Life satisfaction among upper secondary school students in Norway: associations with school stress, academic and social self-efficacy and school satisfaction

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Abstract

Purpose: This study assesses the degree to which school stress, academic self-efficacy, social self-efficacy and school satisfaction are associated with overall life satisfaction in upper secondary school in Norway, and the degree to which school stress, academic self-efficacy, social self-efficacy and school satisfaction are associated with each other. **Method**: Cross-sectional study of 1,031 students from upper secondary schools in Norway. Baseline data from the Dream School Project was collected during spring 2014. Correlation analysis was used to assess the association between the variables, and hierarchical multiple regression analysis was used to evaluate the association between school stress, academic self-efficacy, social self-efficacy, school satisfaction and life satisfaction, controlled for age, gender, grades, study program and family wealth. **Results**: School stress was negatively associated with life satisfaction, to a small degree, while academic self-efficacy, social self-efficacy and school satisfaction were positively associated with life satisfaction to a medium-strong degree. School stress on one hand was negatively associated to school satisfaction and academic self-efficacy on the other hand. School satisfaction was associated with social self-efficacy to a small degree, while medium strong degree to academic self-efficacy.

Together, school stress, academic self-efficacy, social self-efficacy, school satisfaction, study programme and family wealth explained 35 % of the variance in life satisfaction, whereas social self-efficacy explained most of the variance, supporting the importance of social and academic mastery experiences in upper secondary school. Girls, and students from families not economically well off, had the highest scores in school stress, compared to boys and students economically better off.

Keywords
Adolescents, life satisfaction, school stress, academic self-efficacy, social self-efficacy, school satisfaction.

Introduction

Background

Adolescent mental health and well-being have received increasing attention at the global level over the past decades, with estimates indicating that depression is one of the leading causes of illness and disability among youth aged 15-19 years (World Health Organization (WHO), 2012 p.6). In the Norwegian context, recent estimates show that 30-50 % of adolescents aged 15-19 years report being quite or very bothered by symptoms of mental health problems (Bakken, 2017 p. 81), which

often relates to school stress (Bakken, 2017 p.6; Lillejord et al., 2017 p.7). In students aged 15-19 years, about 30 % of boys and 60 % of girls report stress and worry about schoolwork (Bakken, 2017 p.6). The school context is considered a key determinant of child and adolescent mental health (Ministry of Health and Care Services, 2015), and the Norwegian Education Act (1998) states that all students are entitled to a physical and psychosocial environment that promotes health, well-being and learning. However, about 30 % of students drop out of upper secondary school in Norway (SSB, 2016), and it is estimated that 4 to 5 % of the 30 % drop out due to mental or psychosocial problems (Markussen & Seland, 2012 p.44).

Adolescents' psychosocial needs should be addressed through holistic approaches (WHO, 2012 p.23), and both traditional negative indicators of mental health, such as symptoms of anxiety and depression, and more positive aspects, such as mental well-being, should be given attention in adolescent development research (Inchley et al., 2016 p.233; Samdal et al., 2016 p.7). Mental health promotion is concerned with shifting the focus from a disease orientation towards an approach concerned with good mental health and positive youth development. Due to the key element of brain plasticity, all young people can achieve life skills, positive development and well-being through systematically combining ecological developmental assets for positive change (Lerner et al., 2010; Morgan & Ziglio, 2007; Siegel, 2014 p.9). One indicator of subjective well-being among youth is life satisfaction (Huebner, 1991). Life satisfaction is important due to the associations with positive outcomes, such as good mental health and reduced levels of depression in youth (Park, 2004; Suldo & Huebner, 2004; Moksnes et al., 2016). In lower secondary school, studies show a positive relationship between the overall life satisfaction of students and the promotion of health in school, such as motivational and social processes stimulating autonomy, competence and relatedness to school, and experiencing mastery (Samdal & Torsheim, 2012). However, there is a need to extend the knowledge about environmental and individual factors negatively or positively associated with life satisfaction in upper secondary school in Norway, which is the aim of this study. Such factors can be school stress (Moksnes et al., 2016), academic self-efficacy, social self-efficacy (Vecchio et al., 2007) and school satisfaction (Danielsen et al., 2009).

Life satisfaction

Life satisfaction is an independent factor in subjective well-being, and is defined as a general, global quality of a person's life, cognitively assessed by the person himself (Diener, 1984; Huebner, 1991). Research on life satisfaction among adult's shows that subjective evaluations of life satisfaction is associated with physical health and longevity (Diener & Chan, 2011), while there is less research on young people. However, studies show that life satisfaction positively relates to physical health, mastery and self-esteem, and can function as a protective factor and a buffer between stress and problem behaviour in youth (Suldo & Huebner, 2004; Proctor et al., 2009). Life satisfaction is negatively related to school stress and can mediate the association between stress of school performance and symptoms of depression (Moksnes et al., 2016). However, life satisfaction is sensitive to environmental and individual factors, such as school related stressors and resources of self-efficacy (Burger & Samuel, 2017).

School stress

School stress can lead to poorer psychological functioning and lower levels of overall life satisfaction in students (Proctor et al., 2009; Burger & Samuel, 2017). Perceived school stress increases when academic expectations become more demanding from elementary to secondary education, potentially stimulating learning, or negatively influence cognitive performance (Jones, 2014; Klinger et al., 2015). Stress stimuli can be physiological or psychological demands that produce a stress response, which is a normal reaction determined by the individual's earlier experiences and expectancies, which can cause psychological distress and disease if sustained (Ursin & Eriksen, 2007). According to Lazarus & Folkman (1984 p.21), stress occur when there is a discrepancy between demands the individual experiences and perceived individual and social coping resources available. Reactions to stress in young people can be emotional, such as anger, fear and depression; cognitive, such as an inadequate approach to situations; behavioural, including irritability, alcohol and drug abuse; or physiological, such as sleep problems, lack of appetite and pain (Jones, 2014). In coping with difficulties and stress in school, individual resources of self-efficacy can affect motivation, goal setting and resilience (Bandura, 1997 p. 174).

Academic and social self-efficacy

Self-efficacy is intentional personal agency, and the belief that one can act in the environment and perform an action (Bandura, 1997 p.3-5). Self-efficacy is important for young people's perceived life satisfaction (Vecchio et al., 2007; Akin & Akin, 2016; Moksnes et al., 2019), and can moderate the impact of stress on life satisfaction (Burger & Samuel, 2017; Moksnes et al., 2019). Mastery experiences, the example of others, verbal persuasion, thoughts and bodily reactions, in the form of emotions, can affect perceptions of self-efficacy and stress as they bring information to the individual about feelings of mastery or the lack thereof (Bandura, 1997 p.80-106).

Academic self-efficacy is about a student's self-perception in relation to academic tasks, such as beliefs that one can master schoolwork (Roeser et al., 1996; Bandura et al., 1999), for example, in learning new skills, setting realistic goals and being evaluated (Bandura, 1997 p. 215-216). Both academic and social self-efficacy are associated with reduced problem behaviour, lower levels of depression, prosocial behaviour and academic competence (Bandura et al., 1999), such as school grades, attendance and test scores (Lerner et al., 2010). Under or overestimation of one's own competence can lead to the selection of lighter tasks and the avoidance of challenges (Bandura, 1997 p.71-72). Perceived school stress can negatively influence academic self-efficacy (McKay et al., 2014), and students who score low on academic self-efficacy more often associate schoolwork with anxiety (Bandura, 1997 p.235-236; Bassi et al., 2007), while high levels of academic self-efficacy can predict lower stress levels (Gillis, 2011). Stress can work as a mediator between academic self-efficacy and psychological distress (Gillis, 2011), which supports the importance of appropriate demands on perceived academic self-efficacy (Bassi et al., 2007; Lillejord et al., 2017 p.19). However, social self-efficacy can mediate the relationship between beliefs surrounding academic potential and life satisfaction, supporting the importance of social processes in relation to academic beliefs (Samdal & Torsheim, 2012; Akin & Akin, 2016).

Social self-efficacy is about self-perception of the ability to respond with competence in social situations, such as knowing how to make friends, cooperate with others and express one's own opinions (Bandura et al., 1999; Muris, 2001), while social competence is about interpersonal skills, e.g., competence in conflict solution (Lerner et al., 2010). In the adolescent brain, there is a drive for social connectedness, which enhances social engagement and increases the chances of well-being and positive youth development (Lerner et al., 2010; Siegel, 2014 p.8). Social interactions with friends and teachers in school can influence students' perceived school stress (Danielsen et al., 2009; Moksnes et al., 2016; Lillejord, et al., 2017 p.28), and social self-efficacy can help youth to create social support in the environment (Bandura et al., 1999). However, social interaction demands the ability to understand the mental states of others and modifying one's own behaviour accordingly. This ability is still developing in the adolescent brain (Blakemore et al., 2014; Siegel, 2014 p.43) and social training might be necessary in this area.

School satisfaction

School is an important domain for young people, and satisfaction with classmates and friends at school relates to a higher degree of life satisfaction in young people (Danielsen et al., 2009; Samdal & Torsheim, 2012; Casas et al., 2013), which is natural, as the need for supportive connections transfers from parents to peers in the adolescent period (Siegel, 2014 p.8). School satisfaction can be about liking school, finding it interesting, learning and enjoying school activities (Huebner & Gilman, 2002), and relates to satisfaction with teachers (Casas et al., 2013) and school-related social support, e.g., from teachers and classmates, which can function as ecological coping resources in school when students are facing stress (Danielsen et al., 2009; Lillejord et al., 2017 p.28; Burger & Samuel, 2017). Motivational processes such as satisfaction with the need for autonomy, relatedness, and feeling competent in particular, show bidirectional relationships with school-related subjective well-being, as students who are satisfied with school also feel more connected and autonomous (Tian et al., 2014).

Research questions

Based on the above, this study aims to extend knowledge about the association between life satisfaction and perceived school stress, academic self-efficacy, social self-efficacy and school satisfaction in upper secondary school in Norway, and control for demographic variables of age, gender, upper secondary school grade, study programme and family wealth. The study will address the following research questions:

1. To what extent is school stress associated with life satisfaction?
2. To what extent are academic self-efficacy and social self-efficacy associated with life satisfaction?
3. To what extent is school satisfaction associated with life satisfaction?
4. To what extent is school stress, academic self-efficacy, social self-efficacy and school satisfaction associated with each other?

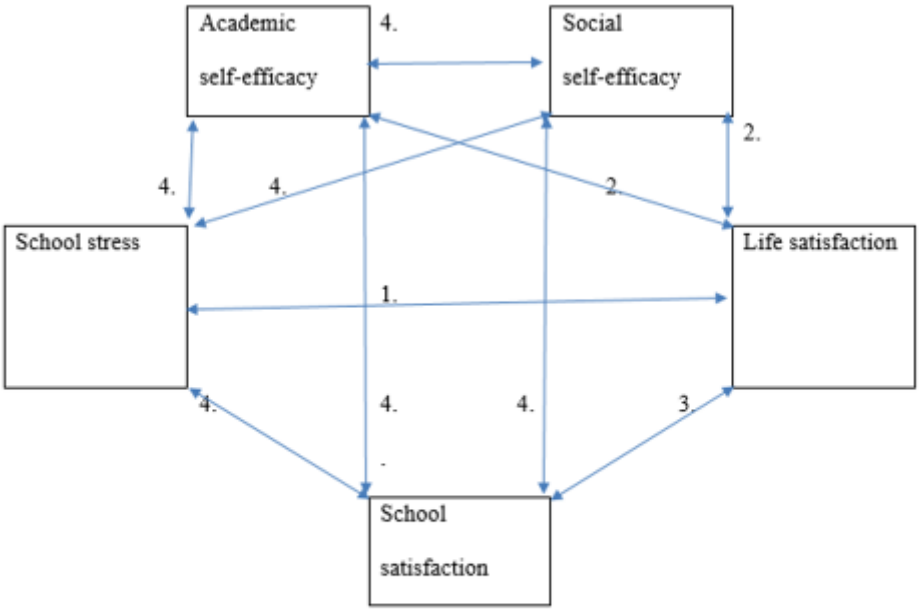

Figure 1. Research question 1-4.

Methods

Sample

The sample consisted of 1,031 students from four upper secondary schools in four counties in Norway. The schools offer general and vocational studies, grades 1-3, with students from 15-20 years of age. Students in vocational studies made up 46% of the student body, while 54% of the students were in general studies. There were 55% girls and 45% boys, and 80% of the students were 17 or 18 years old in the year of data collection. Students in grade 1 constituted 52% of the student body, while 35% of students were in grade 2 and 12% of students were in in grade 3. The sample was part of the first wave of the Dream School Project (Holsen et al., 2016), and self-selected of schools participating in the project. This study used baseline data from spring 2014. The Dream school project is a health promotion programme included in the Norwegian government's strategy for mental health in schools, funded by the Norwegian Directorate of Health. The project aims to systemically create a secure psychosocial learning environment in schools, with training in communication and participation and student mentors as role models (Adults for Children, 2018).

Data collection and procedure

The Norwegian Centre for Research Data (NSD) and the Regional Committee for Medical and Health Research Ethics approved this study, and NSD coordinated the online data collection. Teachers assisted in collecting the data through the schools' electronic learning platforms and students individually answered a digital questionnaire. The inclusion criterion was the ability to read and write in the Norwegian language. Teachers received written information and

students were provided with information in the questionnaire that participation was voluntary. Students above 16 years of age gave their passive consent by participating, while parents of students under 16 years of age provided active consent.

Teachers distributed the survey to 2,146 students and 1,195 responses (56%) were received. No details about students not answering the questionnaire is available in this study. However, the low response rate may have been due to the time of the survey, as the end of the academic year is a particular busy time. After cleaning the data and removing responses with no answers in any of the independent or dependent variables used in the survey, the sample consisted of 1,031 students (48%). Missing values were between 2% and 10% and considered acceptable, due to the large sample size, and all the analysis was done using pairwise exclusion (Pallant, 2016 p.131). Outliers, values well above or below the majority of other values, were kept as they showed no major impact on the average compared with the trimmed mean (Pallant, 2016 p. 64-65).

Measurements

This study used a questionnaire based on validated instruments previously used in research in the Norwegian context. Exploratory factor analysis was performed, after assessing the suitability of the data (Pallant, 2016 p.183-186), to explore whether the scales measuring life satisfaction, academic self-efficacy, social self-efficacy and school satisfaction were usable in the context of this study.
For all measures, variables were encoded with 0 being the lowest value.

Life satisfaction

The scale used in this study is a nine-item version of the "Students' Life Satisfaction Scale" (SLSS), measuring global life satisfaction in young people (Huebner, 1991). The scale has shown satisfactory psychometric properties (Huebner, 1991; Huebner, 1994; Danielsen et al., 2009). The nine items were: *1. I am happy with the way things are at the moment*; *2. My life is going well*; *3. My life is exactly as it should be*; *4. I would want to change a lot of things in my life*; *5. I wish life was different*; *6. I have a good life; 7. I am satisfied with what is happening in my life*; *8. I have everything I wish for in my life*; and *9. I am better off than most people my age*. Answers ranged from 0 = never, 1 = occasionally, 2 = often and 3 = almost always. Huebner (1991) found a Cronbach's alpha of 0.84 and no significantly differences between genders. After reversing the direction of the two negatively charged variables in the same direction as the others, the nine-item scale had an alpha value of 0.91 in this study, which showed good internal consistency (Pallant, 2016, p.104). Principal component analysis, with oblimin rotation, showed that the variables in the scale loaded on two factors with eigenvalues greater than one. The two-component solution explained 76% of the variation with the same pattern in both genders. The seven items that loaded on factor one explained 61% of the variation. The two reversed items loaded on factor two and explained 15% of the variation. In the current study both factors were kept, achieving external validity.

School Stress

Subjective perceptions of school stress were measured using a single item: *How stressed do you get because of schoolwork (both the work that you are supposed to do at school and homework)?* With answers on a four-point scale ranging from 0 (not at all) to 3 (very much). This item has previously shown good validity in adolescent`s' samples (Klinger et al., 2015). In the current study, the measure showed good construct validity by correlating in an expected way with the other independent and dependent variables (Burger & Samuel, 2017; Moksnes et al. 2016).

Academic self-efficacy

The scale used in this study has demonstrated good internal consistency and validity, with an alpha value of 0.86 (Roeser et al., 1996; Midgley et al., 1998). Academic self-efficacy was measured using the following six items: *1. I can complete the hardest schoolwork when I try*; *2. If I have enough time I can do a good job on all my schoolwork*; *3. I can do almost all the work in school if I don't give up*; *4. Even if the work in school is hard, I can manage it*; *5. I'm certain I can master the skills taught in class*; and *6. I am certain I can figure out how to do the most difficult class work*. The variables were reversed and encoded, ranging from 0 = disagree to 4 = strongly agree. The alpha value of 0.93 showed good internal consistency (Pallant, 2016, p.104). Principal component analysis, with oblimin rotation, demonstrated that all six variables loaded on one factor greater than one, explaining 75% of the variation. The same pattern applied to both genders.

Social self-efficacy

The scale used in this study is from the questionnaire "A Brief Questionnaire for Measuring Self-Efficacy in Youths", which measures social, academic and emotional self-efficacy and has demonstrated adequate internal consistency, with an alpha value above 0.8 (Muris, 2001), as well as good psychometric properties (Suldo & Shaffer, 2007). Seven items measured social self-efficacy: *1. How well can you express your opinions when other classmates disagree with you?*; *2. How well can you become friends with other children?*; *3. How well can you have a chat with an unfamiliar person?*; *4. How well do you work in harmony with your classmates?*; *5. How well can you tell other children that they are doing something that you do not like?*; *6. How well can you tell a funny event to a group of children?*; and *7. How well do you succeed in staying friends with other children?*. Answers ranged from 0 = not at all to 4 = very well. The alpha value in the current sample was 0.86, which is good (Pallant, 2016, p.104). Principal component analysis, with oblimin rotation, showed that all variables loaded on one factor with an eigenvalue greater than one, explaining 55% of the variation. The same pattern applied to both genders, but for boys this factor explained 60% of the variation, while for girls this factor explained 50% of the variation.

School satisfaction

The scale measuring school satisfaction is from the "Multidimensional Students Life Satisfaction Scale" (MSLSS), designed to make a profile of children's and adolescents' satisfaction with important domains in their lives. It includes 40 items measuring different domains (Huebner & Gilman, 2002). The scale has shown good validity and alpha values for the school domain, between 0.83-0.85 (Huebner, 1994; Huebner & Gilman, 2002). The current

study used five items from the school domain, previously found valid (Danielsen et al., 2009): 1. *I look forward to going to school*; 2. *I like being in school*; 3. *School is interesting*; 4. I *learn a lot at school*; and 5. *I enjoy school activities*. Answers ranged from zero = disagree to four = strongly agree. In this study, the scale showed a good internal consistency with an alpha value of 0.89. Principal component analysis, with oblimin rotation, demonstrated that all variables loaded on one factor with an eigenvalue greater than one, explaining 71% of the variation. The same pattern applied to both genders.

Demographic data

These measures were age in the year of data collection, gender, upper secondary grade (grade 1, grade 2 or grade 3), study programme (vocational or general studies), and family wealth.

Family wealth

A single item measured family wealth: *How well off is your family?* (Moneywise). This item has previously shown good validity (Wold et al., 2013). Response options were reversed, with 0 being the lowest value (0 = not well off at all (poor), 1 = not particularly well off, 2 = somewhat well off, 3 = well off and 4 = very well off). To make the response groups as equal as possible in size, those answering 0 (not well off at all (poor)) and 1 (not particularly well off) were collapsed into a single group titled “not well off”.

Analyses

The data were analysed using SPSS 23 IBM for Windows. Since variables were not normally distributed, Spearman’s correlation coefficient, rho, was performed to test the degree of associations between the independent variables and life satisfaction. Correlations coefficient between 0.10-0.29 were considered small, while values between 0.30- 0.49 were considered medium and values between 0.50- 1.0 was considered large, as suggested by Cohen (1988 p.79-81). However, parametric tests are solid when the sample is large (Pallant, 2016 p.115), as it was in this study (n=1031). Due to the differences in mean scores in demographic groups of age, gender, grade, study programme and family wealth, an independent samples t-test was conducted to test whether the differences in mean scores were significant or not. The magnitude of the mean differences was calculated using eta squared with guidelines proposed by Cohen (1988 p.284-287) to interpret the value, whereas values of 0.01 were considered small, 0.06 were considered moderate, and 0.14 were considered large.

Hierarchical multiple regression was considered appropriate to assess the association between life satisfaction and school stress, academic self-efficacy, social self-efficacy and school satisfaction controlled for demographic variables of age, gender, grade, study programme and family wealth. Multicollinearity was checked through VIF not above 10, and tolerance not less than 0.10 (Pallant, 2016 p.154), and was not a problem in this study.

Results

Descriptive analyses

Table 1 shows the mean and SD of the variables in the total sample. In scales ranging from 0-3, students scored above medium (1.5) in life satisfaction and in school stress. In scales ranging from 0-4, students scored above medium (2.5) on academic and social self-efficacy, while they scored

below medium on school satisfaction. School stress had the highest standard deviation (SD), indicating a greater variation in this variable (Table 1).

Table 1:

Mean and standard deviations (SD) for life satisfaction, school stress, academic self-efficacy, social self-efficacy, and school satisfaction in total sample and by age, grades and study program.

	N	Life satisfaction (0-3)	School stress (0-3)	Academic self-efficacy (0-4)	Social self-efficacy (0-4)	School satisfaction (0-4)
Total sample	1031	1.8 (0.67)	1.6(0.92)	2.8(0.85)	2.7(0.77)	2.3(0.87)
Age						
15 and 16	12	1.5 (0.83)	1.3 (0.65)	2.9 (0.52)	2.4 (0.64)	2.4 (0.49)
17	477	1.8 (0.65)	1.7 (0.9)	2.8 (0.83)	2.7 (0.78)	2.3 (0.82)
18	347	1.8 (0.68)	1.6 (0.93)	2.8 (0.9)	2.7 (0.77)	2.2(0.92)
19	148	1.8 (0.69)	1.6 (0.98)	2.8 (0.84)	2.7 (0.76)	2.2 (0.84)
20	31	1.9 (0.57)	1.6 (0.9)	2.7 (0.75)	2.6 (0.63)	2.4 (1.0)
Grade						
Grade 1	456	1.8 (0.67)	1.7 (0.89)	2.8 (0.84)	2.7 (0.78)	2.2 (0.83)
Grade 2	321	1.8 (0.67)	1.5 (0.94)	2.8 (0.87)	2.7 (0.79)	2.3 (0.92)
Grade 3	104	1.9 (0.67)	1.7 (0.97)	2.9 (0.79)	2.8 (0.71)	2.2 (0.82)
Study program						
Vocational	408	1.8 (0.67)	1.5 (0.93)	2.7 (0.89)	2.6 (0.8)	2.2 (0.92)
General	471	1.9 (0.66)	1.7 (0.9)	2.9 (0.81)	2.7 (0.75)	2.3 (0.82)

Independent samples t-tests in demographic groups of age, grade and study programme

An independent samples t-test was conducted to test whether the differences in mean score, between demographic groups of age, grade and study program (table 1), were significant or not, except in groups of students aged 15-16 years (n=12) and 20 years (n=31) due to the low sample size. Due to limited space, only results of medium strength or more are reported.

There were significant differences, of a small magnitude in mean score, between study programmes in life satisfaction ($p<0.05$), school stress ($p<0.01$) and degree of academic self-efficacy ($p<0.01$), results not shown.

Correlation analysis in total sample

Spearman's rho in the total sample are shown in figure 2. There were associations of small strength between school stress and life satisfaction, and medium strengths associations between academic self-efficacy, social self-efficacy, school satisfaction and life satisfaction.

There were associations of small strength between school stress on one hand and academic-and social self-efficacy on the other. There were also small strengths associations between academic and social self-efficacy, and between social self-efficacy and school satisfaction, while, there was association of medium strength between academic self-efficacy and school satisfaction (figure 2).

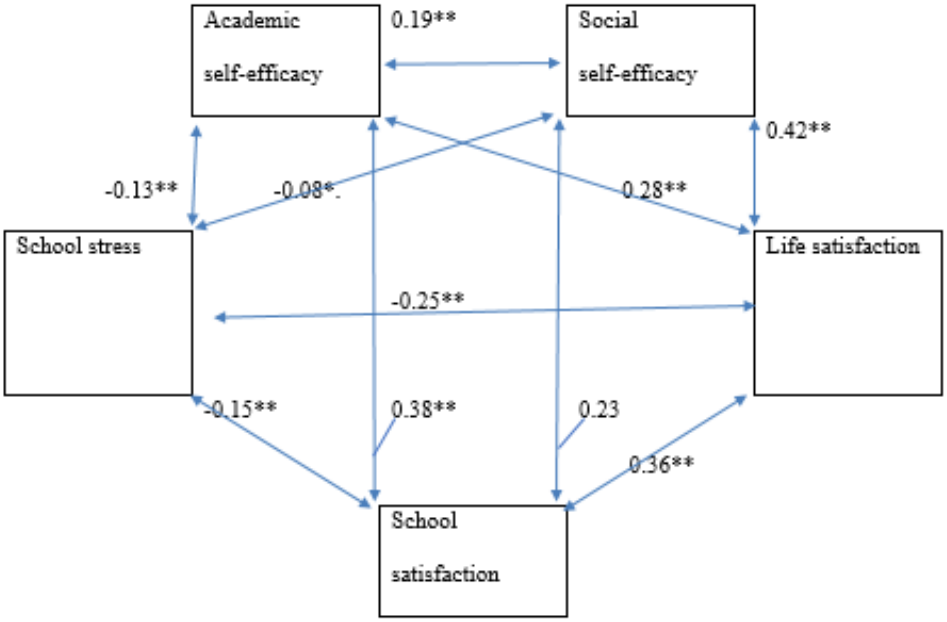

Figure 2.

Bivariate correlations (Spearman`s rho) in total sample (n= 1031)

* Correlation is significant at the 0.05 level (two tailed). ** Correlation is significant at the 0.01 level (two tailed).

Independent samples t-tests by gender

Table 2 shows descriptive statistics in the demographic group of gender. Results from the independent sample t-test showed a significant difference between genders in the degree of school stress ($t(882) = -10.6$, $p<0.01$). The magnitude of the difference in the means (mean difference = -0.63, 95% *CI*: -0.74- -0.51) was moderate ($n^2 = 0.11$), meaning that 11% of the variance in school stress could be explained by gender. There were also significant differences, of small magnitude,

in life satisfaction ($p<0.01$) and social self-efficacy ($p<0.01$) between genders, with girls scoring lower than boys (Table 2), results not shown.

Correlation analysis by gender

In light of the above gender differences, subsequently correlation analysis was performed separately for boys and girls (table 2).

There was a significantly small, negative correlation between school stress and life satisfaction in boys, while near medium-strong negative correlation in girls (table 2). The significantly positive correlation between academic self-efficacy and life satisfaction was to a medium-strong degree for boys, and small degree for girls.

Table 2 further show a significantly small, negative correlation between school stress and academic self-efficacy in boys, but not in girls, while social self-efficacy and school satisfaction was significantly positive correlated, in a small degree in boys, while near medium- strong in girls.

Table 2

Mean (M), standard deviation (SD) by gender.

Bivariate correlations (Spearman's rho) between life satisfaction, school stress, academic self-efficacy), social self-efficacy, and school satisfaction.

Variables	N	M	SD	Life satisfaction (0-3)	School stress (0-3)	Academic self-efficacy (0-4)	Social self-efficacy (0-4)	**School satisfaction (0-4)**
Life satisfaction								
Boys	388	1.9	0.65					
Girls	480	1.7	0.68					
School stress								
Boys	392	1.3	0.87	-0.17**				
Girls	492	1.9	0.87	-0.26**				
3.Academic self-efficacy								
Boys	384	2.8	0.85	0.34**	-0.24**			
Girls	482	2.8	0.84	0.27**	-0.05			
4.Social self-efficacy								
Boys	421	2.7	0.79	0.44**	-0.04	0.25**		
Girls	515	2.6	0.72	0.39**	-0.05	0.18**		
5.School satisfaction								
Boys	387	2.3	0.85	0.35**	-0.13**	0.44**	0.17**	
Girls	484	2.2	0.87	0.40**	-0.17**	0.37**	0.28**	

*Correlation is significant at the 0.05 level (two-tailed). ** Correlation is significant at the 0.01 level (two-tailed).

Independent sample t-test in groups of family wealth

Descriptive statistics for the demographic group of family wealth are shown in table 3**.** An independent sample t-test showed a significant difference in mean scores between students who were not economically well off and those who were very well off (table 3), in terms of the degree of life satisfaction (t (307) = -9.6, p<0.01). The magnitude of the difference in the means (mean difference = -0.74, 95% *CI*: -0.90- -60) was large (n^2 = 0.23), meaning that 23% of the variance in life satisfaction could be explained by family wealth in students who were not and very well off.

Between students who were not well off and well off, there was a significant difference (t (438) = 7.3, p<0.01) in life satisfaction mean scores (mean difference = -0.53, 95% *CI*: -0.67- -0.39), with a moderate magnitude in the difference (n^2 = 0.11). The magnitude of the mean differences in life satisfaction was also moderate between students who were somewhat well off and very well off (p<0.01), and small between the other groups of family wealth (p<0.01), results not shown.

There were significant differences of a small magnitude in mean scores for school stress between students who were not well off and well off, and between somewhat and well-off students (p<0.01), results not shown. However, there was no significant difference in school stress between not well-off students and very well-off students.
Between groups of family wealth there were also significant differences in mean scores, of a small magnitude, for academic self-efficacy (p<0.05), social self-efficacy (p<0.05) and school satisfaction, except between students well off and very well off (p<0.01), with the lowest scores in students who were not well off (Table 3), results not shown.

Correlation analysis in groups of family wealth

In light of the above differences in groups of family wealth, correlation analysis was subsequently performed separately for students not well off, somewhat, well and very well off.
In contrast to other groups of family wealth, social self-efficacy did not significantly correlate with life satisfaction in students who were not well off (Table 3). However, there were significantly positive correlations, of a medium strong degree, between life satisfaction on one hand, and academic self-efficacy and school satisfaction on the other, for students who were not and somewhat well off (Table 3).

School stress and academic self-efficacy were only significantly negative associated for students who were not and somewhat well off, to a small degree, and there was no significant correlation between school stress and school satisfaction in students who were not well off and well off (Table 3).
School satisfaction and academic self-efficacy did show a significantly positive correlation in all groups of family wealth, to a medium-strong degree, while there was no significant correlation between school satisfaction and social self-efficacy in students who were not well off, in contrast to other groups of family wealth. Social and academic self-efficacy did significantly correlate in all groups of family wealth, except for students who were not well off (Table 3).

Table 3

Mean (M), standard deviation (SD) and bivariate correlations (Spearman's rho) between life satisfactions, school stress, academic self-efficacy, social self-efficacy and school satisfaction by family wealth (economically well off).

Variable	Family wealth (well off)	N	M	SD	Life satisfaction (0-3)	School stress (0-3)	Academic self-efficacy (0-4)	Social self-efficacy (0-4)	School satisfaction (0-4)
Life satisfaction	Not	94	1.4	0.63					
	Somewhat	261	1.6	0.67					
	Well	346	1.9	0.6					
	Very	215	2.1	0.62					
4.School stress	Not	97	1.8	0.94	-0.27*				
	Somewhat	265	1.7	0.9	-0.25**				
	Well	350	1.5	0.87	-0.22**				
	Very	217	1.6	0.97	-0.20**				
2.Academic self-efficacy	Not	91	2.6	0.77	0.32**	-0.22*			
	Somewhat	261	2.7	0.9	0.32**	-0.16**			
	Well	347	2.9	0.77	0.27**	-0.08			
	Very	211	2.9	0.95	0.21**	-0.07			
3.Social self-efficacy	Not	99	2.5	0.82	0.11	-0.04	0.02		
	Somewhat	284	2.6	0.7	0.37**	-0.02	0.23**		
	Well	367	2.7	0.7	0.41**	-0.09	0.23**		
	Very	225	2.9	0.87	0.40**	-0.07	0.15*		
5.School satisfaction	Not	96	2.0	0.79	0.34**	-0.17	0.29**	0.12	
	Somewhat	262	2.1	0.85	0.43**	-0.17**	0.47**	0.26**	
	Well	348	2.3	0.75	0.33**	-0.08	0.36**	0.24**	
	Very	207	2.4	1,0	0.22**	-0.15*	0.36**	0.19**	

*Correlation is significant at the 0.05 level (two-tailed). ** Correlation is significant at the 0.01 level (two-tailed).

Hierarchical multiple regression analysis

In this study, hierarchical multiple regression analysis was conducted to examine the association between life-satisfaction, and school stress, academic self-efficacy, social self-efficacy and school satisfaction, controlled for demographic variables.

Age, gender, study programme and family wealth were entered in step one, explaining 13% of the variance in life satisfaction, whereas gender, study programme and family wealth was significantly associated with life satisfaction (Table 4). School stress was entered in step two, explaining the additional 5% of the variance in life satisfaction. In model two, gender was no longer significant after entering school stress. Academic and social self-efficacy were entered

in step three, explaining the additional 15% of the variance in life satisfaction, and school satisfaction was entered in step four, explaining the additional 3% of the variance in life satisfaction. The final model explained 35 % of the variance in life satisfaction, whereas social self-efficacy was the variable most associated with life satisfaction, followed by school satisfaction and family wealth, school stress, academic self-efficacy and study programme (Table 4).

Table 4

Hierarchical multiple regression results for life satisfaction.

Block	Variables	B	SEB	β	Adj.R2	RΔ
1	(Constant)	0.97	0.73		0.13	0.13
	Age	0.02	0.04	-0.02		
	Grades	-0.00	0.05	-0.00		
	Studies	0.09	0.04	0.07*		
	Gender	-0.15	0.04	-0.11**		
	Family wealth	0.23	0.02	0.34**		
2	(Constant)	1.06	0.71		0.18	0.05
	Age	0.02	0.04	0.03		
	Grades	-0.02	0.05	-0.02		
	Studies	0.12	0.04	0.09**		
	Gender	-0.04	0.04	-0.03		
	Family wealth	0.22	0.02	0.32**		
	School stress	-0.17	0.02	-0.24**		
3	(Constant)	-0.16	0.66		0.32	0.15
	Age	0.03	0.04	0.04		
	Grades	-0.04	0.05	-0.04		
	Studies	0.09	0.04	0.07*		
	Gender	-0.02	0.04	-0.01		
	Family wealth	0.18	0.02	0.26**		
	School stress	-0.14	0.02	-0.20**		
	Academic self-efficacy	0.13	0.02	0.17**		
	Social self-efficacy	0.28	0.03	0.33**		
4	(Constant)	-0.16	0.64		0.35	0.03
	Age	0.03	0.04	0.04		
	Grades	-0.03	0.05	-0.03		
	Studies	0.09	0.04	0.07*		
	Gender	-0.03	0.04	-0.02		
	Family wealth	0.16	0.02	0.24**		
	School stress	-0.13	0.02	-0.18**		
	Academic self-efficacy	0.07	0.02	0.09**		
	Social self-efficacy	0.26	0.03	0.30**		
	School satisfaction	0.15	0.02	0.20**		

*Correlation is significant at the 0.05 level (two-tailed). ** Correlation is significant at the 0.01 level (two-tailed).

Discussion

The aim of this study was to examine to what extent school stress, academic and social self-efficacy and school satisfaction is associated with life satisfaction in upper secondary school students in Norway, and to what extent school stress, academic self-efficacy, social self-efficacy and school satisfaction is associated with each other.

Main results

The main results of this study showed significantly negative associations, of small strength, between school stress and life satisfaction, and positive, medium-strength associations between academic-, social self-efficacy and school satisfaction on one hand and life satisfaction on the other.

There were significantly negative, low-strength associations between school stress on one hand, and academic self-efficacy and school satisfaction on the other, while positive medium strength association between school satisfaction and academic self-efficacy. There were small strength associations between school satisfaction and social self-efficacy, and between academic- and social self-efficacy.

Together, school stress, academic self-efficacy, social self-efficacy, school satisfaction, and demographic variables of study programme and family wealth, explained 35% of the variance in life satisfaction. There were significant differences in mean scores on the variables in this study between genders, study programmes and groups of family wealth, while no significant differences between age and grades were found.

Association between school stress and life satisfaction

Results in this study support that school stress is negatively associated with cognition about life satisfaction, and vice versa, as variables may influence each other (Suldo & Huebner, 2004; Proctor et al., 2009). This was expected, according to previous research (Proctor et al., 2009; Burger & Samuel, 2017; Moksnes et al., 2016). It is positive then that life satisfaction levels were high among the participants, as life satisfaction can be a buffer against stress (Suldo & Huebner, 2004). On the other hand, there were significant differences in the perception of stress and life satisfaction among students.

In this study, girls had significantly higher school stress scores and lower scores on perceived life satisfaction than boys. This is consistent with previous research (Klinger et al., 2015; Bakken, 2017 p.6; Burger & Samuel, 2017), and the association between school stress and life satisfaction was near medium strong in girls, while small in boys. However, there was greater dispersion among boys, indicating that some boys also experience high levels of school stress. One contributing factor could be the point in time during which the survey was conducted, as the end of the academic year involves many tests and exams. However, students who were not well off had the highest scores on perceived school stress in this study, and low family wealth was associated with a lower degree of life satisfaction in both genders, consistent with previous research (Bøe et al., 2012; Suldo et al., 2014; Zaborskis et al., 2018).

On the other hand, very well off girls scored higher on school stress than well off girls, but they also scored higher on life satisfaction, which supports the notion that stress stimuli and

appropriate demands at school can positively contribute to learning and well-being (Bassi et al., 2007; Jones, 2011), and that school stress is not always associated with lower levels of life satisfaction (Suldo & Shaunessy-Dedrick, 2013). This may be due to access to coping resources, such as self-efficacy (Burger & Samuel, 2017), or support from teachers, classmates and parents (Danielsen et al., 2009), which protect against reduced life satisfaction in spite of experienced school stress.

Students in general study programs scored higher on life satisfaction and school stress than students in vocational studies. This might indicate boredom in vocational students. In Norway, boys and students in vocational studies are more likely not to complete upper secondary school (SSB, 2016). According to Eccles & Roeser (2011 p.226) boredom, low interest or the perception of the curriculum as irrelevant can predict lower levels of engagement, learning and withdrawal from school. On the other hand, Salmelo-Aro & Tynkkynen (2012) found differences between boys from academic and vocational tracks in terms of burnout, such as disengagement and feelings of inadequacy due to school demands, whereas burnout increased among boys on academic tracks, but not in boys from vocational tracks. Girls in vocational study programme experienced the lowest degree of burnout (Salmelo-Aro & Tynkkynen, 2012). In current study, there is no information available about this, though it should be further examined in Norway.

Associations between academic and social self-efficacy on one hand, and life satisfaction on the other hand

In this study, academic and social self-efficacy were positively associated with life satisfaction, consistent with previous research (Vecchio et al., 2007; Akin & Akin, 2016). Variables may influence each other in a mutual way (Park, 2004; Tian et al., 2014), but the results support that personal agency, like academic and social self-efficacy, are important developmental assets associated with positive cognitions about life satisfaction in youth (Vecchio et al., 2007).

Consistent with previous research, social self-efficacy was the variable most associated with life satisfaction in both genders, supporting the importance of social relations, such as with friends and classmates, for students' well-being and life satisfaction in school (Caprara et al., 2006; Casas et al., 2013; Akin & Akin, 2016). Thus, it is positive that students in this study scored high in terms of academic and social self-efficacy, which are associated with social competence, academic achievement, intrinsic motivation, self-regulating behaviour and setting and realizing of goals (Bandura, 1997 p.174-177; Bandura et al., 1999). There was no difference between genders in scores of academic self-efficacies in this study, but there was a small significantly lower score in girls on social self-efficacy, which supports the notion that girls are more sensitive to social exclusion than boys are (Danielsen et al., 2009; Blakemore et al., 2014; Lillejord et al., 2017 p. 26).

The highest score on both academic self-efficacy and social self-efficacy was in the group of students who were economically very well off, a finding that might explain why very well-off girls experienced a high degree of life satisfaction in this study, despite a high degree of perceived school stress. They might also have access to more social support when needed, due

to a higher degree of social self-efficacy (Bandura et al., 1999), and social self-efficacy can mediate the relation between academic self-efficacy and life satisfaction (Akin & Akin, 2016).

Among most of the students, there was a positive relationship between social self-efficacy and life satisfaction, in contrast to students who were not economically well off, in which academic self-efficacy was more associated with life satisfaction. A possible explanation is that students, who are not economically well off, experience a subculture that emphasizes more pressure on school and academic achievement, similar to what Park & Huebner (2005) found in students from individualistic and collectivistic cultures.

Students in vocational study programs reported a significantly lower degree of academic self-efficacy compared to students in general studies. This might be due to earlier experiences, or less academic mastery experiences in the school context (Bandura, 1997 p.80; Markussen & Seland, 2012 p.11). Moreover, students in vocational studies also scored lower in life satisfaction, which may influence their social and academic self-efficacy (Park, 2004). This suggests a need for more efforts to enhance positive academic and social mastery experiences, as well as a positive interplay between students and context in vocational study programmes.

Associations between school satisfaction and life satisfaction

School satisfaction was positively associated with life satisfaction, supporting previous research that school is an important domain for young people (Huebner & Gilman, 2002; Danielsen et al., 2009; Casas et al., 2013). However, school satisfaction had the lowest score in this study, which indicates a potential for improvements in this area. In this study students were asked whether they look forward to going to school, whether they like being in school and whether school is interesting. They also answered questions about whether they learn a lot at school and whether they enjoy school activities. School satisfaction is bidirectionally related to satisfaction with basic needs of autonomy, competence and relatedness (Tian et al., 2014), and satisfaction with teachers (Casas et al., 2013). Results support that the academic school culture is important, regarding to students liking and interest`s in school, and regarding the impact of school as an ecological developmental asset for adolescents (Lerner et al., 2010; Lillejord et al., 2017 p.41).

There was no significant difference between genders in scores of school satisfaction in this study. However, the highest score on school satisfaction was in the group of students who were economically very well off, consistent with previous research (Inchley et al., 2016 p.67), which indicates a more positive interplay between the individual and school for these students. This might be about satisfaction with teachers (Casas et al., 2013) or social support from teachers and classmates (Danielsen et al., 2009). Another possible explanation is that students, in upper secondary school in Norway, are admitted a place based on grades from lower secondary school. These students may have higher evaluations on academic achievements due to a higher degree of academic self-efficacy (Bassi et al., 2007), which in turn provides more possibilities to execute intentional personal agency and autonomy in choosing their school. Students well

economically off might also experience positive stimulation from other areas, due to a higher degree of life satisfaction (Zaborskis et al., 2018) or social status (Martinez et al., 2010),

Among students who were not well off, school satisfaction and academic self-efficacy were associated in a medium strong degree to life satisfaction, in contrast to small degree in students who were very well off, which may reflect a higher need for academic support from teachers and the school environment for students who are not economically well off, as they may have worries in other areas of their lives, such as how to obtain necessities and make a living on their own (Suldo et al., 2014).

Associations between school stress, academic self-efficacy, social self-efficacy and school satisfaction.

There was a negative relationship between school stress on one hand, and academic self-efficacy and school satisfaction on the other hand, as expected (Gillis, 2011; McKay et al., 2014; Lillejord et al., 2017 p.37). However, the significance was not consistent in all groups. The negative relationship between academic self-efficacy and school stress was significantly, though small for boys and students who were not and somewhat well off, which supports the value of academic competence when facing stress and vice versa (Gillis, 2011: McKay et al., 2014), and that academic support from teachers and classmates is an important ecological resource when students experience school stress, consistent with previous research (Danielsen et al., 2009; Lillejord et al., 2017 p.26).

However, there was no significant association between school stress and academic self-efficacy in girls and students well off, supporting that school stress might also be about other factors than academic self-efficacy, e.g. social support, satisfaction with school or family wealth. School satisfaction was negatively associated with school stress in both genders. The results support that students who are less satisfied with school perceive a stronger degree of school stress, and vice versa, consistent with previous research (Lillejord et al., 2017 p.38).

In this study there was a positive relationship between academic and social self-efficacy in all students, except those who were not well off, which support that self-efficacy in one domain does not necessarily connect to self-efficacy in another, while mastery of one domain will often make it easier in another (Bandura, 1997 p.41-42; Ursin & Eriksen, 2007).

It was a positive association between school satisfaction and academic self-efficacy in all students. On the other hand, school satisfaction was associated with social self-efficacy to a medium-strong degree in girls, but weak in boys. This supports previous research that girls may need stronger social support from the school environment due to stronger perceptions of school stress (Danielsen et al., 2009; Lillejord et al., 2017 p.29).
Results in this study showed that social self-efficacy explained most of the variance in life satisfaction, followed by school satisfaction, school stress and academic self-efficacy, supporting the importance of social and academic mastery experiences in school, as loneliness among young people, as well as support from teachers, can predict intentions to drop out of

school (Frostad et al., 2014), and social conflicts or schoolwork at the expense of social activities relates to increased school stress (Lillejord et al., 2017 p. 29).

However, family wealth was positively associated with life satisfaction, consistent with previous research (Bøe et al., 2012; Suldo et al., 2014; Zaborskis et al., 2018). In this study, students who were not economically well off scored lower on social and academic self-efficacy, school satisfaction and life satisfaction, and higher on school stress, than students economically better off. The combination of experiences of stress and coping resources available is important in relation to the possible harmful effects of stress (Ursin & Eriksen, 2007; Gillis, 2011; Burger & Samuel, 2017). These students might experience stress stimuli and demands that overwhelm their ability to cope. Social background is associated with a heightened experience of school stress and lower academic performance in primary school (Samdal et al., 2016 p.61), which may be the source of future perceptions of stress and self-efficacy beliefs (Bandura, 1997 p.80-82; Ursin & Eriksen, 2007). However, social background is also associated with different cultural factors such as education and the presence of books at home, as well as inequalities in information such as the languages young people are exposed to (Thomas & Laurillard, 2014), so caution should be applied in interpreting this.

Practical implications and further research

This study supports a health promotion perspective where one can use measures aimed at the school environment, and the relationship between the individual and context, to systematically work with positive youth development and psychological health among adolescents (Park, 2004; Lerner et al., 2010), and increase thriving, motivation and self-efficacy beliefs (Bandura, 1997 p.176; Deci & Ryan, 2000; Urdan & Schoenfelder, 2006; Lerner et al., 2010; Tian et al., 2014). This can include collaborating with non-governmental organisations to enhance adolescent's psychosocial well-being (WHO, 2012 p.24).

Due to the positive association between social self-efficacy and life satisfaction, the results of this study support the idea that many students can benefit from strengthened social self-efficacy and social competence at school, such as competence in conflict resolution. Social and emotional skills and life mastery are important areas for schools in the future (Green Paper, 2015:8), and social competence programs can also strengthen social and relational competence in teachers (Larsen & Samdal, 2012).

This study supports a need for improvements in levels of school satisfaction. Academic and social school leadership should stimulate pedagogical practices that increase positive and interesting experiences in school, feelings of autonomy, competence and relatedness, as well as social and academic support from teachers and classmates (Huebner & Gilman, 2002; Danielsen et al., 2009; Casas et al., 2013; Tian et al., 2014). Connectedness to school and the completion of education and later participation in work are central health determinants over young people's lifetimes (Viner et al., 2012), and balancing expectations and demands in learning environments and situations in which students can use their personal agency and experience mastery, rather than avoiding academic challenges, can stimulate self-efficacy and motivation (Bandura, 1997 p.80-81; Eccles & Roeser, 2011).

Teachers should have the ability to recognize and deal with stress reactions in school (Lillejord et al., 2017 p.39), as thoughts and emotions of anxiety can influence self-efficacy beliefs (Bandura, 1997 p.106-113). Developing life skills can be about the ability to understand and sense inner thoughts and emotions, empathy, and integration of different parts of oneself, so as to deal with thoughts and feelings in a flexible way (Siegel, 2014 p. 56-57), such as when coping with stress. Reflection and articulation about experiences, thoughts and feelings can contribute to higher levels of well-being (Siegel, 2014 p.60-61), with students having a positive and realistic view of their own competence.

Further research should explore differences between genders and family wealth, and between students in vocational and general studies in upper secondary school in Norway, in terms of life satisfaction, school stress, academic and social self-efficacy and school satisfaction. For example, this research could explore whether they experience appropriate kinds of expectations and demands from themselves or from significant others, such as teachers.

Conclusion

In summary, students scored high on life satisfaction, academic self-efficacy and social self-efficacy in this study, which can be coping resources when facing stress (Suldo & Huebner, 2004; Burger & Salomon, 2017). In contrast, there were lower scores on school satisfaction.
School stress, academic self-efficacy, social self-efficacy, school satisfaction, and demographic variables of study programme and family wealth, together explained 35% of the variance in life satisfaction. Social self-efficacy was the variable most positively associated with life satisfaction, followed by family wealth, school satisfaction, academic self-efficacy and study programme, while school stress was negatively associated with life satisfaction. This support that a school culture with appropriate demands and support from school environment, as well as positive academic and social mastery experiences, is positively associated with students' cognitions about life satisfaction and thriving in upper secondary school.

The association between school stress and life satisfaction was significant, though small, while there were positive, medium-strength associations between life satisfaction and academic self-efficacy, social self-efficacy and school satisfaction.
There were significantly, small strengths associations between school stress on one hand, and school satisfaction and academic self-efficacy on the other, while positively associations of medium strength between academic self-efficacy and school satisfaction, and small strength associations between social self-efficacy and school satisfaction, academic self-efficacy and social self-efficacy.

Girls scored significantly higher on school stress, and lower in social self-efficacy and life satisfaction than boys, and students in vocational study programme reported significantly lower scores on school stress, academic self-efficacy and life satisfaction than those in general study programmes. However, students who were not economically well off reported a combination of high score on school stress and lower scores on coping resources, such as academic self-efficacy, social self-efficacy, school satisfaction and life satisfaction. This confirms trends found in previous

research (Bøe et al., 2012; Samdal et al., 2016 p.61; Zaborskis et al., 2018), and may represent a risk for future health (Ursin & Eriksen, 2007).

School is an important context for adolescent health, and the aim of public health policies is the promotion of health and the reduction of social inequalities from a lifetime perspective (Ministry of Health and Care Services, 2015). Teachers and school leaders should thus be aware of the impact of proximal social health determinants in students' everyday lives (Viner et al., 2012),

Limitations and strengths

This was a cross-sectional study that cannot establish causality, as variables may mutually influence one another. The mean life satisfaction score and the scores of the social and academic self-efficacy scales were high. This could influence the reliability of the data due to concerns over social desirability. The sample is not representative, but the results of this study are comparable to results from other studies with representative samples (Inchley et al., 2016 p.83; Samdal et al., 2016 p.61; Bakken, 2017 p.10). The scales showed good internal consistency and the exploratory factor analysis demonstrated that all of the instruments were useable in the context of the study. However, all variables measure subjective perceptions, and therefore objective control is not possible. Another limitation of the results is that school stress was only measured as a single item, even though it previously has shown good validity (Klinger et al., 2015). The variable measuring the family wealth is a relative measure in the Norwegian context and cannot be generalized in other contexts. This is also a methodological and conceptual challenge, as one cannot be sure that all young people have knowledge of their family's level of income (Currie et al., 2008). The sample consisted of respondents from four different schools and counties in Norway. Three of the schools are from the east part of Norway, which could represent a limitation due to the similarity of the respondents. The mean degree of family wealth was high, which could affect the results, as increased inequality between students who are not economically well off and those who are very well off could enhance family wealth as a social determinant of health (Viner et al., 2012). Finally, small correlations can be significant in large samples (Pallant, 2016 p. 129) and should thus be considered.

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Declaration of interest

There are no conflicts of interest in this study.

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