

SOCIAL CAPITAL, PSYCHOSOMATIC SYMPTOMS AND STRESS AMONG ADOLESCENTS

A quantitative study exploring relationships between social capital, psychosomatic symptoms and stress among adolescents in Västmanland.

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ABSTRACT

Over the past decade mental health problems among adolescents in Sweden has increased. Psychosomatic symptoms and stress accounts for a large proportion of the disease burden. Social capital is a social resource that can strengthen the individual's well-being. The aim of the study is to examine if social capital is related to psychosomatic symptoms and stress, as well as if there are gender differences in social capital, psychosomatic symptoms and stress among adolescents. A quantitative method was chosen, and the study used secondary data from Survey of Adolescent Life in Västmanland 2012, which had a cross-sectional design. Statistical analyses were carried out to answer the aim of the study. There was 87% of the adolescents that reported high levels of social capital, whereas 72% reported high levels of psychosomatic symptoms and 65% felt stressed. There was a statistically significant negative relationship between social capital and psychosomatic symptoms, also a relationship between social capital and stress. Boys reported higher levels of social capital than girls. Girls reported higher levels of psychosomatic symptoms and felt stressed compared to boys. The results were consistent with previous research regarding psychosomatic symptoms and stress, where girls were affected to a greater extent than boys.

Keywords: adolescents, mental health, public health, social capital, quantitative method

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1 INTRODUCTION

According to WHO (2020b) the adolescent years are fundamental to an individual's emotional development. During the age of 10 to 19, important abilities are formed. The individual's ability to form emotional stability, social relationships and mental well-being can determine how mentally well-prepared the individual is for the adult world. Therefore, mental health problems that develop during adolescence can have an impact on the early adult years. Over the past decades there has been an increase in mental illness among adolescents over the world. According to Folkhälsomyndigheten (2018a) mental illness in Sweden constitutes a large part of the disease burden and the effects of mental illness are generally long-term, making it a significant public health problem. Individuals that experience mental health problems as adolescents can have problems managing schoolwork and not graduating as a result. It can lead to problems acquiring a job and maintaining independence as an adult, which can have a negative effect on the individual, as well as the society. Folkhälsomyndigheten (2018b) reports that in Sweden half of all adolescents experience psychosomatic symptoms in form of headaches, backaches, irritation, dizziness, depression and stomach aches at least twice a week. In addition to psychosomatic symptoms, school related stress is increasing. The sense of not having control over the demands in school and experiencing a high workload is causing stress and mental strain. Previous research show that there is a gender difference in both psychosomatic complaints and stress. Social capital is described by Coleman (1988) as social relationships that can exist within families, among friends and in local communities. It can be seen as a resource that can help the individual achieve goals through the support and help from the people within the social network. Social capital can strengthen an individual's emotional and mental well-being through the support available within the social relationships, as such social capital can act as a protective factor against psychosomatic symptoms and stress.

As the majority of adolescents in Sweden are experiencing psychosomatic symptoms and stress it is imperative to examine this issue further. By understanding the extent of the issue and what can affect it, measures can be taken to form strategies and tools to be used in schools to prevent mental health problems. It is also important to examine gender differences in order to solve the problem why more girls than boys are affected by mental health problems. This would be beneficial, not only for the adolescents, but for public health in general as the consequences of the mental health problems affect societal structures and a large number of the population. Therefore, it is important to study this with the goal of understanding what is causing the increase of adolescents experiencing mental health problems. Adolescents would benefit from having measures taken to improve their mental health, in order for them to develop emotional stability and abilities to help them move into the adult world.

2 BACKGROUND

Mental health is defined by World Health Organisation as not only the absence of mental illness, but as mental well-being, which includes psychological and emotional well-being as well as social wellness (WHO, 2020a). Bhugra, Till and Sartorius (2013) further describes mental health as multiple parts that together result in mental well-being, for example absence of illness and a balance of senses and emotions, giving the individual a sense of control and resources to cope with different situations in life. According to WHO (2020a) individuals that are experiencing mental illness can to some extent experience mental health, as even though the psychological health may be affected, the individual may for example experience social wellness. Furthermore, mental illness is defined as atypical behaviours, thoughts or feelings. This can result in mental health disorders for example, anxiety, depression, personality disorders and psychosomatic symptoms.

2.1 Adolescents mental health

WHO (2020b) define adolescents as individuals aged 10 to 19-years. During the adolescent years a significant foundation is built in terms of developing emotional maturity, social habits and mental well-being. Lee et al. (2014) further describe adolescence as a period in the individual's life where a significant development of the brain takes place. The emotional development can lead to a lack of control over feelings and an inability to handle these reactions. This can leave the individual vulnerable to negative influences from friends and schoolmates, which can lead to emotional stress and anxiety. During these critical years it is, according to WHO (2020b), essential to have support from family, friends and in school to maintain stability and health. During adolescence the majority of mental illnesses, such as depression and anxiety, develop and 50% of all cases of mental illness occur before 14 years of age. Globally, one in six of all 10 to 19-year olds have experienced some type of mental illness, with depression being the fourth leading cause of illness and disability among the youth. Risk factors for developing mental illness can be discrimination, violence, unstable home situations, social exclusion and lack of relationships in school. These risk factors can increase stress of the individual which can lead to depression and in worst case, suicide. Globally in 2016, there were 53,000 deaths among 15 to 19-year olds, related to mental illnesses and suicide is the second leading cause of death among adolescent girls worldwide.

According to Folkhälsomyndigheten (2018a), mental health problems accounts for a large proportion of the disease burden in Sweden, making it a significant public health problem. Socialstyrelsen (2013) reports that this can lead to problems for society in large, as individuals affected by mental illnesses can have difficulties with completing school as well as acquiring and maintaining a job over a longer period. Folkhälsomyndigheten (2018a) reports that for girls aged 15 to 19-years, depression was the second largest cause of disability-adjusted life years [DALY] in Sweden 2016. For boys of the same age, depression was found to be the sixth largest cause of DALY. Socialstyrelsen (2013) report that the effect of these mental illnesses is prolonged, with 30% of individuals effected in adolescence requiring care ten years later.

2.1.1 Psychosomatic symptoms

Psychosomatic problems are described by Folkhälsomyndigheten (2018b) as experiencing both physical and mental symptoms. The four physical symptoms are dizziness, headaches, stomach aches, back aches. The four mental symptoms are irritation, sleep disturbances as well as depression and anxiety. Takata and Sakata (2004) explain that psychosomatic symptoms can be divided into four parts that expose different complaints. The first is symptoms relating to concentration and attentiveness, followed by symptoms relating to depression. The third part relates to impulsiveness and irritability. The fourth and last part covers pain in different parts of the body as well as fatigue. According to Östberg, Alfvén and Hjern (2006) negative stress can affect the body and result in physical complaints. It can be pain in muscles, stomach or head, as well as hormonal effects with result in concentration difficulties or irritability. Often, these physical complaints in adolescents cannot be explained by a physician, which leads to undiagnosed conditions and prolonged suffering for the individual. However, these complaints often tend to be psychosomatic, caused by stress in school or at home.

Folkhälsomyndigheten (2018a) report that in Sweden, psychosomatic problems have continuously increased among 13 to 15-year olds since 1980. The numbers have more than doubled since the 80s, with 50% of all 13 to 15-year olds suffering from at least two psychosomatic symptoms more than once a week. Sweden has a larger number of self-reported cases of psychosomatic symptoms than the other Nordic countries. 60% of 15-year old girls in Sweden have reported suffering from psychosomatic symptoms, compared to 40% in the other Nordic countries. Among 15-year olds boys in Sweden the number is over 35%, compared to 20% in the other Nordic countries. According to Östberg et al. (2006) adolescent girls in Sweden experience psychosomatic complaints such as headaches to a greater extent than boys. However, with regards to sleep disturbances there were no gender differences.

Folkhälsomyndigheten (2018a) further report that there are different factors as to why the psychosomatic complaints have increased in Sweden over the past decades. Adolescents that did not have a parent or other adult to confide in with concerns had a high level of self-reported psychosomatic symptoms, as did adolescents that experienced economic strain in the family (Folkhälsomyndigheten, 2018a). According to Östberg et al. (2015) children from single-parent households have higher levels of psychosomatic complaints than two-parent families. This is thought to be due to single parents working more and having less time to spend with their children. Furthermore Folkhälsomyndigheten (2018a) report that the factor that caused the highest level of self-reported psychosomatic complaints was school stress. The adolescents that experienced stress over schoolwork and had lower school results also experienced stress over their future.

2.1.2 Stress

Stress is a physiological response to a stressor that causes the body to react by releasing stress hormones to cope with the stressor (Lazarus & Folkman, 1984). According to Bösch (2014) there are two parts of stress. The first part is acute stress which is generally not harmful to the body, as it is a short and temporary emotional or physical reaction. Acute stress occurs when the body is faced with a temporary stressor such as an argument, an exam or an accident. Acute stress can last a few minutes up to a couple of hours. The second part of stress is chronic stress which is a long-term reaction to a stressor. Chronic stress can last from a few days to years. During chronic stress the body is under strain with no possibility to recuperate. Factors causing chronic stress can be, for example, long-term illness, chronic

pain, loss of a loved one, work or school related demands or financial problems. As chronic stress is prolonged it is a risk factor for both physiological and psychological illnesses such as heart disease, insomnia, depression and anxiety.

According to Burnett-Zeigler et al. (2012) girls are more prone to experience psychosomatic and stress complaints than boys. Adolescent girls are affected by school related stress to a greater extent than boys which in turn can cause psychosomatic symptoms such as headaches, sleep disturbance and depression. Folkhälsomyndigheten (2018b) report that school related stress has increased in Sweden over the past decade. 15-year old girls that experience school related stress has increased from 53% in 2009 to 73% in 2018. For boys the number increased from 30% in 2009 to 50% in 2018. According to Ollfors and Anderson (2007) school stress among adolescents is related to various factors which can lead to feeling stressed. These factors can affect the stress levels, either on their own or several factors together. The factors that most affected the stress levels were school workload, demands from school and how peers perceive the individual. Adolescent girls experienced lower control over their school situation due to these stressors.

Wiklund, Malmgren-Olsson, Öhman, Bergström and Fjellman-Wiklund (2012) report that over 50% of the adolescent girls and boys experienced the tasks in school as too demanding and with too many tasks to be completed at once, which can lead to a lack of control over the work. The perceived stress in school was correlated to the adolescents experiencing psychosomatic symptoms. According to Morazes (2016), stress that is caused by school demands has a large impact on adolescents' health. In addition, school related stress also had an impact on educational success and relationships in school with peers and teachers. Furthermore, Östberg et al. (2015) claim that even though adolescent girls self-report perceived stress and school pressure to a greater extent than boys, both genders report the same level on school demands. The demands are perceived as too high which infringes on their leisure time. Both girls and boys experience having less time to meet friends and participate in leisure activities, which affects their mental well-being. Piko, Varga and Mellor (2016) explain that problems maintaining social relationships is a risk factor for psychosomatic symptoms. Among adolescent girls, a need to belong in school and with peers was a major predictor for psychosomatic symptoms. The study also showed that self-esteem could be a protective factor against school stress and psychosomatic symptoms. Self-esteem was reported to be higher among boys, which meant they experienced less stress in school and less symptoms such as headaches, stomach aches, sleeping disturbances and fatigue. Though boys had a greater self-reported self-esteem than girls, the study showed that self-esteem and the ability to maintain social relationships can be a protective factor for both genders.

2.2 Social Capital Theory

Coleman (1988) defines social capital theory as a strategy of social relationships. Social capital is defined as social networks between likeminded people, so called bonding, as well as bridging relationships between people from, for example, different communities or socioeconomic backgrounds. Within the social relationships there is a shared sense of community with values and norms that bring people together. It also entails a mutual understanding that will build trust and trustworthiness. The foundation of social capital are resources that are available to an individual to use in order to achieve a better result than the individual would alone. The resources available may involve shared information, social support or material aid in order for an individual to progress and achieve set goals. There are different parts of resources forming social capital within a community. One part is the ability to share information among the individuals. Another part is the norms that are commonly

shared among the individuals. The norms help form a sense of community and creates a sense of safety and belonging.

Coleman (1988) further explain that social capital is important for the development of emotional and social abilities in adolescents. Within families, other forms of capital exist, including economical and human capital. These forms of capital provide a family with money, socioeconomic status, level of education from parents and support in the learning process. Social capital also exists within families and it involves relationships between children, parents and other close family members. In order for a child to have social capital within the family, parents must support their children, not only financially, but emotionally. By spending time with their children and showing an interest in them, parents can provide emotional support and attention and thus strengthen the children's social capital. Absent parents that provide adequate levels of financial and human capital cannot contribute to the child's social capital. According to Östberg et al. (2006) children from single parent homes where the parent is working a lot, and children from two parent homes with absent parents, experience less emotional support and also report higher levels of psychosomatic complaints. Coleman (1988) explain that social capital can also be found outside of the family, where children develop meaningful social relationships with peers and other adults such as teachers or leisure club leaders. In schools, especially during the adolescent years, social capital is important for developing strengths and abilities to be able to handle the responsibilities after graduating from school. For adolescents, belonging to a community outside the family is important to gain access to resources and support to cope with stressors and obstacles.

According to Putnam and Goss (2002) social capital is built on an agreement between individuals to help and support each other. Therefore, a sharing of resources emerges with a common understanding that individuals help each other and as such, can expect help when needed, in return. Having a high level of social capital in the community can help create a safer environment for the residents, with lower crime rates as a result of the trust within the community. Social capital can also bring positive health effects as the individuals mental health and well-being can be increased by the social support and relationships. By having people in family, school, work and neighbourhood that can provide emotional support and resources to help with problems and to reach goals, the individuals life satisfaction and mental health can increase.

2.2.1 Social capital and adolescent health

According to Morgan and Haglund (2009) there are three indicators to measure social capital, with the indicators being available in different settings. The first indicator was belonging and referred to a sense of belonging in the family, in school or in the neighbourhood. A sense of belonging would entail feeling emotional support and trust from parents, spending quality time with parents, feeling safe in school, having friends in school and in the neighbourhood and feeling trust for friends and other adults in the community. The second indicator was autonomy, which referred to having control over different situations in life. It also involved parents not controlling too many aspects of the individual's life as well as being involved and participating in school and a sense of being listened to by teachers. The third indicator related to social networks within school and in the neighbourhood with adolescents having an active social life and being involved in school activities as well as leisure time activities and youth clubs. Social capital was related to self-reported health and well-being among the adolescents. Adolescents with a sense of belonging in school reported the highest levels of well-being and good health. Therefore, adolescents with a low sense of belonging reported poor health and low levels of well-being. Furthermore, being active in leisure time activities and social clubs was strongly associated with positive health outcomes and high levels of well-being. Burnett-Zeigler et al. (2012) report that

psychosomatic complaints in adolescents noticeably affected their social relationships and their social activities. The adolescents with perceived stress and psychosomatic symptoms were less inclined to participate in school activities and leisure activities.

Eriksson, Hochwalder, Carlsund and Sallstrom (2011) report that adolescents with higher levels of social capital in the family, in school as well as in the community also report higher levels of well-being. It was found that school social capital was a significant factor of the adolescents' mental well-being, despite their level of family social capital. Therefore, experiencing high levels of school social capital can be a protective factor against ill health and mental health problems. Nielsen et al. (2015) explain that school social capital can be a protective factor against ill health and mental health problems. School is an arena where adolescents spend a major part of their time, and it is therefore a significant factor that influence the health and well-being of children. Adolescents that feel safe and experience trust in school report lower levels of psychological symptoms, such as stress and anxiety. Furthermore, according to Sakai-Bizmark et al. (2020) school social capital can impact adolescents to behave or make choices in a certain matter, depending on their peers. The study found that adolescents experiencing high levels of school social capital were less likely to smoke. As such, school social capital had a positive effect on the adolescents' health. School social capital may encourage adolescents to make better choices that can positively affect their health and well-being.

2.3 Problem formulation

Previous research shows the extent of psychosomatic complaints and school related stress, with the number of adolescents experiencing these problems continuously increasing. The previous research also highlights a gender difference, with girls reporting higher levels of stress and psychosomatic symptoms than boys. Given this information, it is of interest to examine if this is the case in adolescents in Vastmanland, in order to gain knowledge on the subject and to be able to form preventative measures. The increase in mental health problems is affecting both individuals and society. Previous research also shows how social capital can act as a protective factor against psychosomatic complaints. However, there is a gap in the research field on social capital in relation to stress. In Sweden there is a lack of research on adolescents' social capital and stress, as such there is insufficient knowledge on the relationship and any possible effects social capital may have. As stress and psychosomatic symptoms along with other mental health problems is a large public health problem in Sweden, improving the mental health of adolescents would be beneficial to the population as well as the individual. By emphasizing the relationship between social capital and psychosomatic symptoms and stress from a public health perspective, it can generate knowledge that can form foundations of preventative measures for schools as well as be used for further research in the area.

3 AIM

The aim of the study is to examine if social capital is related to psychosomatic symptoms and stress, as well as if there are gender differences in social capital, psychosomatic symptoms and stress among adolescents in Västmanland.

3.1 Research questions

How common are social capital, psychosomatic symptoms and stress among adolescents?

Is there a relationship between social capital and psychosomatic symptoms?

Is there a relationship between social capital and stress?

Is there a gender difference in social capital, psychosomatic symptoms and stress?

4 METHOD

Below follows a presentation of the methodological approach and the process of sampling and data analysis.

4.1 Methodological approach

The present study aims to examine relationships between different variables and differences in gender using measurable data, consequently a quantitative approach was chosen. By using a quantitative method, the aim and research questions can be answered, as according to Creswell (2014) the research questions determine what methodological approach to be used. As such, a qualitative method would not be appropriate to use as the data would not be measurable and relationships would not be possible to prove. Creswell (2014) describes quantitative methods as a scientific approach that aim to test theories and generalise the result to the study population. The method is characterised by the systematic process and stringency in data collection and analysis. In quantitative research the researcher applies an objective perspective on the research field in order to avoid influencing the result. Non-experimental methods are descriptive and explore associations between different variables or groups whereas experimental methods can examine causality between variables. Non-experimental design allows for a large sample and can generate large quantities of data which could improve the generalisability of the result to the study population.

The present study is based on previous research and a proven theory, as such, it has a deductive approach. A deductive approach entails, according to Creswell (2014), forming an

aim and research questions based on previous research and a proven theory. Data is collected and analysed with the purpose to answer the aim and research questions. Upon obtaining answers for the research questions, conclusions can be drawn, taking the theory from the specific to the general. In a deductive approach the theory is presented in the early stages of the process and act as a strategic tool and help form the study design. In the present study, the social capital theory was used to formulate the research questions, which will be answered through the data analysis.

4.2 Study design

The present study is using secondary data from the survey; Survey of Adolescent Life in Västmanland [SALVe] 2012 which was conducted with a cross-sectional design. SALVe is part of a population survey that has been carried out by the county council of Västmanland since 1995. The county council of Västmanland conducts this survey every two years, in order to gather information on the adolescents' life and health. The county of Västmanland consist of a major city, small towns, as well as rural areas which brings a representative population and diversity to studies. According to Mann (2003), a cross-sectional design is suitable to establish relationships between variables and prevalence of conditions. As the SALVe questionnaire was distributed at one point in time, the design is observational and cross-sectional which entails that no interference or manipulation occurs, the participants are only being observed. As there was no follow-up in the SALVe survey, exposure and outcome was measured at the same time. Therefore, only associations could be measured, as it is not possible to measure causality with a cross-sectional design. Most cross-sectional studies use questionnaires which, according to Bruce, Pope and Stanistreet (2018) allows for a larger and more representative sample compared to other designs, for example experimental studies. Cross-sectional studies are therefore useful when investigating health conditions in certain groups in the population. Grimes and Schulz (2002) state that cross-sectional surveys are used to monitor trends in health among a population, as well as be used for planning prevention measures in health care. Bruce et al. (2018) agrees that surveys are useful when investigating health care needs and the data can be used as support for health interventions. The relationships discovered in a cross-sectional study can also be used as a basis for further research to examine, for example, causality through an experimental study.

4.3 Sample

The target population in the SALVe 2012 survey was all adolescents in the 9th grade in junior high school and 2nd grade in senior high school in the county of Västmanland (Hellström et al., 2015). All adolescents in the target population were included in the study population, which according to Bruce et al. (2018) is considered a total population sampling. This entails including the whole population of interest in the study, which generally results in a large number of participants. Hellström et al. (2015) explain that adolescents from special needs schools and adolescents with inadequate Swedish were excluded from the target population.

The study population is presented in figure 1. The target population in SALVe 2012 consisted of 6296 adolescents, aged 15-16 and 17-18 years. The external loss of participants consisted of 625 adolescents that did not participate due to their principals rejecting the invitation to participate. There were 1117 external non-responses, which entails individuals that were not present on the day the questionnaire was distributed, or individuals that did not wish to participate in the study. The number of participants were 4554, which gives a response rate of

72.3%. The internal loss of participants was 114, due to the questionnaires not being completed or gender not being filled in (Hellström et al., 2015). The final sample used in the study was 4440. This corresponds to 1856 fewer participants than the target population.

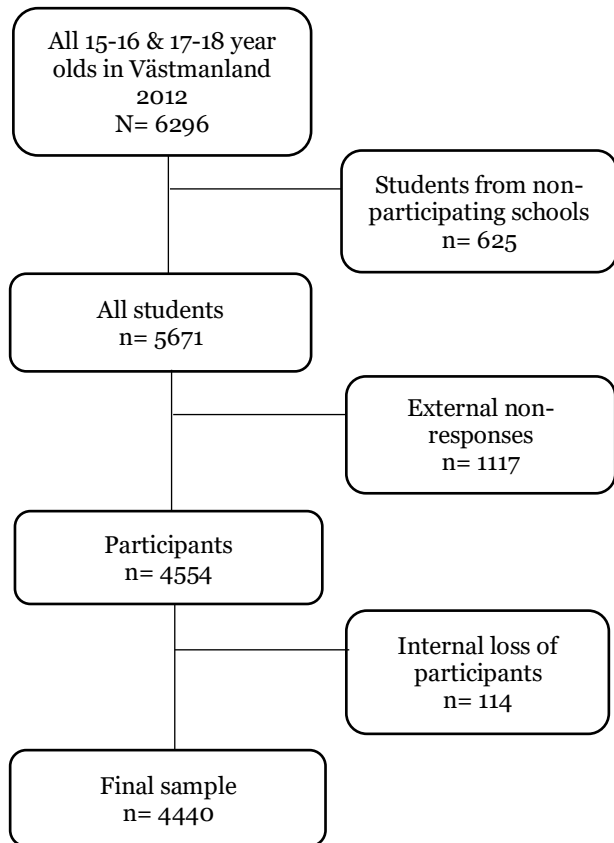


Figure 1. Flow chart of study population in SALVe 2012 (Hellström et al., 2015).

4.4 Data material

The present study uses secondary data material from the SALVe 2012 survey. The questionnaire in SALVe 2012 was conducted by county council of Västmanland and the Centre of Clinical Research in Västerås (Hellström et al. 2015). The questionnaire consisted of lifestyle questions relating to the participants mental health, home situation and school situation, as well as questions regarding physical activity, social media use, gaming habits and substance use. The questionnaire had multiple choice questions in order to measure the extent of, for example, psychosomatic complaints, stress and substance use. Furthermore, questions about the participants gender, background and parents background were included (Hellström et al., 2015).

As the participants were students in 9th grade of junior high school and 2nd grade of senior high school, the questionnaires were distributed during school hours by teachers or school nurses. The teachers and school nurses gave the participants information about the survey and guidelines on their participation. Once completed they sealed their questionnaires in an envelope which were then collected by the teachers and school nurses and sent back to the Centre of Clinical Research. Students who were not present on the day of data collection,

were given an opportunity to participate afterwards. If they chose to participate, they counted as late responders (Hellström et al., 2015).

4.5 Variables

Below follows a presentation of the variables chosen to be included from the SALVE questionnaire, in the data analysis. The questions were selected based on the research questions and are presented in appendix A.

4.5.1 Dependent variables

Field (2018) describes a dependent variable as a variable that show an effect after exposure. The dependent variable's value changes with regards of the influence from the independent variable. The dependent variables included in the present study are psychosomatic symptoms and stress based on the research questions of the study.

The variable *stress* was measured through a multiple-choice question, asking the participants how often they felt stressed during the past three months. The response options were; never, rarely, sometimes, often or always. The response options were dichotomised into *Not stressed* and *Stressed*, in order to make it comparable to other variables in the analysis (*table 1*). The response rate for the stress variable was n= 4407, which gives a non-response rate of 0.8%. The dichotomised stress variable was used in the analyses.

Table 1. Description of recoding of response options of question: How often have you felt stressed during the past three months?

<i>Previous response options</i>	<i>New values</i>
<i>Never</i> <i>Rarely</i> }	Not stressed
<i>Sometimes</i> <i>Often</i> <i>Always</i> }	Stressed

The variable *psychosomatic symptoms* were measured by seven questions. The questions asked the participants how often they had experienced any of the following symptoms during the past three months; *headache, stomach ache, shoulder/neckache, backache, nervousness, irritation and problems sleeping*. The response options were; never, rarely, sometimes, often or always. The response options were valued of 1 to 5. An index was created that included the seven questions with a value range between 7 and 35. A low value, between 7 and 14, was determined to indicate a low level of symptoms and a high value, between 15 and 35, was determined to indicate a high level of symptoms. The response rate for the psychosomatic symptoms index was n=4329, which gives a non-response rate of 2.5%. The psychosomatic symptom index was used in the analyses partly as a binary variable and partly as a continuous variable.

4.5.2 Independent variables

According to Field (2018), the independent variable's value does not change on account of other variables. As such, the independent variable can be seen as the exposure or cause. Included in the present study as the independent variable is social capital. Social capital was measured in several questions in the questionnaire. For the present study, five questions were selected based on the research questions for the present study. The questions included were;

I can turn to my mother and I can turn to my father when I need support and help, which had a seven-options response ranging from 1: *strongly disagree* to 7: *strongly agree*.

Do you have close friends in school, with the response options of *no*, *one*, *two*, or *three or more*.

Are you active in a sports or leisure club with response options *yes* or *no*.

How often do you visit the youth club with response options *never*, *a few times a year*, *a few times a month*, *at least once a week* and *every day*.

As the questions had different response options, the four questions with several response options were dichotomised (table 2).

Table 2. Dichotomising of response options for social capital variables.

<u>I can turn to my mother and I can turn to my father when I need support and help</u>	
Previous response options	New values
<i>Strongly disagree, up to option 3</i>	No
<i>option 4 up to Strongly agree</i>	Yes

<u>Do you have close friends in school?</u>	
Previous response options	New values
<i>No</i>	No
<i>Yes, one</i> <i>Yes, two</i> <i>Yes, three or more</i>	Yes

<u>Do you visit the youth club?</u>	
Previous response options	New values
<i>Never</i>	No
<i>Few times a year</i> <i>Few times a month</i> <i>At least once a week</i> <i>Every day</i>	Yes

After the variables were dichotomised, the five questions were valued 1 to 2. The dichotomised variables were used to create an index, with a value range of 5 to 10. A low number, between 5 to 7, was determined to indicate lower levels of social capital and a high number, between 8 to 10, was determined to indicate higher levels of social capital. The response rate for the social capital index was n=4201, which gives a non-response rate of 5.4%. The index was used in the analyses as binary, categorical and continuous.

Gender was also included in the present study as an independent variable. The variable was categorical. There were two response options; boy and girl. No other gender option was available to choose, as such the variable was binary.

4.6 Analysis

The present study performed a statistical analysis of the data, using the statistical analysis program IBM SPSS Statistics (version 24, IBM Corp. Armonk, NY, USA). In order to answer the research questions, analyses were performed to test relationships between the variables as well as gender differences.

4.6.1 Descriptive analyses

The begin with, descriptive analyses were performed to answer the first research question. According to Field (2018), by performing descriptive analyses on each variable, it gives an indication of how the distribution is in the study population. In the present study the categorical variables were presented in frequencies, while the continuous variables were presented in central tendency, such as mean and standard deviation. The social capital index was presented both in frequencies and in central tendency, as was the psychosomatic symptoms index. By performing descriptive analyses, it also allowed for histograms to show the distribution of the data and whether it was normally distributed or skewed. The distribution of the data was used to determine what type of test to be performed for the different variables. If the data was normally distributed parametric test were chosen, whereas if the variables had skewed data, non-parametric tests were chosen.

4.6.2 Correlation analysis

In order to answer the research questions on relationship between the social capital and psychosomatic symptom variables, a Spearman's rho correlation analysis was performed. This is, according to Field (2018) a non-parametric test ranking the data before performing a correlation test. The Spearman's correlation was chosen to see if there was a relationship between social capital and psychosomatic symptom. The data in the psychosomatic symptom index (values 7 to 35) was continuous and the social capital index (values 5 to 10) was categorical and skewed, hence the choice of the Spearman's rho.

Field (2018) states that the Spearman's rho correlation test presents a value between -1 and +1. -1 indicates a perfect negative correlation and +1 indicates a positive correlation, with 0 indicating no correlation. There are various levels in between that show the strength of the rho; *very weak*: .00-.19, *weak*: .20-.39, *moderate*: .40-.59, *strong*: .60-.79 and *very strong*: .80-1.0. Therefore, the direction of the correlation as well as the strength of the correlation can be interpreted.

4.6.3 Relationship analysis

To examine if there was a relationship between the social capital index (values 5 to 10) and the dichotomised stress variable a Mann Whitney U test was performed. The social capital index was treated as continuous in the test and it was skewed. As the stress variable was binary, the Mann Whitney U test was chosen as it is, according to Field (2018), a non-parametric test equivalent to an independent t-test. The test compares two groups against one variable. If one variable changes, and the other variable also changes it indicates that there is a relationship between the variables.

4.6.4 Difference analyses

For the research questions regarding gender differences, two types of tests were performed. To investigate if there was a significant difference between the genders in the social capital index (values 5 to 10) a Chi-square test was performed. A Pearson Chi-square test is, according to Field (2018), used to see differences between categorical variables. It allows for data on two groups to be tested against a categorical variable, where the measured frequency is compared to the expected frequency. Therefore, a Chi-square test was chosen as both gender and social capital index were categorical. Further, to investigate a difference between boys and girls and the dichotomised stress variable, a Chi-square test was performed, as the variables were both categorical.

In order to investigate whether there was a difference between boys and girls in psychosomatic symptoms, an independent sample t-test was performed. Field (2018) state that an independent t-test is performed to see significant differences between two groups, which in this analysis was boys and girls. As with the Chi-square test, the measurements for each group in this study are taken at the same point in time. The t-test requires the variables to be normally distributed and the dependent variable to be continuous, whilst the independent variable is categorical. In the present analysis, gender as the independent variable was categorical and psychosomatic symptoms as the dependent variable was continuous. As the psychosomatic symptom index (values 7 to 35) was normally distributed, an independent sample t-test was chosen.

4.7 Quality criteria

To ensure quality of the research there are different criteria to see that the study measures what it intends to measure. The present study has based the quality assessment on validity, reliability and generalisability.

4.7.1 Validity

Validity refers to, according to Field (2018), how well the measured value represents the true value of what is being measured. Validity shows the extent of the accuracy of the conclusion

made from the result. In order to achieve good internal validity, the systematic and random error must be kept to a minimum. By ensuring the study has a good design and is well planned, the internal validity can be strengthened. Furthermore, Bruce et al. (2018) states that there are different concepts of validity that constitutes internal validity. *Criterion validity* entails comparing the instrument against existing measurements. By controlling how well the instrument is working with a set criterion, it can indicate that the instrument is measuring what it is intended to do. *Face validity* refers to how relevant the measuring instrument is. In a questionnaire this can entail having questions that are relevant for the research and comprehensible. Face validity is not easy to measure, it is therefore assessed by experts. *Content validity* assesses if the measuring instrument contains the complete range of attributes of the subject. This is commonly assessed by a team of experts in the field, where the characteristics that distinguishes the subject are compared to what the instrument is measuring.

The present study is using secondary data where the instrument is constructed by researchers which can strengthen the validity. The questionnaire consisted of questions regarding social capital that have not been validated which can affect the validity and trustworthiness of the results. Psychosomatic symptoms have been measured in previous studies which can indicate that the questions are relevant and can achieve adequate results, however the questions are not validated.

4.7.2 Reliability

The term reliability, according to Bruce et al. (2018), entails how consistent the measuring instrument is. Reliability is imperative together with validity to ensure high quality of a study. In order to achieve reliability in a study, the instrument need to reach the same result each time it is tested, independently of who is testing it. By testing an instrument repeatedly and it reaching the same result indicates that the measuring instrument is reliable and consistent. This also gives an indication that the data the instrument produces is reproducible. In order to test the stability of the instrument a so-called test-retest can be performed, where the instrument is tested to see if it produces the same result each time. In the present study, as it uses secondary data from SALVe 2012, it was not possible to perform a test-retest on the questionnaire.

A way to test the internal consistency of the measuring instrument is, according to Field (2018), by performing a reliability test. Cronbach's Alpha is a test of measurement reliability, that indicates how consistent the items in an index are. The test show how the items correlate with each other. The Cronbach's alpha gives a value between 0 and 1, where 0.70 is an acceptable value. A higher value indicates a higher internal consistency. In the present study Cronbach's alpha was used to control the internal consistency of psychosomatic symptoms. The index obtained a Cronbach's alpha of 0.77, it is considered fairly good.

4.7.3 Generalisability

Generalisability is, according to Bruce et al. (2018), also known as external validity and it refers to the extent that the result can be imputed to a different context or a different population than in the study. By achieving high generalisability, it indicates that the study's result can be reached with a different population due to a strong study design and hypothesis. Generalisability can also be achieved by a representative sample. In the present study, as

SALVe 2012 was a total population survey, the sample is thought to be representative for adolescents aged 15-16 and 17-18 years in Sweden with adequate knowledge of Swedish and that are not attending a special needs school. The external non-responses and schools not participating could affect the representativeness. However, the county of Västmanland consists of a city, smaller towns and rural areas as well as different socioeconomic areas, which means that the population is diverse. As such, it is thought to be representative of the adolescent population in Sweden and therefore, the generalisability is perceived as good.

4.8 Ethical considerations

According to Vetenskapsrådet (2017), when conducting research, it is imperative to follow the set research ethical guidelines in order to protect the participants from harm. There are three main guidelines that researchers should fulfil in order to maintain good ethical standards; *information*, *consent* and *confidentiality*. Creswell (2014) describes the *information requirement* where the participants receive information about the study, the purpose of the study and the conditions for participating. In SALVe 2012, the participants received information prior to approving their partaking. They received verbal information as well as a letter of information that was included with the questionnaire, informing them of the purpose of the study, that their participation was voluntary and that they were free to terminate their participation at any time. They were also informed that their participation was anonymous.

According to Creswell (2014) the participants must give their *consent* prior to beginning the survey. The consent requirement was met in SALVe 2012 by the participants filling in the questionnaire. The participants who completed and submitted the questionnaire thus gave their consent to partake in the study. Further, Creswell (2014) explains the *confidentiality* requirement as ensuring the participants identities are protected and that the data collected cannot be connected to a person. It also includes storing data securely, ensuring unauthorised people cannot access the data. In SALVe 2012, no personal information that could be used to identify an individual was collected from the participants. The answers were registered through a serial number on the questionnaire, and the serial number could be linked to the school district only. Thus, the participation was anonymous and confidential. The questionnaires and data were stored securely with only authorised personnel able to access it. Hellström et al. (2015) explains that SALVe 2012 met the Declaration of Helsinki ethical principles for research. As of 2012 it was not a requirement to seek ethical approval for anonymous surveys by a medical faculty in Sweden.

5 RESULT

Below follows the result from the statistical analyses.

5.1 Distribution of social capital, psychosomatic symptoms and stress

Of the final sample of 4440, the gender distribution was even, with 50.8% of the participants being girls (*table 3*). The majority of the participants, 87% reported high levels of social capital. 72.6% of the participants reported having experienced high levels of psychosomatic symptoms and 65.4% were stressed during the past three months.

Table 3. Frequency distribution of dependent and independent variables.

	<i>N</i>	<i>%</i>
Gender		
Boys	2186	49.2
Girls	2254	50.8
Social Capital		
Low	546	13
High	3655	87
Psychosomatic symptoms		
Low	1185	27.4
High	3144	72.6
Stress		
Yes	2883	65.4
No	1524	34.6

The social capital index had a response rate of 94.6% (n=4201) with a mean value of 8.347 and standard deviation of .868. The mean value shows that the adolescents on average reported high levels of social capital. The index of psychosomatic symptoms had response rate of 97.5% (n=4329) with a mean value of 17.813 and standard deviation of 5.004, which indicate that adolescents on average reported high levels of psychosomatic symptoms over the past three months (*table 4*).

Table 4. Central tendency in social capital index and psychosomatic symptoms index.

	<i>N</i>	<i>Mean</i>	<i>Std. deviation</i>
Social capital	4201	8.347	.868
Psychosomatic symptoms	4329	17.813	5.004

5.2 Relationship between social capital and psychosomatic symptoms

To investigate if there was a significant relationship between social capital and psychosomatic symptoms, Spearman's rho correlation tests were performed. The analysis showed a significant negative relationship ($\rho = -.060, p < .001$) between social capital and psychosomatic symptoms. This indicates that the relationship was very weak between social capital and psychosomatic symptoms.

5.3 Relationship between social capital and stress

There was a statistically significant relationship ($z = -3.257, p = .001$) between social capital and stress. The Mann Whitney U-test showed a very small difference in mean values between social capital and groups; *not stressed* ($M = 8.41, sd = .838$) and *stressed* ($M = 8.31, sd = .878$). However, there was no difference in median between the groups; *not stressed* ($Md = 8.00$) and *stressed* ($Md = 8.00$).

5.4 Gender differences in social capital, psychosomatic symptoms and stress

To investigate gender differences in social capital a Chi-square test was performed. The Pearson Chi-square test showed a significant difference between boys and girls in social capital ($\chi^2 = 11.387, df = 5, p = .044$). This indicates a difference in how boys and girls experience social capital. 88.5% of boys reported having high levels of social capital, compared to 85.5% of girls reported high levels of social capital.

A Pearson Chi-square test was performed to investigate gender differences in stress. The test showed a significant difference between boys and girls ($\chi^2 = 454.663, df = 1, p < .000$). This indicates a difference in experiences of stress, with 80.5% of girls reported feeling stressed during the past three months, whilst the respective proportion for boys was 49.8%.

In order to investigate gender differences and psychosomatic symptoms, an independent t-test was performed to analyse differences in mean value. The t-test showed a significant difference in mean value of boys and girls in psychosomatic symptoms ($t = -24.758, df = 4309, p < .000$). This indicated that girls experienced higher levels of psychosomatic symptoms ($M = 19.54, sd = 4.65$), compared to boys ($M = 16.00, sd = 4.72$).

6 DISCUSSION

The aim of the study was to examine if there was a relationship between social capital and psychosomatic symptoms and stress, and if there were any gender differences in social capital, psychosomatic symptoms and stress among adolescents in Västmanland. The study was able to find answers to the research questions and aim through the analyses.

The main findings were:

-There was 87% of the adolescents that reported having high levels of social capital. 72.6% reported high levels of psychosomatic symptoms. 65.4% reported being stressed during the past three months.

-There was a very weak negative relationship between social capital and psychosomatic symptoms.

-There was a very small relationship between social capital and stress.

-Boys reported a statistically significantly higher levels of social capital (88.5%) compared to girls (85.5%). Girls did report having felt stressed to a greater extent (80.5%) compared to boys (49.8%) and higher levels of psychosomatic symptoms ($M= 19.54, sd= 4.65$), compared to boys ($M= 16.00, sd= 4.72$).

6.1 Methodological discussion

As the aim of the study was to examine relationships and differences between independent and dependent variables, a quantitative methodological approach was chosen. A quantitative design means data is measurable and presented in numbers, which allows for the aim to be answered. It was considered to be the appropriate approach to answer the present study's research questions, as it required measurable data and larger quantities of data. Qualitative methods, according to Creswell (2014), focus on understanding the participants experiences, which is not possible in quantitative studies. Even though it could be useful to gain a deeper understanding of an issue, which a qualitative study could have achieved, it would not have been possible to see any relationships or prevalence. Hence, a quantitative approach was more suitable for this study. By testing a theory, according to Creswell (2014), it is also possible to generalise the result to the population. The deductive approach also allows for the theory to work as a strategic tool in the process, as such, the theoretical perspective help guide the researcher through the process.

6.1.1 Study design

The present study used secondary data from SALVe 2012, which entailed that the study design was already definite. The SALVe used a cross-sectional study design with a questionnaire as measuring instrument. This design meant that SALVe had collected data

from the participants at one point in time. There was no follow-up in the study, which can be seen as a limitation to the study design as it means no causality can be studied. Mann (2003) states that cross-sectional studies are used to explore relationships and prevalence, which entails that conclusions on relationships between variables can be made, but it is not possible to say anything with regards to the direction of the relationships, that is causality. However, as SALVe intended to only measure prevalence, a cross-sectional design was suitable for that occasion. Bruce et al. (2018) states that a longitudinal study design where the participants are measured over time, or an experimental study where the researchers affect the participants, are preferable to see causality. However, cross-sectional studies are ideal to investigate prevalence and to understand trends of a specific phenomenon. Cross-sectional studies also allow for larger number of participants and therefore, can be more representative with a result that can be generalised. Thus, the SALVe study design can be a strength as it had large sample and the data collected show a clear picture of the prevalence. The data can also be used as basis for longitudinal studies to explore causality. This means that a cross-sectional study design is useful and essential to understand trends and to form health interventions.

6.1.2 Sample

Since the data came from SALVe 2012, it meant that the study population was large, as was the final sample. Large sample sizes are considered one of the strengths with cross-sectional studies according to Bruce et al. (2018). All adolescents in Västmanland, aged 15 to 16 and 17 to 18 years were included in target population and were given an opportunity to participate. The representativeness of the sample increased as participants from different parts of the county were included as well as, participants from different backgrounds. However, individuals with inadequate Swedish and individuals in special needs schools were excluded from the study, which means that the sample does not represent all adolescents in Västmanland and as such, it could be seen as a limitation to the representativeness. Also, the principals in some schools declined to participate, which meant some adolescents did not get a chance to partake in the study. There is no information in SALVe with regards to the schools where the principals declined the participation. As such, this can affect the representativeness as it is unknown what individuals were represented in these schools. Despite this, the sample can be seen as having a high level of representativeness to adolescents of the same age in regular schools and with adequate knowledge of Swedish.

The SALVe had a response rate of 72.3%, which is considered good for a cross-sectional study. As the questionnaire was distributed during school hours, it could have helped to increase the response rate, as the adolescents did not have to do it in their leisure time. The students who were absent on the day the questionnaire was distributed, were given another opportunity to participate, which 126 participants chose to do. This increased the response rate and meant additional diversity in the responses, which could increase the representativeness of the sample. According to Hellström et al. (2015), by having a large sample and high response rate, selection bias can be minimised. As SALVe 2012 included adolescents from schools in the whole of Västmanland, the risk of selection bias can be considered smaller as there were no areas or schools excluded from the target population. However, as there were schools that did not participate, as well as students that were absent, means that they did not contribute to the results. There is a possibility that individuals with higher levels of psychosomatic symptoms, stress or social capital were not included in the study, and as such, the result could have been different had they participated. However, the risk of the result being affected is considered low as the response rate was good.

The gender distribution was even. As gender differences were investigated in the present study, an even distribution helps determine differences. Any participants that had not completed the questionnaire or had not filled in gender were excluded from the present study which resulted in an internal non-response of 2.5%. The SALVe questionnaire had only two response options for gender, which could have led to participants choosing not to fill it in. If there had been another option, more participants could have been included in the analyses. Participants that chose not to fill in gender might also have represented different levels of psychosomatic symptoms, stress and social capital that were missed out on.

The internal non-response rate varied between the variables included in the present study. Stress had the lowest internal non-response rate of 0.8%, whereas the social capital index had the highest non-response rate of 5.4%. This could be due to the questions regarding social capital being perceived as more sensitive and therefore, it could have been harder to answer these questions. It could also be due to the participants not understanding the questions or how to answer them.

6.1.3 Data material and variables

SALVe 2012 was a self-reported questionnaire with several questions regarding lifestyle, health and habits. As the present study used this data it was not possible to affect the questions in the questionnaire. However, SALVe is an established survey and it uses previously used questions or validated questions, which means the survey is trustworthy. According to Creswell (2014), questionnaires are suitable when the sample is large as they are fairly easy and cheap to produce. However, a risk with self-reported questionnaires is response bias, which means that participants do not answer truthfully or does not understand the question and therefore fill in the incorrect answer. As SALVe asked the participants to report on their experiences over the past three months, there is a risk that they do not remember correctly and as such, give a random answer. If the questions are covering a sensitive subject it is also possible that the participants do not want to answer or answer wrong on purpose as to not reveal their true feelings.

As the questionnaire consisted of many questions, a selection of questions was chosen to be included in the present study. The questions related to social capital, psychosomatic symptoms and stress were chosen to represent the independent and dependent variables of the study. The questions for psychosomatic symptoms did correspond with Folkhälsomyndigheten (2018b) definition of the symptoms. As the questions regarding social capital were many, only five were selected to be included in the index that was created. This could be a limitation of the study as it is possible that the questions that were not included could have affected the result. The questions were chosen to include the different parts of social capital as Morgan and Haglund (2009) explains, such as trust in family, having friends in school and being part of community activities.

6.1.4 Analysis

Prior to the analyses the variables were processed by creating index and by dichotomising some variables. Of the five social capital questions, four of them were dichotomised to make them comparable to the fifth question which was binary. This meant that they all had the same response options and hence, an index could be created. Field (2018) mention that by dichotomising a variable there is a risk of losing intermediate values, which could give a variance in the result. However, as the question *I can turn to my mum/dad when I need help*

and support, had a response option of 1 to 7, it is a matter of interpretation of the difference, for example, between answering a 4 or a 5.

The first analysis was descriptive to answer the first research question. By performing descriptive analyses, it gives an indication of how the spread of the variables are, as well as showing if the data is normally distributed or skewed (Field, 2018). The variables in the present study were normally distributed and skewed. If all the variables had been normally distributed ordinary parametric tests could have been performed. Therefore, different types of analyses were performed, as it depended on the variables being tested. To answer the research questions on relationships, the choice of Spearman's rho was based on the social capital variable being skewed. A Spearman's rho gives the strength of the relationship as well as if it is positive or negative (Field, 2018). Thus, it provides information if a significant relationship exists and how the variables correlate with each other. As stress was a binary variable a Mann Whitney U test was performed to examine a relationship with social capital. The Mann Whitney U test allows for two groups, in this case *not stressed* and *stressed* to be tested against one variable and thereby see if they have a relationship. If one variable change and there is a change in the other variables as well, this indicates that there is a relationship between them. As the social capital index was skewed, it motivated using the Mann Whitney U test for this analysis.

As the gender and stress variables were dichotomous and the social capital index was categorical, Chi-square tests were performed to see gender differences. For psychosomatic symptoms an independent t-test was performed as the psychosomatic symptom variable was continuous and normally distributed. By adjusting the analyses according to the variables, it gives a more reliable result, compared to using the same tests for all variables regardless of data distribution. Furthermore, the analyses were able to provide answers to the research questions which is considered a strength.

6.1.5 Quality criteria

The quality of a study can be measured through various criteria to ensure the study is reliable and trustworthy. By ensuring the quality of the study is good, the risk of systematic and random error can be minimised, and thus produce a more reliable result. Using validated measuring instruments is, according to Field (2018) one way to achieve internal validity. This can be by using already tested questions or measuring instruments. The data used in the present study, from SALVe, can be considered validated as the survey has been conducted for several years and the questions have been constructed by researchers which can strengthen the face validity of the study. The measuring instrument in SALVe have been tested and adjusted over the years to achieve more accurate measurements. There have also been several reports and research articles published using the data from SALVe, which indicates that the data is trustworthy. In the present study the questions regarding psychosomatic symptoms have been used in previous questionnaires and are created by researchers. However, there are no validated measurement index for psychosomatic symptoms, which can be a limitation to the validity of the study.

For social capital it does not exist any validated measuring instruments, which is a limitation to the study and can affect the validity. The questions included in the analyses were chosen based on the different components of social capital. Webber and Huxley (2007) argues that social capital is a complex matter to investigate as it is a social resource. There is no physical proof that can be measured. Instead it is an emotional matter, which can vary depending on context or culture. Thus, social capital requires the measurement instruments to be adjusted for each unique context and situation, in order to achieve validity (Webber & Huxley, 2007). Even though social capital is complex to measure, without a validated measuring instrument

it will entail questions being created based on estimates and the validity can not be assured. Therefore, the social capital measurement of the study may decrease the validity.

The study used a total population sampling which according to Bruce et al. (2018) entails studying the whole population of interest. The population of the SALVe was adolescents in Västmanland aged 15 to 16 and 17 to 18 years. As all adolescents in the county were invited to participate it is thought to give the study good representativeness. By achieving generalisability, the result of the study can be applied to other populations or contexts. As Västmanland is considered being representative of the demographics in Sweden, having a total population sampling of adolescents from the county is considered a strength of the study. The results of the study are therefore considered generalisable to other adolescent populations in Sweden, provided that the context is similar. However, as there was a total non-response of 27,7%, there is a risk that the adolescents not participating in the study were from different context, that therefore were not represented in the study. Thus, when looking at representativeness, diversity and representation from different contexts must be taken into consideration.

The reliability of a study entails the consistency of the measuring instrument, which is, according to Bruce et al. (2018), tested by achieving the same result from the instrument each time it is tested. As the present study used secondary data it was not possible to test the measuring instrument prior to the analyses. Had it been possible to a test-retest of the questionnaire, the consistency and reliability of the measurement could have been assessed. As such, this is a limitation to the study as the consistency was not tested. However, as SALVe has been conducted for several years, using the questionnaire, the measuring instrument could be considered consistent and reliable. The internal consistency was checked by performing a Cronbach's alpha reliability test on the psychosomatic symptom index. As the psychosomatic symptom index achieved a Cronbach's alpha of 0.77, it was considered fairly good as it was above the acceptable level of 0.70. This implies that the questions in the psychosomatic symptoms index are consistent with each other. However, this can not be used as an indication of the total reliability of the study.

6.1.6 Ethical considerations

All research should adhere to the ethical guidelines to ensure the participants are protected and that no foul play can occur. By following three guidelines, the ethical consideration is good, according to Vetenskapsrådet (2017). By using secondary data, it is not possible to affect the ethical considerations of the survey. However, it is clearly detailed how SALVe followed the ethical guideline, which makes it easier to understand the ethical aspects of the study. According to Hellström et al. (2015) the participants were informed about the study prior to partaking, with details on their participation, use of data and consent to participate. By letting the teachers and school nurses hand out and collect the questionnaires, it minimised the risk of the researchers affecting the participants. There is a risk that the participants feel obliged to participate even if they do not want to, which could be increased if the researchers are present during the data collection. Also, by letting the school staff collect the completed questionnaires that were sealed in envelopes, the anonymity of the participants could be maintained.

Furthermore, according to Hellström et al. (2015) the SALVe 2012 survey did not require to seek ethical approval from a medical faculty, as it did not include experiments or questions on too sensitive matters. The survey did comply with the Declaration of Helsinki ethical guidelines. As the participants were informed prior to participating that the data collected would be used for future research purposes, the use of this secondary data for the present study follows this consent. Therefore, no specific consent for this study was needed.

6.2 Result discussion

6.2.1 *Distribution of social capital, psychosomatic symptoms and stress*

The descriptive analyses showed that the adolescents reported having high levels of social capital, with a mean of 8.347 on a scale from 5 to 10. This indicates that the adolescents feel they are able to seek help and support from their parents. It also indicates that they have friends in school and are active in leisure time activities to a large extent. The majority of adolescents in the study (65.4%) had felt stressed sometimes or often during the previous three months. This supports the report from Folkhälsomyndigheten (2018b) that showed that more than half of all adolescents in Sweden were feeling stressed. This number has increased over the past decade, with more adolescents feeling stressed and experiencing mental health problems, which could, according to Ollfors and Anderson (2007), be due to high workloads in school and peer pressure to be and act a certain way in school.

Wiklund et al. (2012) argues that the majority of adolescents are stressed due to the demands in school, which is causing higher levels of psychosomatic symptoms. The analyses showed that the adolescents also reported high values on psychosomatic symptoms index with a mean of 17.8 on a scale of 7 to 35, which indicated they have experienced psychosomatic symptoms sometimes or often during the previous three months. As Folkhälsomyndigheten (2018b) reports, a majority of adolescents in Sweden experienced psychosomatic symptoms at least once a week, this result supports the reports of adolescents experiencing high levels of psychosomatic symptoms. This number has also increased over the past decades. Östberg et al. (2006) argues that the increase in psychosomatic symptoms is linked to school stress, as high levels of stress can lead to both physical complaints as well as psychological ailments. The result from the descriptive analyses is in line with WHO (2020b) report that show the majority of adolescents worldwide suffer from some form of mental health problem. Therefore, as so many of the adolescents in Västmanland experience psychosomatic symptoms and stress, it is a public health problem that is increasing.

6.2.2 *Relationships between social capital and psychosomatic symptoms and stress*

The results show that there was a significant negative relationship between social capital and psychosomatic symptoms, which indicates that higher levels of social capital leads to lower levels of psychosomatic symptoms or higher levels of psychosomatic symptoms leads to lower levels of social capital. This implies that social capital can have an impact on psychosomatic symptoms. However, the relationship was very weak, which indicates that even though the relationship was significant, the impact from social capital on psychosomatic symptoms would be very small. The result could, however, in agreement with Folkhälsomyndigheten (2018a) rapport, indicate that adolescents that do not have parents to confide in or other adults to turn to, have higher levels of psychosomatic symptoms. According to Morgan and Haglund (2009), as a crucial part of social capital within the family is to be able to get support and help from parents, this would lead to lower levels of social capital, which could affect the health of the adolescent. At the same time, low levels of family social capital could also impair other social relationships that could be imperative for the health of the adolescent.

Östberg et al. (2006) argues that children that receive less social and emotional support from their parents tend to experience higher levels of psychosomatic symptoms. If the adolescents did not feel they could turn to their parents for help, they also experienced higher levels of stress. According to Morgan and Haglund (2009) an indicator of social capital is having the support and trust from parents. Adolescents have higher levels of social capital if their parents invest in emotional time with them, not only providing them with material support. By feeling emotionally connected to their parents, the adolescents' social capital could increase, and thereby their ailments could decrease. This is supported by Eriksson et al. (2011) that argues that social capital in both the family and school decreases mental health problems and stress among adolescents. However, a lack of family and school social capital does increase the risk of mental health problems. The relationship between social capital and psychosomatic symptoms can, according to Coleman (1988) affect the ability of adolescents to develop social abilities. Strong social capital can indicate an ability to form social relationships, which in turn can act as a protective factor against stress and psychosomatic symptoms. The result indicates that adolescents that experience high levels psychosomatic symptoms have lower levels of social capital, which is in line with Burnett-Zeigler et al. (2012), that if an individual experience psychosomatic symptoms that are caused by stress or other factors affecting their mental and physical health, they tend to be less inclined to participate in leisure activities. They are also less likely to engage in social activities, which can lead to a lack of social relationships and friends, and thereby lower levels of social capital.

The result also showed a significant relationship between social capital and stress in mean values, with adolescents that did not feel stressed were associated with higher levels of social capital, compared to adolescents that felt stressed. However, the difference between the mean values was very small. Also, there was no difference in medians between the groups which could be due to the social capital index only having six values. Therefore, it could have been more suitable to use the index as a categorical variable instead of continuous. As there seems to be a gap in the research field between social capital and stress among adolescents, it is complex to interpret the relationship. However, Coleman (1988) argues that developing social relationships and being part of a community outside the family, as an adolescent is crucial in order to cope with stress and difficulties that may occur. Social capital in family and in school can help strengthen abilities and to develop effective strategies to cope with obstacles. According to Wiklund et al. (2012), adolescents experience stress in school due to not being in control of their own situation. The demands from school are perceived high as well as the workload. This is confirmed by Morazes (2016) that argues that high demands and workloads in school leads to stress, which in turn, negatively affects the adolescents' health. The school stress was found to cause problems with relationships in school, with both peers and teachers.

According to Morgan and Haglund (2009) a part of social capital is to have control of situations that occur in life. By having autonomy in school, the adolescents can have a strengthened sense of control, as they could be involved in decisions regarding their schooling and feel heard from the teachers. This could have a positive effect on their well-being, which could lead to lower levels of stress. Morgan and Haglund (2009) further argues that adolescents that had a sense of belonging in school also reported higher levels of well-being and health. This indicates the importance of enabling adolescents to develop social relationships in school and in the local community in order to strengthen their well-being and lower their stress. Sakai-Bizmark et al. (2020) argues that social capital in school does not only affect the well-being of the adolescents, it can also affect the choices they make. Peer pressure can make adolescents more inclined to, for example smoke or drink alcohol. However, having high levels of school social capital was related to adolescents smoking less. This indicates that school social capital can be a significant determinant for how adolescents can cope with stressors in school. As stress can cause adolescents to be less inclined to socialise and develop meaningful relationships in school, it could lead to low levels of social capital. Thus, to encourage and enable adolescents to develop social relationship, can be a protective factor against stress.

6.2.3 Gender differences in social capital, psychosomatic symptoms and stress

The result indicated that girls had higher levels of psychosomatic symptoms and felt stressed to a much greater extent than boys. It also indicated that boys had higher levels of social capital than girls to some extent. Even though the difference was statistically significant it was very small. This shows that girls were worse off than boys in all three areas. This result is consistent with Burnett-Zeigler et al. (2012) that argues that girls are more affected by psychosomatic symptoms and stress than boys. Folkhälsomyndigheten (2018b) also reported that stress among adolescent girls in Sweden is significantly higher than among boys. The result showed that whilst just under 50% of boys felt stressed, the number of girls were just over 80%, which is a considerable difference. Östberg et al. (2015) argues that even though there is a higher proportion of girls reporting stress, both genders report equal levels of experiencing high workloads and demands in school. As the result show that the majority of the adolescent girls were experiencing stress, it could indicate a connection with psychosomatic symptoms among girls. As stress can, according to Bösch (2014) lead to both physical and psychological health problems.

In line with the results, Östberg et al. (2006) state that experiences of psychosomatic symptoms among girls are higher than among boys. Which is consistent with Folkhälsomyndigheten (2018a) rapport, that showed significantly higher numbers of girls with psychosomatic symptoms than boys. Girls that are experiencing high levels of psychosomatic symptoms and stress may experience problems with friends and peers in school, as mental health problems can affect the ability of developing and maintaining social relationships. Morgan and Haglund (2009) show that having friends in school and being part of the local community is imperative to maintain social capital. Hence, being less inclined to develop social relationships due to mental health problems such as psychosomatic symptoms and stress could impair the social capital among adolescent girls.

Piko et al. (2016) argues that having problems with social relationships can lead to stress and psychosomatic symptoms. Adolescent girls experienced psychosomatic symptoms as they were more inclined to try and fit in among peers in school, which caused psychosomatic problems. Though, problematic social relationships could lead to psychosomatic problems, social relationships can also be a protective factor against psychosomatic problems. Feeling safe and having friends to turn to for help and support can lessen the symptoms and lower the stress levels. Social capital can therefore help lower stress and psychosomatic symptoms. This could be an explanation that boys reported higher levels of social capital than girls, at the same time as they also experienced lower levels of psychosomatic symptoms and stress. Whereas, girls reported much higher levels of psychosomatic symptoms and stress, and also had lower levels of social capital.

6.3 Further research

The result showed that adolescents experienced high levels of psychosomatic symptoms and stress, but also fairly high levels of social capital which is in line with previous research in the field. However, there appears to be a gap in the research field as to why the adolescents are experiencing such high levels of psychosomatic symptoms and stress. It would be relevant to further investigate the reasons behind the increasing levels of mental health problems among

adolescents. By finding out what is causing this, it is also possible to get answers to what can be done to improve the mental health for young people, which would be beneficial for the public health. Further research on social capitals' effect on stress as well as on psychosomatic symptoms would also be beneficial, as social capital could be used to develop health promoting strategies for schools and youth clubs. As children spend a major part of their lives in school, it would be a suitable arena to strengthen social capital in order to improve mental health. Therefore, further research on the relationship between these factors can help improve adolescent health. Furthermore, as such a large proportion of adolescents experienced psychosomatic problems and stress, it does have a negative effect on public health. The problems that arise in adolescence are generally prolonged, the long-term effects on societal systems and the public health are significant. Thus, it is imperative to obtain further knowledge about the problems. As the data in this study was from a cross-sectional study, it could be used as a base for other, for example longitudinal, studies to investigate the causality.

7 CONCLUSIONS

- There was 87% of the adolescents that reported high levels of social capital 72% reported high levels of psychosomatic symptoms ($M=17.813$, $sd= 5.004$) and 65% of the adolescents reported that they had felt stressed during the past three months.
- There was a statistically significant negative relationship between social capital and psychosomatic symptoms, however the relationship was very weak. There was also a statistically significant relationship between social capital and stress in the mean values, however the relationship was very small.
- Girls reported slightly lower levels of social capital (85%) compared to boys (88%), while levels psychosomatic symptoms ($M=19.54$, $sd= 4.65$), were higher compared to boys ($M=16.00$, $sd= 4.72$) and stress was more common in girls (80%) compared to boys (50%).

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APPENDIX A SELECTED QUESTIONS FROM SALVE 2012

Gender

Boy

Girl

How often have you felt stressed in the past three months?

Never Rarely Sometimes Often Always

How often have you felt the following in the past three months?

	Never	Rarely	Sometimes	Often	Always
Headache	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stomach ache	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shoulder/Neck ache	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backache	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nervousness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irritation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Problems sleeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I can turn to my mum when I need help and support

Strongly disagree

Strongly agree

1 2 3 4 5 6 7

I can turn to my dad when I need help and support

Strongly disagree

Strongly agree

1 2 3 4 5 6 7

Do you have a close friend in school?

No

Yes, one

Yes, two

Yes, three or more

Are you active in a sports or leisure club?

Yes

No

How often do you visit the youth centre?

Never

Few times a year

Few times a month

At least once a week

Every day



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