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## Positive self-reported health might be an important determinant of student's experiences of high school in northern Sweden

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### ABSTRACT

There is a need for more knowledge about positive health determinants in the school setting. The overall aim of this study was to analyse if positive self-reported health is associated with experiences of school among high-school students. Data originated from the health dialogue questionnaire answered by students in grade 1 of high school. A total of 5035 students participated from the academic years 2013 to 2016. Logistic regression with positive odds ratio (POR) was used to analyse associations between positive self-reported health and school experiences. There was an association between positive self-reported health and school experiences among students. Positive mental health was the strongest predictor for positive school experiences. To frequently participate in Physical Education, have a positive body image and satisfactory sleep nearly doubled the students' odds for positive school experiences. The results also revealed gender differences; boys more often reported positive experiences of school and positive health than girls. Positive self-reported health is associated with positive experiences of school, particularly mental health. Moreover, these findings have significant implications for how students experience school and demonstrate the importance of including health-promoting interventions in systemic school improvement, meeting both girls' and boys' needs.

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### KEYWORDS

Adolescent health; health dialogue; health promotion; school health; self-reported health; positive odds ratio; high school students

## Introduction

Education is one of the most important determinants of health and sustainable public health development [1]. In this study, health is defined in accordance with the World Health Organisation as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity", which is necessary for the individual's possibility of living a good and satisfying life [2,3]. Also, the importance of positive mental health for educational achievement is well covered in the research [4], and various health promotion efforts (e.g. physical activity) have been shown to be effective at increasing academic performance [5,6]. In other words, there is a relationship between health and learning and can be viewed as a requirement for each other [7,8]. For several years in Sweden, the proportion of students not graduating from high school has been increasing [9]. Recently, overall trends show a slight positive development with more students graduating. However, still about one-fifth of all students do not complete their studies. In addition, reports show that it is more common for boys not to graduate than girls from high school. Furthermore,

social exclusion can be a consequence for students who do not complete high school as they are expected to have more difficulties establishing themselves in the labour market and have fewer opportunities for further studies [9,10]. According to the Swedish National Agency for Education [11], students who interrupt their studies from high school in year 1 or 2 neither worked nor studied 5 years after leaving school. The overall goal of public health in Sweden is to create social conditions for good health on equal terms for the entire population, where children and adolescents are a prioritised group [12]. Completing high school could be considered important in the pursuit of more equal conditions for health, both now and in a long-term perspective [1]. Identifying factors contributing to a positive experience of school would likely be useful in efforts to help students graduate.

How students experience school has been described as important for achievement and study results [13]. Also, health is related to a diverse number of experiences at school [14–16]. More specific health aspects, such as mental health, body image, physical activity and sleep, have been shown to be related to all school experiences, performance and

results [5,17–19]. Furthermore, previous research has shown that awareness of the occurrence of power imbalance at school and insufficient level of participation in the everyday activities are associated with increased risk of psychosomatic symptoms (e.g. headache, stomach ache, low appetite, feeling nervous and dizziness) with stronger associations in girls than in boys [20]. Attwood and Croll [21] also argue that a negative experience of school is associated with truancy, which can increase the risk of students having a problem with their schooling. Dropping out of the school system has also been shown to be associated with poor health [22].

School has long been a popular arena for health promotion due to the well-known relationship between health and learning [7,23–25], echoing the salutogenic approach developed by Antonovsky [26]. Swedish schools are, by law, obligated to offer students health visits aimed at assessing their health, growth, development and educational progress [27]. However, the health of Swedish adolescents has deteriorated, especially their mental health [28,29]. This is an increasing problem, particularly among girls, and compared to other Nordic countries, the trend in Sweden is distinctively negative. One approach used by the school health service to promote student's health is the health dialogue [30]. The health dialogue is used in various forms both in Sweden and other Nordic countries [30–32]. As an implement to reduce health inequalities, the health dialogue has shown some potential; previous studies found that children from lower social classes benefited mostly from the health dialogue [31]. In the most northern county in Sweden, a health dialogue (HD) concept is used that was developed by another county in Sweden [30]. The HD concept is used and administered by school nurses and consists of 3 parts, previously described by Rising Holmström et al. [30,33], as: (a) an HD questionnaire; (b) a meeting between the student and school nurse, in which the HD questionnaire is used as a base for the dialogue; and (c) registration of the HD questionnaire results in the student's medical record and an epidemiological database. Each year, all students enrolled in grades 4, 7, and year 1 of high school (in Sweden, this corresponds to 10-, 13-, and 16-years-old) are offered the HD concept by the school health service [34]. Although the basis of the concept is the same for each grade and year, the questionnaire differs in some questions and is also customised to be age appropriate [30,33,34]. Furthermore, the HD questionnaire differs from other surveys as it is created and developed from clinical practice and includes a dialogue where the students receive feedback on the questionnaire from the school health nurse.

Although many years have passed since the Ottawa Charter for Health Promotion, it is still common to study health by considering only pathogens, even when it comes to health promotion at school [35,36]. Furthermore, there is a lack of studies focusing on students positive self-reported health [16,33]. Moreover, the core business of school is focused on educational outcomes rather than the reduction of health problems [37]. With this in mind, this study aimed to analyse if positive self-reported health is associated with experiences of school among high-school students. More specifically, the following question was raised; Is mental health, body image, sleep and attendance in the mandatory subject Physical Education associated with experiences of school, regardless of geographical living location?

## Methods

### Participants

The data originated from a cross-sectional HD questionnaire answered by first-grade students in high school from all municipal and independent schools in a northern Swedish county. The county has approximately one-quarter of a million inhabitants and is Sweden's largest county [38]; it represents a quarter of the country's geographical area and is also the only county that has a national border to both Norway and Finland [39]. The region is characterised by high mountains and archipelagos and is sparsely populated with few cities and some urban areas along the coast. Most inhabitants reside in the coastal area. The county has a diverse culture, including traditions from eastern countries (such as Finland and Russia) and foundations in polar curriculum traditions and reindeer care. The spoken national minority languages are Finnish, Meänkieli, and Sami. This study includes 3 cross-sectional data collections from academic year 2013/14, 2014/15, and 2015/16. The overall response rate was 55.3%. In total, 5,035 students (2,385 girls and 2,650 boys) participated.

### Ethics

This study was part of a large project with a focus on promoting children and young people's health and learning, which was approved by the local ethical board (Dr 2017/403–31).

### Measures and procedures

Part (a) of the HD consists of a questionnaire with a salutogenic perspective [30,33]. The questions concerning the student's lifestyle are positively phrased and have a health-promoting approach [30,33]. In high

school, the HD questionnaire consists of 30 questions concerning the student's habits of living and well-being [34]. The questionnaire covers physical, mental and social dimensions of health, which include eating habits, exercise, sleep, leisure interests, school well-being and alcohol, tobacco, and drug use. HD part (b) consists of a meeting between the student and the school health nurse [30,33]. The students completed the HD questionnaire before the scheduled meeting. During the health dialogue, the school health nurse goes through the answers from the questionnaire with the student. Also, the student's height and weight are measured and body mass index (BMI) is calculated. The HD concept is inspired by "Motivational Interviewing" (MI), and school nurses use it to increase motivation to change. In HD part (c), the school nurse performs registration of the results in the digital medical journal and a database (if the student above the age of 15 gives their permission and/or parental consent has been given). The nurse and persons who come in contact with the database are working under strict confidentiality, and all results are registered unidentified [34]. To protect the student's integrity in further processing of data from the HD, the personal number is coded when sent to the database. The database is monitored by the Public Health Centre at the most northern county in Sweden, with registrations from all municipalities in the region.

### Data analysis

Because the questions in the HD questionnaire are positively phrased and focused on salutogenetic aspects; all variables were coded and dichotomised consistently as positive (coded 1) and negative (coded 0) [30]. In this study, 5 items measuring the respondent's experience of school are used as the outcome variable. The following items were included: "I can work in peace at lessons", "I can concentrate on lessons", "I feel stressed about schoolwork", "I choose to stay home without being sick" and "Experience of comfort in school". The answer options were based on a Likert scale [40]. The first 3 questions had 5 answer options, ranging from "always" to "never". The fourth question had 6 answer options, ranging from "never" to "every day", and the fifth question had 6 answer options, ranging from "very good" to "very bad". The items were summarised to an index ranging from 3 to 20 (Cronbach Alpha 0.652), the cut-off point was set at 17 with the upper quartile indicating positive experiences of school (coded 1) [41].

Three questions and an index were used as predictors: "How satisfied are you with your body?", with answer options "very pleased" and "pleased" (coded 1), "neither", "quite unsatisfied" and "unsatisfied" (coded 0); "I attend

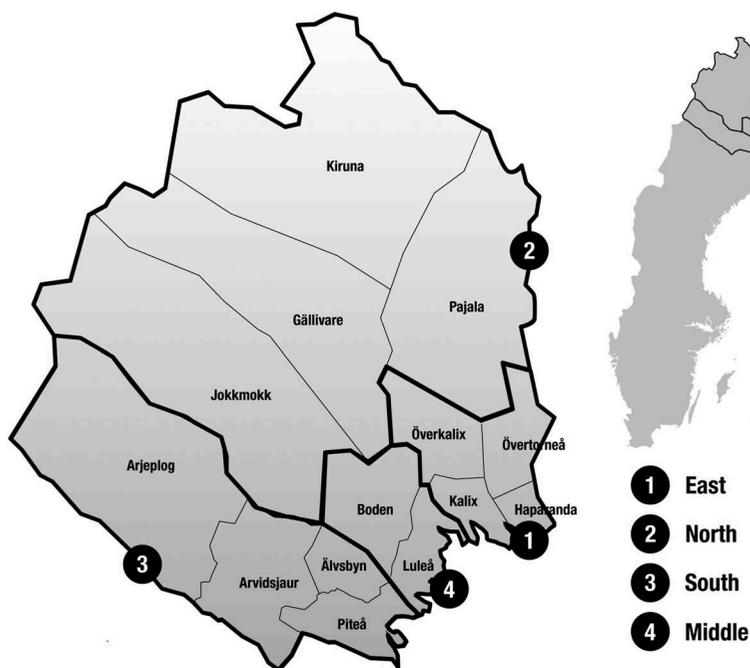
classes in Physical Education", with answer options "always" (coded 1), "every other time", "a few times a month", "rarely" and "never" (coded 0); and "I sleep well", with answer options "always" and "often" (coded 1), "sometimes", "rarely" and "never" (coded 0) [30]. Mental health was measured with 3 items. All questions started with "In the three last months I have felt..." and continued with 1 of following: "sad and depressed", "worried or scared" or "irritated or in a bad mood". The answer options were: "never", "rarely", "sometimes", "often" and "always". The items were summarised to an index ranging from 0 to 12 (Cronbach Alpha 0.780) [42]. Based on the distribution of responses and in line with Warne et al. [16], the scale was dichotomised by dividing into tertiles. The highest tertile indicated positive mental health and the cut-off point was set at 10 (coded 1). In addition to previous studies [30,33], the questions "Experience of comfort in school" and "How satisfied are you with your body" were added to the questionnaire analysed in this study [34].

The county of Norrbotten consists of 14 municipalities and is organised in 4 groups [43]; East (coded 1 = reference category), North (coded 2), South (coded 3), and Middle (coded 4). The variable uses as control a variable (Figure 1).

All analyses were conducted using IBM SPSS Statistics 24 [44] and separate analyses were made for girls and boys chi-square test was used for analysing differences between girls and boys. A  $p$ -value < 0.05 was accepted as statistically significant. Internal consistency was measured by Cronbach's Alpha. The association between positive health and experiences of school was analysed by logistic regression, presented as crude and adjusted positive odds ratios (POR) (16). The multivariate model was adjusted for geographical location. A confidence interval (CI) of 95% was used for the logistic regression analysis.

### Results

Table 1 describes the variables and includes chi-square  $p$ -values for estimation of differences between boys and girls. In total, the quartile who classified their experiences in school as positive was relatively small. In comparison, significantly more boys than girls reported positive experiences of school ( $p$ -value = 0.001). One out of 5 girls were allocated in the tertile of positive mental health, as compared to 3 out of 5 boys ( $p$ -value = 0.001). Significant gender differences were detected for body image, attendance in Physical Education, and sleeping, with boys more often reporting positive scores compared to girls. The students were allocated to municipality categories as follows: East



**Figure 1.** Classification of municipalities in Norrbotten County with East (14.3%), North (19%), South (21.4%) and Middle (45.3%).

**Table 1.** Prevalence of each variable for girls and boys (%). *P*-value from Chi-square test. A *p*-value < 0.05 was considered statistically significant, based on the HD- concept questionnaire academic year 2013/14, 2014/15 and 2015/16.

N 5035		Girls n(%)	Boys n(%)	Chi <sup>2</sup> p-value
Experience of school	Positive	516 (21.9)	924 (35.2)	<0.001
	Negative	1845 (78.1)	1702 (64.8)	
Mental health	Positive	478 (20.2)	1547 (58.8)	<0.001
	Negative	1888 (79.8)	1082 (41.2)	
Body image	Very pleased/Pleased	1191 (50.2)	1989 (75.4)	<0.001
	Neither/Quite/Very unsatisfied	1182 (49.8)	649 (24.6)	
I attend in Physical Education	Always	2011 (86.0)	2348 (89.8)	<0.001
	Every other time/A few times a month/Rarely/Never	327 (14.0)	266 (10.2)	
I sleep well	Always/Often	1772 (74.5)	2056 (77.8)	0.006
	Sometimes/Rarely/Never	606 (25.5)	586 (22.2)	

(14.3%), North (19.0%), South (21.4%) and Middle (45.3%) (Figure 1). Table 2 shows the crude and adjusted PORs for positive experiences of school in boys and girls. The full model shows a threefold higher likelihood for a high level of positive mental health and probability for positive experiences of school in both boys and girls. Girls and boys who reported positive body image, attendance in Physical Education and sleeping were almost twice as likely to report positive experiences of school. Additional findings showed that even after adjustment for geographical location, the ratios only changed moderately and remained significant.

In summary, there was an association between positive self-reported health and school experiences among students. Positive mental health was the strongest predictor for positive school experiences. To frequently participate in physical education, have a positive body image and satisfactory sleep nearly doubled the odds for having a positive

school experience. The results also revealed gender differences in which boys more often reported positive experiences of school and positive health than girls.

## Discussion

This study shows that positive mental health and body image, frequent attendance in Physical Education, and satisfactory sleep increase a student's odds of being in the group that reported positive experiences of school. Associations between different experiences of school and health have been well described in earlier publications [4,14–16], but to a lesser extent for positive health and school experiences [15,16]. This study suggests that improving health might affect factors in the core business of school, such as how students experience school. The results will discuss student's experiences of school in

**Table 2.** Logistic regression analysis showing positive odds ratios (POR) with 95% confidence intervals (CI) for girls and boys positive experiences of school. Positive experiences of school determined as >17, based on the HD concept questionnaire academic year 2013/14, 2014/15 and 2015/16.

		Crude POR (CI)		Adjusted POR <sup>a</sup> (CI)	
		Girls		Boys	
Mental health	Positive	4.61 (3.70–5.74) ***	3.65 (2.90–4.61) ***	3.67 (3.10–4.40) ***	3.15 (2.60–3.81) ***
Body image	Very pleased/pleased	2.59 (2.11–3.18) ***	1.95 (1.56–2.44) ***	2.49 (2.02–3.10) ***	1.78 (1.42–2.23) ***
I attend in sports and health	Always	2.72 (1.87–3.95) ***	1.84 (1.24–2.73) **	2.14 (1.57–2.91) ***	1.69 (1.21–2.36) **
I sleep well	Always/Often	2.82 (2.13–3.72) ***	1.77 (1.31–2.40) ***	2.72 (2.17–3.40) ***	1.95 (1.53–2.48) ***

a) Adjusted to municipality b) \*\*\* =  $p < 0,001$  c) \*\* =  $p < 0,01$

relation to following; 1) mental health, 2) body image, 3) attendance in Physical Education, 4) satisfactory sleep and 5) and gender. The association between mental health and school performance and learning has been well described [14,17], but not as well in relation to positive health [15]. In this study, 3 out of 5 boys as compared to 1 out of 5 girls reported positive mental health. However, girls might express a lower positive mental health because they seem to be more sensitive to stress and react with anxiety [28,29]. Moreover, our results show that mental well-being could be a significant factor for how students experience school and highlight the importance of including health promoting aspects in the systematic school improvement initiatives, such as that governed by the Swedish Law of Education [27]. In line with this study, Gustafsson et al. [45] found that learning in itself and completing school with approved grades also reduce the likelihood of ill mental health, crime and exclusion in a long-term perspective. In addition, Oberle [46] argues that contextual and personal assets are central for early adolescents' emotional well-being. The interrelation among assets needs to be considered when understanding, and ultimately promoting, student's emotional well-being. Moreover, the association between positive body image and self-esteem and well-being has been described by Gillen [47], as well as the association between self-esteem and school performance [48]. In line with previous research [49], this study showed associations between body image and school experiences. In addition, significantly more boys than girls reported a positive body image, which is in line with previous research and reports [50,51]. Furthermore, the importance of physical activity and school performance has been reported frequently [5,6], and these results are in line with this study. However, physical inactivity is an increasing problem and, in Sweden, the number of sports and health hours in school is low relative to other European countries [50,52,53]. Moreover, previous studies have shown that sleep is of significance for

student's memory, concentration and learning abilities in school [19,54], as in line with this study. Sleeping well can, therefore, be considered as a significant resource for student's experiences of school. Furthermore, compared to previous data, today, schoolchildren more frequently report mental illness along with sleeping disorders, mainly among girls [50]. Since studies show that young people have a delayed sleep phase and are often tired during daytime, it has, for example, been suggested that school hours should be adapted and postponed, enabling students to better take advantage of teaching [55,56]. Schools could, therefore, explore different flexible schedule options to optimise student's positive experiences of school, echoing research on giving voice to students, suggesting that they should be able to choose when to start and when to end the school day [57]. This study shows that gender difference not only appear as a pattern in positive self-reported health but also in experiences of school. It is well-known that other social factors, such as structures of power (e.g. the occurrence of discrimination), have stronger associations with health in girls than in boys [20]. Hence, gender perspectives were not a subject in this study. Nevertheless, gender was not regarded as uninteresting. As previously described, girls achieve better results in high school but at the same time they report worse health than boys, also in line with this study's result [9,50].

### Limitations

How to properly measure health is well-known as a complex issue [58]. However, the HD is a clinical instrument and it has shown high validity and agreeable reliability in measuring health in 11th graders [59]. This study has some limitations, first according to the Swedish Law of Education [27], students should have influence over their education and be encouraged to take an active part in the work with further development of their education, as well as receive information about issues related to them. Present study was done

without contact with the participating students, and that might be a limitation. Also, because the data were anonymous, it is difficult for the researchers to give the students feedback and to make the findings available to them. However, the findings will be made available on the School of Health website and through the multi-professional networks at the regional County Council and the Association of Local Authorities, thereby reaching health educators, physical educators, psychologists, school health coordinators, school nurses, school physicians, social workers and educational leaders and teachers. Second, additional limitations include the cross-sectional nature of this study and the low response rate (55.3%). In comparison with younger age groups, the HD concept at high school has historically had low response rates [34]. Another factor contributing to the response rate is that not all questionnaires have been registered in the database due to various organisational and technical problems. However, similar low response rates have been reported in other studies involving adolescents, compared to younger children where the response rate usually is higher [33]. The HD concept is a unique method developed in clinical practice [30], performed in a similar and systematic way among school nurses. The HD concept is a health-promoting approach targeting all students in school and is based on voluntary participation. This freedom of choice might mean that some girls and boys prioritise other activities or consider themselves healthy enough and, therefore, not in need of the HD. Furthermore, another possible explanation for the low response rate might be that students or parents did not give their consent for the HD to be registered in the database. Third, although the HD concept primarily is constructed to promote health, various symptoms such as mental health issues can appear and be detected during the HD by school nurses [30,60]. However, previous research [30,60] has shown that school nurses are able to identify health problems and provide preventive advice. Moreover, in Sweden there is an agreement regarding collaboration between student health services and the Swedish health care including referral guidelines [35]. Also, student health service is constructed in a way that facilitate collaboration in an interdisciplinary team, where school nurses work together with other professionals' such as physicians and psychologists to manage detected health-related issues [35]. Fourth, the HD questionnaire is a clinical instrument and it does not include socioeconomic questions [30]. Fifth, 1 scale showed reliability slightly below the acceptance criteria ( $< 0.70$ ). Although not ideal,  $> 0.65$  is considered acceptable [42] since the Cronbach Alpha values are sensitive to

the number of items in the scale, especially with fewer items than 10 [42,44]. Finally, despite the fact that this sample was comprised of a regionally representative sample, the results might not be generalisable to all adolescents beyond this geographical context. Furthermore, as with any questionnaire and self-report, a form of response bias [31] might also have occurred in this study. Despite these limitations, this study has revealed some useful and informative data concerning adolescent health.

## Conclusions

- (1) In this study, all determinants including mental health, body image, physical activity and sleep were associated with positive experiences of school, among both boys and girls. These associations demonstrate the importance to include health-promoting interventions in systematic school improvement initiatives.
- (2) There were differences related to less positive school experiences and positive self-reported health among girls as compared to boys. Further research is needed to better understand the impact of gender patterns regarding school experiences and health promoting approaches targeting, mental health, body image, physical activity and sleep.
- (3) The results from this study suggest that students' self-reported health from the HD can be used to illuminate contextual and personal assets central to student's school experiences, health and well-being. Longitudinal studies could further investigate the presumed complex relations and causality among health, learning and school experience contributing with deeper knowledge that should be helpful when designing school systems that promote both health and learning.

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