3011 girls) from 359
44 schools. The overall response rate was 85,2%. Responses provided by students aged 13 (7th grade) and
45 15 (9th grade) were used in the present study.
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Measures

Perceptions of the psychosocial school environment

Students' perceptions of the psychosocial school environment were measured by a set of questions concerning the school atmosphere, the school environment, teachers, peers, and parents. The questions were built on previous HBSC research findings, which highlight the importance of the psychosocial school environment for students' health and health behaviour. (Currie et al. 2010) There were 31 statements in total. The students gave their opinion by expressing the degree to which they agreed with the statements, using a scale with five response options: *strongly agree*, *agree*, *neither/nor*, *disagree*, and *strongly disagree*.

Explorative factor analysis (with Oblimin rotation) was conducted for the 31 variables in order to reduce the data and to uncover the underlying dimensions of the students' perceptions of the psychosocial school environment. The factor analysis resulted in six factors (Table 1). The six-factor solution explained 55% of the total variance. The items in each factor were added up to give sum scores, which were named as follows: *School engagement* (5 items) indicated the outlook on school life and on belonging within the school. *Parental support* (5 items) indicated the parents' involvement in schoolwork. *Student relations* (3 items) reflected relationships and interactions at school. *Academic support* (8 items) and *Teacher-student relations* (7 items) reflected the student-teacher relations at the school, and *Student autonomy* (3 items) indicated how students perceived their opportunities for participation. To preserve the original scale for the sum scores formed, the sum scores were divided by the number of items in each sum score. The internal consistencies of the sum scores were satisfactory. Cronbach's alpha for the sum scores varied between .91 and .78.

In addition to these sum scores, a single question was used to indicate *School strain*. The students were asked "How pressured do you feel by the school work you have to do?" and the item had four response options: *not at all*, *a little*, *some*, *a lot*. For the analyses, this variable was rescaled into two categories. Thus, the first two options, (*not at all* and *a little*) were pooled, as were the latter two options (*some* and *a lot*).

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9 Educational aspiration was measured by a single item: “*What do you think you will do when you finish*
10 *comprehensive school?*” Here students were asked if they were intending to apply for general upper
11 secondary education, for vocational education, or for an apprenticeship, and further, if they were
12 intending to get a job, if they were intending to remain unemployed, or if they were as yet undecided.
13 The variable was rescaled so that the statements “I’m going to apply for general upper secondary
14 school” and “I’m going to apply for vocational school” were kept as they were, while the others were
15 left out of the analysis (n=308). The first of these was seen as reflecting an academic orientation and the
16 second a vocational orientation. **The others were left out of the analysis because it was a too**
17 **heterogenous group to be included as ‘others’ or to be combined to first to categories.**
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24 Indicators of subjective health

25 Students’ subjective health was measured via three indicators – self-rated health, perceived life
26 satisfaction, and subjective health complaints. Self-rated health was measured via a single item: “*Would*
27 *you say your health is...?*” The response options were *excellent, good, fair, and poor*.
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30 A ladder scale, namely the Cantril ladder (Currie et al. 2010) was used to measure life satisfaction.
31 Students were asked to evaluate their life satisfaction by indicating the step on the ladder that
32 corresponded to their feelings at the moment. The top of the ladder (10) indicated the best possible life
33 and the lowest step (0) the worst possible life.
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37 Subjective health complaints were measured using the HBSC Symptom Check List (Haugland and Wold
38 2001 Haugland et al. 2001), which is a reliable and valid, non-clinical measure of subjective health
39 complaints. It includes eight complaints (headache, stomachache, backache, feeling low, irritability or
40 bad temper, feeling nervous, sleeping difficulties, and dizziness). In addition to these, four country-
41 specific items were used: neck and shoulder pain, loss of appetite, feeling tense, awakenings.
42 Participants reported how often they had experienced these complaints in the past six months (via a
43 five-point scale: *about every day, more than once a week, about every week, about every month, rarely,*
44 *or never*). The responses for these 12 items were dichotomized into weekly vs. less often.
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Perceived family affluence

Perceived family affluence was measured using the HBSC Family Affluence Scale (FAS). The scale consists of six different items: “Does your family own a car, van or truck?”, “Do you have your own bedroom for yourself?”, “How many computers does your family own?”, “How many bathrooms (room with a bath/shower or both) are in your home?”, “Does your family have a dishwasher at home?”, and “How many times did you and your family travel out of Finland for a holiday/vacation last year?”. A sum score was calculated, and three categories were formed reflecting high (10–13), medium (6–9), and low (0–6) family affluence. The scale has been validated within HBSC, and it is an appropriate indicator of socioeconomic position. (Currie et al. 2010)

Statistical analysis

To account for the clustered structure of the data, multilevel logistic regression analyses were conducted to analyse the associations between students’ perceptions of the psychosocial school environment and the indicators of subjective health. For the purposes of the analyses, the school perception sum scores and the subjective health indicators were rescaled. The sum scores were split into two categories, hence placed on the positive or negative side according to the original scale. The subjective health indicators were rescaled in accordance with the HBSC coding recommendations (Currie et al. 2010). Self-rated health was dichotomized as *excellent/good* vs. *fair/poor*. The ladder scale was dichotomized to indicate high life satisfaction (8–10) and lower life satisfaction (0–7). The cutoff point in HBSC is normally 6, but in the Finnish data this dichotomization describes the phenomenon better because of the distribution of the item. In addition, an index was constructed, covering the perception of having at least three health complaints per week. Boys and girls were analysed separately.

Results

Students’ self-rated health, life satisfaction and subjective health complaints

The indicators of subjective health were first analysed by age and gender. Most students rated their health as good or excellent. A significant difference was found among older students, with boys giving higher ratings to their health than girls. High life satisfaction was also reported by most students. Older boys reported significantly more high life satisfaction than girls of the same age. Younger girls reported significantly higher life satisfaction than older girls when analysis was conducted by gender.

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9 The prevalence of weekly subjective health complaints varied from 15% to 63%, “irritability or bad
10 temper” being the most common weekly symptom. Boys and girls differed significantly in almost every
11 complaint reported, with girls reporting symptoms more often than boys in both age categories. When
12 the analysis was conducted between age groups, older boys reported backache more often than
13 younger boys. For their part, the younger boys gave more reports of loss of appetite, awakenings,
14 feeling nervous, and feeling tense. Older girls reported significantly more backache, neck and shoulder
15 pain, and feeling low than younger girls. (Table 2.)
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20 Associations between students' school perceptions and indicators of subjective 21 health 22 23

24 The analyses of the associations between students' perceptions of the psychosocial school environment
25 and subjective health were performed separately for boys and girls. The results differed somewhat
26 between the genders but there were no significant differences between schools (with the exception of
27 girls' self-rated health). As shown in Tables 3 and 4, student relations and school strain were the only
28 factors associated with all the subjective health indicators measured, among both genders. Students
29 with good relations with peers and lower school strain reported better self-rated health, higher life
30 satisfaction, and fewer health complaints. For girls, better self-rated health was predicted by higher
31 school engagement, and teacher support for school work. In addition to these factors, parental support
32 was associated with higher life satisfaction.
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39 Students who had supportive parents and better teacher-student relations were likely to indicate fewer
40 health complaints than students who reported less support by parents, and poor teacher-student
41 relations. Boys who reported high school engagement and higher student autonomy, and who had more
42 supportive parents, were more likely to rate their life satisfaction as high than those who had lower
43 school engagement, lower student autonomy, and less supportive parents. Higher school engagement
44 predicted fewer health complaints, and higher parental support predicted better self-rated health. Good
45 relationships with teachers seemed to predict only better self-rated health.
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50 Educational aspiration was associated with self-rated health and life satisfaction among both boys and
51 girls. Students who were going to apply for upper secondary school were more likely to rate their health
52 as good, and to indicate higher life satisfaction. There were no significant differences in subjective
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9 health complaints. Age was significantly associated with health complaints among boys; thus, younger
10 boys were more likely to indicate several weekly health complaints than older boys. Family affluence
11 was associated only with life satisfaction. Those girls who reported high family affluence were more
12 likely to report a level of higher life satisfaction. Among boys, high or average family affluence predicted
13 higher life satisfaction.
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16 Discussion

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19 This study adds to a growing body of literature indicating that students' perceptions of psychosocial
20 school environment are important, and it underlines the fact that there is more to school than merely
21 academic learning (OECD 2017). Most students reported good self-rated health, high life satisfaction,
22 and fewer than three complaints per week; however, there was a considerable proportion who did not
23 give such positive evaluations. Weekly complaints were very common among girls in both age groups,
24 and in the older age category, boys rated their health as better, and reported higher life satisfaction,
25 than girls. These findings are in line with previous research. (Ottová-Jordan et al 2015; Wiklund et al.
26 2012; Cavallo et al. 2015a;2015b; Välijärvi 2017).
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31 All the measured students' perceptions of psychosocial school environment were associated with one or
32 more indicators of subjective health, and the perceptions were more positive in parallel with higher
33 levels of perceived health. Student relations and school strain were the factors that stood out among all
34 the health indicators. This applied to both genders. In addition, school engagement and parental
35 support, were found to be important for the overall subjective health of the students. This was an
36 expected result; since the interactions with peers and parents are so frequent, one could expect these
37 to have an effect on students' experiences and on health. Being accepted socially may strengthen self-
38 esteem, thus helping the individual to perform better and to value herself/himself. Such a positive cycle
39 could also affect students' perceived health. It has been observed that students find social interactions
40 at the school the most rewarding as well as the most problematic aspect of schooling (Pyhältö et al.
41 2010). In previous studies, poor social relations related to the school have been recognized as strong
42 predictors of e.g. health- compromising behaviours (Haapasalo et al. 2012) and further, of emotional
43 symptoms and conduct problems (Plenty et al 2014). These can inevitably impair students' perceived
44 health.
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9 In Finland, educational paths have a significant role in determining adolescents' health inequalities. Low
10 school achievement, together with a lack of educational plans, is related to higher mortality (Berg et al.
11 2011). Students who follow the non-academic path (e.g. move to vocational education) have more
12 health compromising behaviours and poorer perceived health than students following an academic path
13 (Ruokolainen & Mäki 2015). In this study educational aspiration was found to be an important factor for
14 students' perceived health, favouring those who were to choose an academic path.
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19 These results here indicate the complex nature of health, and how students' subjective health can be
20 affected by various factors, even if this study only focused on school-related issues. It is worth noting
21 that at least with these measures, student autonomy was associated with life satisfaction only among
22 boys; this is somewhat surprising, since in other studies student autonomy has been noted as an
23 important factor (e.g. Samdal 1998; de Róiste et al 2012).
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27 Overall, the connections between perceptions of the psychosocial school environment and subjective
28 health showed statistical significance, even if the associations were not in themselves particularly
29 strong. This could imply that there are underlying factors affecting the two main phenomena included in
30 this study. More thorough research is needed to clarify the factors associated with students'
31 perceptions of psychosocial school environment and their subjective health; also, to look at whether
32 these associations are direct, or whether there are some mediating factors such as health behaviours.
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37 This study does have some limitations. Since the data is cross-sectional, we cannot determine the
38 causality between students' perceptions of the psychosocial school environment and the indicators of
39 subjective health. The data are also self-reported, and the study limits itself to the subjective
40 perceptions of individuals. Nevertheless, when (as in the present case) the focus is not on clinical
41 illnesses, surveys of this kind are a good tool for understanding the perceptions of young people. Here it
42 is worth noting that the way in which adolescents understand health affects the way in which they
43 answer surveys concerning their health. (Currie et al. 2010) In fact, there are clear indications from our
44 results that the two have a strong influence on each other.
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50 It is important to emphasize that some class-level factors were omitted from the study. The influence of
51 these factors might be worth investigating in further studies. However, the Finnish school system offers
52 a great deal of individual choice in their studies, which means that students are more likely to spend
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9 their day in social groups outside their own official class (Karvonen et al 2005). Those groups cannot be
10 identified in the current study but would be an interesting addition for further studies.
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13 The strengths of the current study include having a nationally representative sample and a high
14 response rate. Furthermore, it is important that the study should be capable of capturing valid
15 information on students' perceptions of their school environment and their perceived health. It can be
16 claimed that the study has good credibility in this respect, since the questionnaire and the items have
17 been carefully reviewed and revised by the HBSC research network (Currie et al. 2010; Roberts et al.
18 2009).
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23 The study suggests that improving the school experience might improve the subjective health of the
24 students. It is clearly crucial to find the best practices for improving the school experience. When
25 planning strategies, one should bear in mind that the results of this study, and those of previous
26 research (e.g. Wiklund et al. 2012; Brodin Låftman and Modin 2012) show certain differences between
27 boys and girls.
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31 Overall, it can be argued that school development strategies should go beyond formal curriculum
32 development, taking it as a starting point that the major part of school life is social in nature, with much
33 social learning and construction of relationships occurring within schools (Linnakylä and Malin 2008). In
34 discussions of education, academic success tends to be foregrounded at the expense of the social
35 aspects of the school. Here it should be noted that in Finland, despite good PISA results, many children
36 are unhappy in their school. There is evidence that the promotion of positive schooling in its broadest
37 sense – which would encompass health-promoting schools that target all the students – has the
38 potential to create a positive developmental atmosphere, and to contribute to the health of the entire
39 school community (see e.g. Green and Tones 2010).
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Table 1. The results of the factor analysis; six dimensions describing school perceptions.

	Factors*						Communalities
	1.	2.	3.	4.	5.	6.	
1. School engagement							
Our school is a nice place to be	-.668						.659
The rules in this school are fair	-.573						.526
I feel I belong in this school	-.503						.525
The students are not treated too severely/strictly in this school	-.466						.360
I feel safe in this school	-.390						.435
2. Parental support							
My parents are interested in what happens to me at school		.798					.601
If I have a problem at school, my parents are ready to help		.791					.611
My parents are willing to help me with my homework		.757					.549
My parents encourage me to do well at school		.753					.569
My parents are willing to come to school to talk to the teachers		.591					.358
3. Student relations							
Most of the students in my class(es) are kind and helpful			-.739				.602
The students in my class(es) enjoy being together			-.725				.530
Other students accept me as I am			-.713				.570
4. Academic support							
My teachers tell me how to do better on school-tasks				.807			.575
My teachers guide me how to solve tasks				.748			.576
When I need extra help, I can get it				.634			.492
My teachers make sure that I really understand my goals and what I need to do				.580			.548
I feel that my teachers provide me with choices and options				.541			.537
My teachers encourage me when I do school work				.536			.458
My teachers try to understand how I think before suggesting a new way to do things				.510			.544
My teachers listen to how I would like to do things				.435			.542
5. Teacher-student relations							
I feel a lot of trust in my teachers					.723		.674
I feel that my teachers care about me as a person					.700		.625
My teachers are interested in knowing how I'm doing					.663		.552
Most of my teachers are friendly					.532		.594
I feel that my teachers accept me just as I am					.519		.584
Our teachers treat us fairly					.504		.621
I am encouraged to express my own views in my class(es)					.444		.499
6. Student autonomy							
In my classes, students have some control in deciding which tasks to work on						.827	.651
In my classes, students get to participate in deciding how to work on tasks						.816	.661
In my classes, students get to participate in deciding class rules						.537	.397
Cronbach's Alpha	.811	.840	.779	.890	.909	.775	

* Loadings of less than .30 were suppressed

Table 2. Indicators of subjective health by age and gender, %

Indicators of subjective health	13 years			15 years			Boys			Girls		
	Boys, %	Girls, %	Sig.	Boys, %	Girls, %	Sig.	13 years, %	15 years, %	Sig.	13 years, %	15 years, %	Sig.
Self-rated health												
Excellent	25	22	.243	28	18	.000	25	28	.208	22	18	.168
Good	60	63		56	65		60	55		63	65	
Fair	13	14		14	15		13	14		14	15	
Poor	2	1		2	2		2	2		1	2	
Life satisfaction												
High (8-10)	68	64	.080	67	45	.000	68	67	.695	64	55	.000
Low (0-7)	32	36		33	55		32	33		36	45	
Subjective health complaints (Weekly)												
Headache	36	48	.000	36	51	.000	36	36	.923	42	44	.160
Stomachache	20	27	.000	16	27	.000	20	17	.094	27	27	.838
Backache	23	27	.088	28	38	.000	23	28	.026	27	38	.000
Irritability or bad temper	46	61	.000	43	63	.000	46	43	.194	61	63	.484
Feeling nervous	44	53	.000	37	55	.000	44	37	.002	53	55	.413
Difficulties in getting to sleep	35	44	.000	34	45	.000	35	34	.628	44	45	.649
Feeling dizzy	17	29	.000	20	30	.000	17	20	.076	29	30	.457
Neck and shoulder pain	33	40	.002	33	50	.000	33	33	.806	40	50	.000
Loss of appetite	19	29	.000	13	26	.000	19	13	.000	30	26	.115
Feeling tense	31	42	.000	26	44	.000	31	26	.021	42	44	.409
Feeling low	15	31	.000	18	40	.000	15	18	.104	31	40	.000
Awakenings	25	29	.059	21	32	.000	25	21	.041	29	32	.114

Table 3. Results of the multilevel logistic regression analysis; school perceptions associated with the indicators of subjective health.

Boys.

	Indicators of subjective health											
	Self-rated health (good or excellent)				Life satisfaction (high)				Subjective health complaints (3 or more weekly)			
	OR	95 % CI	Std. Err.	Sig .	OR	95 % CI	Std. Err.	Sig .	OR	95 % CI	Std. Err.	Sig .
Age												
13	1.15 2	0.855- 1.555	.176	.35 2	1.06 8	0.837- 1.362	.133	.59 7	1.36 0	1.091- 1.694	.152	.00 6
15	1.00				1.00				1.00			
Educational aspiration												
Upper secondary school	1.48 3	1.101- 1.997	.225	.01 0	1.86 2	1.460- 2.375	.231	.00 0	0.91 5	0.731- 1.145	.105	.43 8
Vocational school	1.00				1.00				1.00			
Family affluence												
High	1.39 5	0.863- 2.254	.342	.17 4	1.52 0	1.016- 2.272	.312	.04 1	1.08 2	0.753- 1.555	.200	.66 8
Average	1.17 6	0.777- 1.779	.248	.44 3	1.10 7	0.781- 1.570	.197	.56 7	0.90 8	0.657- 1.255	.150	.56 0
Low	1.00				1.00				1.00			
School engagement												
High	1.00 1	0.664- 1.510	.210	.99 6	1.71 9	1.234- 2.394	.291	.00 1	0.61 5	0.442- 0.857	.104	.00 4
Low	1.00				1.00				1.00			
Parental support												
Supportive	1.80 0	1.062- 3.051	.485	.02 9	2.17 5	1.308- 3.617	.564	.00 3	1.00 6	0.605- 1.675	.262	.98 1
Less supportive	1.00				1.00				1.00			
Student autonomy												
High	1.35 5	0.983- 1.869	.222	.06 4	1.31 7	1.019- 1.702	.172	.03 5	1.03 4	0.825- 1.296	.119	.77 4
Low	1.00				1.00				1.00			
Student relations												
Good	1.76 0	1.172- 2.643	.365	.00 6	2.09 4	1.459- 3.004	.386	.00 0	0.52 2	0.360- 0.756	.099	.00 1
Poor	1.00				1.00				1.00			
Teacher-student relations												
Good	1.55 3	1.033- 2.333	.323	.03 4	1.35 2	0.965- 1.894	.233	.08 0	0.72 7	0.527- 1.003	.119	.05 2
Poor	1.00				1.00				1.00			
Teacher support for schoolwork												
Supportive	0.69 1	0.451- 1.060	.151	.09 0	0.89 3	0.630- 1.265	.157	.52 2	1.02 0	0.733- 1.418	.172	.90 8
Less supportive	1.00				1.00				1.00			
School strain												
Low	1.38 4	1.024- 1.870	.212	.03 5	1.77 3	1.389- 2.262	.220	.00 0	0.42 6	0.342- 0.531	.048	.00 0
High	1.00				1.00				1.00			
LR test vs. logistic model		P=1.000				p=1.000				p=1.000		

Table 4. Results of the multilevel logistic regression analysis; school perceptions associated with the indicators of subjective health.

Girls.

	Indicators of subjective health											
	Self-rated health (good or excellent)				Life satisfaction (high)				Subjective health complaints (3 or more weekly)			
	OR	95 % CI	Std. Err.	Sig .	OR	95 % CI	Std. Err.	Sig .	OR	95 % CI	Std. Err.	Sig .
Age												
13	1.01 4	0.724- 1.418	.173	.93 7	1.22 2	0.961- 1.554	.150	.10 2	1.20 7	0.960- 1.519	.141	.10 7
15	1.00				1.00				1.00			
Educational aspiration												
Upper secondary school	1.48 3	1.064- 2.066	.251	.02 0	1.62 3	1.253- 2.120	.219	.00 0	0.80 2	0.609- 1.057	.113	.11 8
Vocational school	1.00				1.00				1.00			
Family affluence												
High	1.36 7	0.839- 2.232	.342	.20 8	1.60 7	1.110- 2.327	.303	.01 2	1.15 7	0.793- 1.692	.224	.44 8
Average	1.09 2	0.713- 1.672	.237	.68 7	1.41 3	1.013- 1.970	.240	.04 2	0.93 7	0.665- 1.321	.164	.71 1
Low	1.00				1.00				1.00			
School engagement												
High	2.34 8	1.569- 3.514	.483	.00 0	1.91 9	1.334- 2.759	.356	.00 0	0.72 3	0.467- 1.119	.161	.14 5
Low	1.00				1.00				1.00			
Parental support												
Supportive	1.55 3	0.961- 2.509	.380	.07 2	5.76 9	3.327- 10.005	1.620	.00 0	0.20 4	0.096- 0.435	.079	.00 0
Less supportive	1.00				1.00				1.00			
Student autonomy												
High	0.92 8	0.672- 1.281	.153	.65 0	1.22 0	0.965- 1.542	.146	.09 6	1.04 7	0.830- 1.320	.124	.70 0
Low	1.00				1.00				1.00			
Student relations												
Good	1.57 4	1.103- 2.247	.286	.01 2	1.63 8	1.220- 2.200	.246	.00 1	0.69 3	0.497- 0.966	.117	.03 0
Poor	1.00				1.00				1.00			
Teacher-student relations												
Good	1.17 3	0.790- 1.743	.238	.42 8	1.36 9	0.998- 1.878	.221	.05 1	0.60 8	0.423- 0.874	.112	.00 7
Poor	1.00				1.00				1.00			
Teacher support for schoolwork												
Supportive	1.66 0	1.134- 2.419	.319	.00 8	1.57 5	1.169- 2.120	.239	.00 3	0.72 7	0.521- 1.014	.124	.06 0
Less supportive	1.00				1.00				1.00			
School strain												
Low	1.96 4	1.415- 2.728	.329	.00 0	1.73 7	1.378- 2.190	.205	.00 0	0.34 3	0.272- 0.433	.041	.00 0
High	1.00				1.00				1.00			
LR test vs. logistic model		p= 0.006				p=0.062				p=0.452		