Health Promotion in Schools
Results of a Swedish Public Health Project

Louise Persson
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Louise Persson
To my beloved children,
Lova and August.

“Good health is the bedrock on which social progress is built. A nation of healthy people can do those things that make life worthwhile, and as the level of health increases so does the potential for happiness”.

ABSTRACT

**Background:** All children have the right to a safe, supportive and healthy school environment. The school is since long acknowledged as an important setting in public health because it has a unique opportunity to increase the knowledge and awareness of health from an early age. A good health status can function as a resource in achieving learning outcomes and life goals in general. However, today about 20 percent in the younger population suffer from mental illnesses. Poor mental health, may lead to poorer school achievements, which in turn can lead to low-self-esteem and aggressive forms of behavior. Poor mental health and poor school achievement may follow the child into adolescence and adulthood. A positive school environment may help to counteract these kinds of problems, and school health promotion can help to foster a supportive environment for health. The Swedish schools are obligated to pay heed to health promotion, and children’s well-being is a prioritized political and educational issue. However, the Swedish school system is not nearly as satisfying as it has been or could be when it comes to issues such as; promoting children’s mental health and improving a beneficial psychosocial climate, likewise there are problems with deteriorating physical school environments. In addition, society need to be better in following-up school health programs, and ultimately we need to be better in creating supportive environments to health – and improve the Swedish school environment in general. Due to these reasons the Preventive School project (the PS-project) was implemented in the primary schools of Karlstad municipality, 2006-2012.

**Aim:** The main aim of this thesis is to examine the health promotion activities, from different perspectives, that have been performed in the Karlstad municipality primary schools 2006-2012, with a special focus on the school environment.

**Method:** This thesis is based on four studies, two qualitative (I-II) and two quantitative (III-IV). In study I interviews were performed with all 13 school managers of Karlstad municipality’s primary schools. In study II, improvement suggestions were collected from children (n66) in three different schools in Karlstad municipality, aged 10-12, with the help of a feedback model and an open-ended question-
naire developed for the purpose. Qualitative content analysis was used to analyse the data in studies I-II. Studies III and IV have a cross-sectional design based on a questionnaire. In study III a questionnaire was distributed at one point in time (2011) to all children, aged 10-12 (n1247), in the municipality of Karlstad. In study IV data was collected from children, aged 15-16, from three points in time: 2005 (n2664), 2008 (n2653) and 2011 (n2246), in 14 out of 16 municipalities in the county of Värmland. The same questionnaire was used each year in study IV. Data were analyzed using multilevel models for binary responses in study III, and in study IV, multinomial logistic regression analysis were used.

**Results:** Study I shows the school managers’ views about what health promotion in Swedish schools includes. The theme, ‘Opportunities for learning and a good life’, describes the latent content of the three categories that emerged from the analysis; ‘Organization and Collaboration’, ‘Optimize the arena’ and ‘Strengthen the individual’ with ten subcategories. In study II, two categories: ‘Psychosocial climate’ and ‘Influence’ with four subcategories emerged from the analysis. The categories are seen as important to increase school satisfaction and improve social relations among peers at school from a child’s perspective, as children are experts on their school environment. Study III shows that classmate’ characteristics and class composition, were associated with different perceptions of the classroom climate. Study IV shows that both the physical and psychosocial school environment improved during the project period, in the project municipality schools between the years, and compared to the other municipalities in the county.

**Conclusion:** This thesis complements with new knowledge to the public health field and to the school as a setting in health promotion, by adding a more complete picture of how Swedish school managers work with health promotion, and what is needed to enhance the future health promotion efforts to improve students’ opportunities for learning and achieving a good life. The findings contribute to the field by showing how school satisfaction and social relations might be improved, if the child perspective is considered in the planning of school health promotion. The result complement to earlier research with knowledge about that classmate characteristics and class composition may be important to consider to prevent classroom
disruption and to improve the classroom climate in general. The PS-project which aimed to improve the school environment seems to have been successful in improving the overall environment, over the years and compared to the non-project municipalities in the county. Summing up, this thesis contributes to the field of public health sciences by showing, from different perspectives, what is needed to enhance the future school health promotion and the school environment particularly.
SAMMANFATTNING


Av den anledningen, implementerades också projektet Skolan förebygger, i Karlstads kommuns grundskolor 2006-2012.

Syfte: Det övergripande syftet var att studera, utifrån olika perspektiv, de hälsofrämjande aktiviteter som genomförts i Karlstads kommuns grundskolor 2006-2012, med ett särskilt fokus på skolmiljön.

Metod: Avhandling består av fyra delstudier, två kvalitativa (I-II) och två kvantitativa (III-IV). I studie I genomfördes intervjuer med samtliga 13 verksamhetschefer verksamma vid Karlstads kommuns grundskolor. Studie II inbegrepp att förbättringsförslag från barn (n66) från tre olika skolor i Karlstads kommun, i åldrarna tio till tolv år, inhämtades med hjälp av en återkopplingsmodell, och ett öppet frågeformulär som var utvecklat för syftet. Kvalitativ innehållsanalys användes för att
analysera data i studie I-II. Studie III-IV består av data som inhämtats genom tvär-
snittsstudier och frågeformulär. I studie III har ett frågeformulär delats ut en gång (2011) till samtliga elever i åldrarna tio till tolv år (n1247) i Karlstads kommun.
Studie IV består av data från elever i åldrarna 15-16 år, från tre olika tvärsnittsstu-
dier: 2005 (n2664), 2008 (n2653) och 2011 (n2246) från 14 av 16 kommuner i Värmlands län. Samma frågeformulär har använts samtliga år i studie IV. Data har analyserats med hjälp av multilevel regression i studie III, och i studie IV har multinomial logistisk regression använts.

Resultat: Studie I visar verksamhetschefernas syn på vad hälsofrämjande arbete i svenska skolor innefattar och innebär. Temat, ”Möjligheter till lärande och ett gott liv”, beskriver det latenta innehållet i de tre kategorierna; "Organisation och samar-
bete", "Optimera spelplanen" och "Stärka individen", med tio subkategorier som framkom av analysen. I studie II, framkom de två kategorierna: "Psykosocialt kli-
mat" och "Inflytande" med fyra underkategorier från analysen. Kategorierna kan ses som viktiga för att öka skoltrivsel och förbättra de sociala relationerna mellan jämnåriga i skolan, från ett barns perspektiv, då barn är experter på sin skolmiljö.
Studie III visade att barns bakgrund och klassammansättning, var associerat med olika uppfattningar om klassrumsklimatet. Studie IV visade att både den psykosociala och den fysiska skolmiljön förbättrats i projektkommunen överlag och i kommunens högstadieskolor (både på kommun- såväl som på skolnivå), över åren, samt i jämförelse med övriga kommuner i länet.

Sammanfattning: Avhandlingen bidrar med ny kunskap till folkhälsoområdet och om skolan som arena i det hälsofrämjande arbetet, med en mer fullständig bild av hur den svenska skolan arbetar hälsofrämjande- och vad som krävs för att förbättra det framtida hälsofrämjande arbetet, för att stärka barns möjligheter till lärande och ett gott liv. Resultaten bidrar också till fältet genom att visa hur skoltrivsel och so-
ciala relationer mellan jämnåriga kan förbättras, om barnperspektivet beaktas i pla-
neringen av hälsofrämjande aktiviteter i skolan. Dessutom kompletterar resultatet till tidigare forskning med kunskap om att barns bakgrund och klassammansät-
tningen, kan vara viktigt att ha i åtanke för att förebygga störningar i klassrummet 
och förbättra klassrumsklimatet i allmänhet. Avhandlingen bidrar med kunskap om
att projektet Skolan förebygger, som syftade till att förbättra skolmiljön, också verkar ha varit framgångsrik i att förbättra skolmiljön på både kommun- och skolnivå, mellan åren men även i jämförelse med de andra kommunerna i länet. Sammanfattningsvis bidrar avhandlingen till tidigare kunskap inom det folkhälsovetenskapliga fältet, genom att visa, utifrån olika perspektiv, vad som behövs för att stärka det framtida hälsofrämjande arbetet i skolan, och kopplat skolmiljön i synnerhet.
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This thesis is based on the following four studies, which are referred to in the text by their Roman numerals:


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AUTHOR CONTRIBUTIONS

Study I
Louise Persson initiated and implemented the study, participated in the preparation of the interview guide, the study design, performed the interviews, conducted the qualitative content analysis and interpretation of data, and drafted the manuscript. Katarina Haraldsson participated in the preparation of the interview guide, the data collection, the qualitative content analysis and helped to draft the manuscript. Both authors read and approved the final manuscript.

Study II
Louise Persson initiated and implemented the study, prepared the questionnaire, performed the data collection, analyzed the data and drafted the manuscript. Katarina Haraldsson participated in the data collection, the data analysis and helped to draft the manuscript. Curt Hagquist participated in the design of the study, participated in the data analysis and helped to draft the manuscript. All authors read and approved the final manuscript.

Study III
Louise Persson initiated and implemented the study, conducted the data collection, analyzed the data and drafted the manuscript. Mikael Svensson participated in the design of the study, the data analysis and helped to draft the manuscript. Both authors read and approved the final manuscript.

Study IV
Louise Persson initiated and implemented the study, analyzed the data and drafted the manuscript. Curt Hagquist participated in the design of the study, participated in the data analysis and helped to draft the manuscript. Both authors read and approved the final manuscript.
DEFINITIONS AND ABBREVIATIONS

*Children* are chronologically seen as a member of society under the age of 18 (General Assembly 1989).

*Classroom climate* encompasses both the social relations and the learning environment in the classroom (Wilson et al. 2007, Allodi 2010). Children’s perceived classroom climate is examined in study III.

*Classroom disruption* is defined as a disorderly and messy climate (Hagquist 2012, OECD 2012, Veerman 2015).

*Effective schools* (in Swedish: *Framgångsrika skolor*) the aim of effective schools is to give children opportunities to form their educational and health assets. It centers on using evidence based learning and teaching methods (Lezotte 2001).

*Empowerment* is defined as helping people to develop the knowledge and skills required to make positive health choices and the ability to act individually and collectively to improve health (WHO 1986).

*Health* is in this thesis, in terms of a health promotion perspective, is seen as a state that depends on the relationship between social, political, biomedical and psychological factors. It is about getting people to achieve their full capacity (WHO 1948, Naidoo and Wills 2005).

*Health literacy* (in Swedish: *Hälsoförmåga*) speaking from a health promotion view is defined as a possession of literacy skills (reading and writing) and the ability to undertake knowledge based literacy tasks (understanding and using information) that are required to make health related considerations (Nutbeam 2015).

*Health promotion* aims to promote and strengthen health, and endorse protective measures against illness (WHO 1986).

*Mental health* is more than the absence of mental disorders; it is a state of *well-being* in which individuals manage the normal stressors of life on their own, can work successfully and are able to take part in community life (WHO 1986, 2001).

*OECD* is an abbreviation for Organisation for Economic Co-operation and Development.

*Public health* refers to all organized measures to prevent disease, promote health, and prolong life among the population as a whole (WHO 2015a).
Salutogenes seeing health as a valuable resource to achieve goals in life, and is introduced as a health promotion theory (Antonovsky 1996). Salutogenes functions as theoretical basis in this thesis.

School environment includes both the school’s physical environment (i.e. the layout of rooms and maintenance) to psychosocial factors (i.e. atmosphere and attitudes in school, and child involvement) (SOU 2000, Thapa et al. 2013).

School health promotion can be defined as any activity undertaken to protect or improve the health of all school users (WHO 2000b).

School managers have the main administrative responsibility for the schools in their district, including staff (for example, principals and teachers) as well as the children. In this thesis all of them have a background as a principal (study I).

Support concerns fostering health giving social norms, alliances and systems that are responsive to and take the health needs of people into consideration (WHO 1986).

Supportive environments to health comprises both the physical and the social aspects of our surroundings. It encompasses where people live, their local community, their home, where they love, work and play (WHO 1991).

WHO is an abbreviation for the World Health Organization (in Swedish: Världshälsoorganisationen).
Preface

All children have the right to a safe and healthy upbringing. My personal interest in questions related to children’s health and health promotion began to develop when I was studying towards my Bachelor and Master degrees in Public Health at Mälardalen University 2005-2009. I was made aware of the vital role of health supportive environments in the lives of children, and that public policies aiming to promote child health and school health promotion are endorsed worldwide, and that child health is seen as an important public health concern. Consequently, I recognized that there are many ways in which school health promotion can be effectuated, but it is ultimately the interest taken by the principal and school staff in health promotion that can ensure that it is implemented, sustained and followed up. This made me interested in knowing more about health promotion, child health and school as a health supportive environment, and to deepen my knowledge in the field as a doctoral student in Public Health Sciences, at Karlstad University, Centre for Research on Child and Adolescent Mental Health (CFBUPH).

The thesis consists of four studies (two qualitative and two quantitative), and is the result of my membership of a research team and the opportunity provided to examine a Swedish Public Health School Project 2009-2012, a collaboration project between Karlstad municipality and CFBUPH, known as the Preventive School project (the PS-project). The main aim of this thesis is to examine the health promotion activities, from different perspectives, that have been performed in the Karlstad municipality primary schools between 2006-2012, with a special focus on the school environment.
INTRODUCTION

Health is created by people within the settings of their everyday lives, and school is a vital public health setting (WHO 1986, 1991). Taking a settings approach includes the context in which people live, work, and play and making these the object of investigation and intervention, along with the needs and capacities of people in these settings (Poland et al. 2009). School is an important public health setting, since it is possible to reach a large population over several years and because many later adult habits are formed in childhood and adolescence (Romano 1992, SOU 2000). It is easier to prevent health damaging behavior early in life, than later modify an already established habit (Hjern 2006, CSDH 2008, Marmot 2009). Children who attend school have a better chance of good health, and healthy children are more likely to learn more effectively (St Leger and Young 2009, Marmot 2009, Jackson et al. 2015).

However, ill health during childhood can have a marked effect on life attainments and educational goals, as well as having a negative influence on social and emotional development (Currie et al. 2008, Gustafsson et al. 2010, Langford et al. 2014), causing lower self-esteem, which in turn may lead to aggressive forms of behavior. The correlation also works in the opposite direction: low self-esteem and externalized behavioral problems increase the risk of a child performing poorer in school. There is evidence that a vicious circle of poor mental health and poor school achievement follows the child into adolescence (Currie et al. 2008, Gustafsson et al. 2010, Hagquist 2015), for example, non-graduation, impaired health, and risk of unemployment are strongly associated (Marmot 2004, De Ridder et al. 2012). Further, parent’s mental health statues have an impact on children’s school achievements. Especially mothers suffering from depression seem to have a negative effect primarily on their daughters’ school achievements (Shen et al. 2016). Likewise, living with only one parent is a risk factor for ill health, which is particularly true for girls (Carleby 2012).

Solely, it is vital from an early age, thru the school setting, to awaken children’s interests for- and give them tools to increase their knowledge about health related
issues (Trollvik 2014). And, because of the link between child health and well-being, and school aims to meet their educational goals; health promotion and creating supporting environments in school, are even more crucial today (Nutbeam 2000, Gådin-Gillander 2002, Regeringens proposition 2007, St Leger et al. 2009, Gustafsson et al. 2010, Weare 2010, Warne 2013, Gunnarsson 2015, OECD 2015).

The school setting as a supportive environment to health
To date the concept of health supportive environments has attracted more and more attention (for example Garcia-Moya et al. 2013, Warne 2013, Schaps 2016) – even though this is not a new phenomenon (WHO 1991, Nutbeam and Harris 1995). It is argued that the school setting is central to improvements of public health, and that it is particularly vital in this context that the school setting functions as a supportive environment to health (WHO 1986, 1991, 1997). At the WHO conference for health promotion in Sundsvall 1991, ‘supportive environments’ were defined, and as something that refers to “both the physical and the social aspects of our surroundings. It encompasses where people live, their local community, their home, where they work and play”, and includes different dimensions such as physical, social, spiritual, economic and political. These dimensions are interlinked in a dynamic interaction, which demands coordination at all levels in society – local, regional, national and global– to establish actions that are really sustainable (WHO 1991).

The school environment concept
The school environment concept includes both the school’s physical environment (i.e. the physical surroundings, the layout of rooms and maintenance) and psychosocial factors (i.e. atmosphere and attitudes in school, classroom climate, quality of relationships among children and staff as well as child involvement) (WHO 1996, SOU 2000, Thapa et al. 2013). As stated in the Swedish Education Act and in the curricula; all children should have access to a school environment that is characterized by security and has a beneficial working climate in the classroom (SFS 2010:800, Skolverket 2011).
From a public health perspective, it is especially important to achieve an encouraging school environment, as it is associated with children’s mental, social and physical health, and academic achievement (Gustafsson et al. 2010, Modin et al. 2011, Thapa et al. 2013). The concept of the school environment is studied from different angles in study I-IV. Furthermore, Sweden has worked with school health, put efforts into creating supportive health environments since long, but the way efforts have been performed has changed from time to time.

**Swedish school health activities in retrospect**

From a historical and a public health perspective, the importance of a healthy and strong population was acknowledged and recognized as crucial to a nation’s progress and success even before the 1700s. Hygiene and the care of the poor were seen as two essential aspects in achieving a better health for the population. The Swedish school health care has its roots in the late 1800s and early 1900s, but with a strong breakthrough in the 1940s. In 1838, school health ideas had started to spread in the country with inspiration from Germany. School health services was founded in a time when medicine was rated very high in society. By the year 1842, the Swedish government introduced a four-year school for all children, and in 1868, all schools were presumed to have a school doctor (Hammarberg 2014).

By the year 1878, the first recommendation for school doctors was included in the educational act. The doctors were only men, until 1880, when the first Swedish woman doctor graduated, and in 1913 the first nurse was recruited by the first woman doctor. The school doctors did health checks on the children, supported the school staff with advice about hygiene and how to prevent infections. Moreover, the school doctors placed children with different kinds of difficulties, problems and/or with sicknesses in special classes or schools. The school nurses, on the other hand, helped weighing, measuring, and debugging the children, and followed sick children to the hospital. But gradually they took more responsibility for the child’s whole health (Hammarberg 2014). In 1883 a Swedish handbook on school hygiene was published. The main aim of the book was how to create “powerful citizens with solid characters”, and to give guidance on how education should be utilized to improve children’s morals, body and mind. The guidance concerned matters such
as the physical school environment (e.g. lightning and temperature), the working climate (design of the school desks and teaching time), school-tiredness and children’s dress code. Successively, vaccination became a vital part of the school doctor’s health care responsibilities (Goldkulh 1883).

Further, in 1935, the Swedish Population Commission was founded (Hammarberg 2014). The commission proposed to establish a broad social program of importance for the future health services in schools. The program comprised health education on, for example, preventive maternal and child health care, housing, nutrition and hygiene. Furthermore, a comprehensive national program for public health was developed during the first decades of the 20th century, in which school staff were seen as important intermediaries of society’s message to the homes and the children (Johannisson 1991). The State implemented two important factors for the development of the school health services (including health education). Firstly, government grants were allocated on condition that they must benefit all children in the country, and that both a school doctor and a nurse must be employed at each school. Secondly, a health card for each child was introduced in the schools and a copy of the health card was saved at a national level. With both government grants and health cards, the school health services now had a solid basis for working with the health of the children (Hammarberg 2014).

In 1952 a book about school hygiene was published. Questions such as how best to work in schools to benefit child development, education and the school environment are addressed in the book (Kungliga skolöverstyrelsen 1952). Besides, at that time the school nurse enjoyed increased status; the school nurse was seen as a vital person not only taking care of the weighing and the health cards, but also looking after and caring for the children in general. New categories of professions were added to the health care team in the schools in 1950 to 1960, in the form of psychologists and school welfare officers, and later supplemented with special teachers and directors of study. Altogether, from 1960 and onward the school health team has consisted of several professions and competencies, for example, doctors, school nurses, psychologists and special teachers (Hammarberg 2014).
However, in 1991 education was decentralized to the local municipal level and since then a great deal has changed. From 1991 and onwards, each municipality could organize education in response to local needs and preferences. The main reason for the reform was that the school community had become too extensive and complex to be controlled by the State. The State should now simply formulate the national objectives, without controlling the activities through implementing rules. The Swedish National Agency for Education was established at the same time. The agency’s tasks were to support the adjustment through curricula and grading criteria, and to monitor and evaluate school achievements (SOU 2007).

**Swedish school health activities today**

Today, like earlier, schools have high societal demands to live up to. To begin with, every child should have the opportunity to acquire the skills and knowledge required for further studies and should develop socially and emotionally. In addition, school is expected to maintain and create democratic values. The national steering documents all emphasize democratic values (Lindgren 2014). The Education Act has sections on equal education, the curriculum includes norms and values, and the Swedish National Agency for Education recommends that children, teachers and parents should be involved in systematic quality assurance activities (SFS 2010:800, Skolverket 2011). Put together, the demands make the school setting complex in terms of improvements (such as school health promotion), evaluations, and quality assurance (Maruyama and Deno 1992, Dooris 2005, Poland et al. 2009, Lindgren 2014). Furthermore, there is a new school act (SFS 2010:800), which, like the former (SFS 1994: 1) states that all schools should have a school health team, but today teachers should have a key role in preventing and handling bullying, and improving social relations between peers, and between peers and adults (SFS 2010:800).

**The role of the principal**

Each school unit should have a principal whose role is to manage and be responsible for the pedagogical activities, which should be characterized by the norms and values that the school unit is expected to follow. The principal is responsible for the development of the school health services. It is the principal’s task to organize the
school health services and to ensure that the school unit has access to the different kinds of health service professionals required under the Education Act. For example the principal should ensure that the children receive special support and help when needed and that interdisciplinary issues such as equity, sex and relationships are integrated in the ordinary activities along with education on the risks associated with tobacco, alcohol and other drugs. Children should have the opportunity to influence the education provided, including the school health services activities (Skolverket 2011). This means that, if a school management fails to realize the importance of school health and omits to implement measures, it will be difficult for a school to be health promotive (St Leger and Young 2009, Persson and Haraldsson 2013). Likewise, there is a growing awareness to examine the views of school managers, and especially their importance for children’s well-being and performance in schools (Ärlestig and Johansson, 2011). School managers’ views of school health promotion and what it includes are examined in study I in this thesis.

Organization of the school health services

School health services, on the other hand, should, as described earlier, consist of special professionals with medical, psychological, psychosocial, and special education expertise\(^1\) (Skolverket 2011, Hammarberg 2014). Their main responsibility in the school organization is to complement the knowledge of the school staff regarding the child’s development and learning. Specifically, the responsibility includes attending to children’s needs and defining circumstances in the school environment that may affect their learning, and contribute professional expertise in the efforts of caring for children’s health (Socialstyrelsen 2014, Skolinspektionen 2015). For example, anonymous and aggregated data from health controls can serve as a basis for health promoting school development. Children’s health talks with the school nurse are seen as a health promoting activity, when questions are asked how things can get better. The work can also include informing children about stress-related

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\(^1\)The school health service is governed by The Swedish National Board of Health and Welfare and The Swedish Agency for Education, which publishes regulations and provides general guidance on the meaning of laws and national objectives. Regulations are binding; these are rules that must be followed. General guidance is intended to support the work, and is not binding. The State, through the Swedish School Inspection, oversees the school health services based on the provisions of the Education Act. Furthermore, IVO (The Swedish Inspection for Nursing and Health care) oversees the school health services medical activities respectively and the agency for the working environment monitors the school environment (Socialstyrelsen 2014).
questions, school pressure, and further discussing stress management and coping. Other examples are helping children to develop better sleeping habits and promoting healthy food habits and physical activity (Socialstyrelsen 2014). Summing up, the mission of the school health services is extensive, if rather unspecified and at the same time we get alarming reports that the school health teams cannot live up to the anticipated activities (Skolinspektionen 2015).

**School health activities in general**

It is prescribed that health activities in the school setting in Sweden should be organized at three levels (Socialstyrelsen 2014, Skolverket 2015a): the organizational, group and individual level. The organizational level involves creating a school environment where all children can grow, develop and feel satisfied. More specifically, it means a school with a school environment, where the adults quickly handle bullying, where there is a beneficial and safe learning environment, where children feel valuable, and are cared for, where children get support in developing trusting relationships and get constructive feedback on their school achievements. At the group level, it means that school staff must have a special eye for and swiftly handle children with increased risk of vulnerability or children who expose others to risk. It is about recognizing both the child’s individual problems, but also how these can be linked to the overall school environment. Lastly, the individual level, involves the individual child who has an urgent need of extra support, care and/or treatment. Especially important for the child is to have effective cooperation in place between schools, school health services, social services, child psychiatry and others so that the child receives the support she/he needs in that situation. Besides, it is stated in the Swedish curricula that physical education and good health knowledge is vital for both the individual as well as for the society in general. Not at least because of the link between physical activity, well-being and healthy living habits overall (Skolverket 2011).

**Future challenges**

In Sweden as described above, the school environment is a prioritized issue on the political and educational agenda, as well as from a public health perspective (SFS 2010:800, Skolverket 2011, Folkhälsomyndiheten 2014a). Worryingly though, dur-
ing the last couple of years, it has been observed that the Swedish physical and psychosocial school environment has several types of shortcomings that urgently need to be redressed; for example, the outdoor environment such as playgrounds (Boverket 2015), ventilation systems and the cleaning (Folkhälsomyndigheten 2014a), as well as the classroom climate needs to be improved (Skolverket 2013, OECD 2015).

Additionally, in 2013, OECD noted that the presence of school doctors, school nurses and school psychologists was spectacularly low in the Swedish schools, for example, one school doctor per 10 000 children and one psychologist per 2 000 children. Especially, the waiting time was considered remarkably long, for example, ten weeks to meet a psychologist in a municipal school, and 22 weeks of waiting time in a private school (OECD 2013). Long waiting times for appointment at children’s psychiatry clinics, is seen as a great danger to the child (Skolinspektioni- nen 2015). OECD (2013) comments on the situation as follows p.1:

“Mental health problems often begin early in life. If left un-addressed in school and during the transition from school to employment, they can have major negative consequences in adulthood. Swedish school health services are under-resourced to help children in coping with behavioral and psychological problems, and waiting times to see a psychologist are too long”.

This is also a problem that the Swedish school doctor Ekman voices in the Medical Journal (2011), pointing out that it is, for example, unclear who is responsible for the children’s physical and mental health in the school. OECD (2013) gave one important key recommendation to Sweden about policy change, which concerned improving access to mental health services in school. Children’s mental health was also addressed at the expert conference in Stockholm in January 2013 arranged by the Nordic Council of Ministers and the Nordic Welfare Centre with 25 researchers and experts from the Nordic countries (Hagquist 2015). Four thematic areas crucial for improving children’s mental health directly related to school were identified,
such as the school working environment, preventive measures to counteract non-completion of upper secondary education, critical transition phases between lower and upper secondary school and between upper secondary school and work, and faster follow-up and activation of young individuals at risk of early retirement (those with a mental diagnosis or a slight diagnosis are at special risk of early retirement) (Hagquist 2015).

Correspondingly, the Swedish National Board of Health and Welfare and the Swedish National Agency for Education have, together with representatives of the school health services, identified four future areas that the Swedish school health services, should prioritize in addition to the ordinary health controls. These areas are: mental health and well-being, the learning environment, school absence, and living habits (Socialstyrelsen 2014).

Moreover, in 2015 a Swedish report on the Swedish school health services was published by The Swedish School Inspection. Among other things, the conclusion was that the Swedish school health services do not work satisfactorily with children’s mental health, and they do not support the children in maintaining and improving their mental health, or function as preventers of mental illness. It further emerged that school health promotion activities were normally introduced by the teachers, with the help of the school health services (Skolinspektionen 2015), instead of vice versa as written in the curricula (Skolverket 2011) The report highlights that the school health services do not have a clear strategy for how health promotion should or could be utilized (Skolinspektionen 2015).

School health activities are in the future, requested to better teach, support and help children improve their mental health and well-being in general (OECD 2015) especially in view of the fact that the School Inspection report indicates a lack of a psychologist in the health service team. About 63 percent of the girls had experienced symptoms of mental health problems during the school day, but only two percent had seen a school psychologist. The children also wanted more school activities concerning motivation and self-esteem. All in all, and because of the growing public mental health problems, the report suggests that the children should have the
opportunity to talk about mental health related issues in school, and to get professional help when needed. It is further described as important to instruct children in research based strategies developed to strengthen mental health, and that the children need to better informed about the different help and support resources available (Skolinspektionen 2015).

**Improvements of the total Swedish school system is requested**

Today and in the future, Sweden is therefore strongly recommended to improve its total school system in terms of quality and equity, for example by adding extra assistants in the classroom and by strengthening the support of immigrant children as well as disadvantaged children in general (OECD 2015). According to the Swedish National Agency for Education is this an urgent question in times when Sweden is experiencing an increase of immigrants from distant countries, which means that Sweden faces the challenge of helping and supporting immigrant children in a situation that is a challenge to them (Skolverket 2015b). Likewise, because of traumatic experiences, these children often suffer from severe mental illnesses, thus aggravating their educational situation (Shaw et al. 2006). To sum up, all the international and national reports mentioned above pinpoint that it is time to start acting more health promotively in the whole Swedish school community, in order to improve the school environment and children’s well-being (e.g. Gustafsson et al. 2010, OECD 2013, 2015, Socialstyrelsen 2014, Hagquist 2015, Skolinspektionen 2015). Similarly, the Swedish Government has invested many millions to promote children’s well-being. By example the Government financed the PS-project, which functions as the basis for this thesis, was developed with the aim to improve the school environment and children’s well-being.

"The Preventive School Project"

Between 2005 and 2007, The Swedish Institute of Public Health (FHI) was commissioned to disseminate knowledge about effective alcohol and drug prevention programs in Swedish schools. In all municipalities, the PS-project was a broad initiative, and in Sweden comprehensive schools in Skåne and the Värmland region where chosen as pilot counties. In the Värmland region Karlstad, Arvika and Sunne were selected as pilot municipalities (Karlstads kommun 2007). The project includ-
ed the implementation of different programs and methods to promote mental health among the children and improve the learning environment and social relations in school. The use of alcohol and drugs were seen as possible obstacles to success. Therefore the municipality primary schools were offered different kinds of programs and methods including different approaches to helping children solve individual problems or reaching all children at a universal level (Karlstads kommun 2007).

In 2008, the Government gave FHI a renewed commission consisting of 50 million SEK to distribute to six municipalities. In the final report of the project (Karlstads kommun 2012), it is stated p.4:

“By the year of 2007, we believed that the operation had developed into such a good structure that we applied for development funding from the Agency for School Improvement. The agency granted two million SEK in funds. It gave us the opportunity to increase the intensity of the skill development among the teaching staff. In the summer of 2008, we drew the same conclusion and applied to be one of the six municipalities in the 50 million SEK campaign.”

The intention of the new commission was to enhance the ongoing efforts (but with more focus on the classroom climate) and to spread knowledge about the various programs being used in the municipality schools (n 29), and to be a continuation of the already completed part of the PS-project (2005-2007) in general. About forty municipalities submitted an application of interest; Karlstad municipality was one of six municipalities selected in the autumn of 2008. Karlstad municipality was granted nine million SEK, and after an agreement more than half of the funds were transferred to Karlstad University (CFBUPH) (Karlstads kommun 2007).

Collaboration between Karlstad municipality and Karlstad University
In the second phase of the PS-project (2009-2012), Karlstad municipality (Child and Youth Department, BUF) and CFBUPH intensified the PS-project in close
collaboration. CFBUPH was responsible for the research part, i.e. the examination of the project (Karlstads kommun 2012, Karlstads universitet 2012). CFBUPH studied both the processes and outcomes of the PS-project, and has within the frame of the project 2009-2012 collected massive data. Several questionnaire surveys comprising measures of children’s perceived health, health related habits, social relations, and school environment (school years 4-5 and 7-9) and questionnaire surveys of teachers and principals were performed. Interviews with school managers, principals, children, school nurses and school counselors were done with different research designs (Karlstads kommun 2012). The research team at CFBUPH consisted of one project leader and three doctoral students (Hagquist et al. 2012).

Studies I-III draw on data gathered during the project.

Feedback of results

Feedback of survey research results to children and school staff in the participating schools has since the very start been an essential part of keeping each participating school updated in the hope that the results would function as a knowledge base in the future health promotion in the municipality. To this end, a feedback model of results was developed (study II in the thesis) and tested among children in school years 5-6, in six school-classes, in three of the municipality primary schools.

The programs offered within the project

The school managers and the principals had the possibility to choose which programs they preferred on the basis of their local needs. The programs and methods principally offered with the aim were: Socio-Emotional Training (SET), SkolKom- et and Classroom Management (CM) (Folkhälsomyndigheten 2006, Karlstads kommun 2012) and these are demonstrated in Figure 1 and are further examined in study IV.
Socioemotional training (SET)

SET is a Swedish manual-based program inspired by, programs such as Promoting Alternative Thinking Strategies (PATHS) from America (Greenberg 1996) which aims to improve children’s social and emotional ability as well as their overall well-being. The program is based on emotional intelligence and social behavioral learning theories (Kimber 2009). The training of teachers followed a three-step model. In step one an instructor from the child and youth unit in the municipality taught teachers from each school, and in the second step the Set-trained teacher instructed colleagues, and then the teachers implemented SET in the classroom (Hagquist et al. 2012, Karlstads kommun 2012). In Karlstad SET was a popular program to choose and most schools trained school staff in the program. The school areas started training school staff (teachers primarily) in 2006 (Hagquist et al. 2012).

SET and the criticism

Initially, the programs introduced to the municipality school leaders, school managers and principals were evidence based (Folkhälsomyndigheten 2006). However, in the middle of the training of school staff, questions were raised regarding the program’s evidence base and trustworthiness. The reason was that a central report on the subject was published in 2010. The report included a review of studies of different school programs aiming to improve child mental health, particularly. The researchers questioned if, for example, SET functioned as intended as no appropriate evaluation of the program had been completed in a Swedish setting. For exam-
ple, no previous study of SET met the inclusion criteria of the review, and the researchers could not find any scientific support for the model PATHS (SBU 2010). In the review, SBU (2010) excluded a control study of Kimber et al. (2008a) on SET, because it lacked a follow-up study and had a big drop out. The study of Kimber et al. (2008a) showed positive changes regarding decreased aggression, negative attention seeking, and bullying.

Further, about the same time as SBU published their report, the Swedish School Inspection, revised a notification from a school in Stockholm municipality, saying that SET could be unpleasant for the child and that the school staff, conducting the program, did not have the adequate qualifications (i.e. medical and or psychological education) for handling the potential consequences or responses of the program (Skolinspektionen 2011). But, when Socialstyrelsen (2010) examined the program, it was concluded that SET most definitely was not harmful to the child. On the contrary, it was asserted that the program could be beneficial in improving children’s social and mental health, but it was pointed out that the program lacked essential information about how certain parts should be performed and how to handle potential problems following on an SET-exercise. Furthermore, a recently published Swedish thesis by Lindholm (2015), based on interviews with children and teachers experiences of SET, concluded that the program, which, among other things, is advertised as a tool to combat bullying in schools, uses fictitious cases and thus fails to respond to real cases of bullying. In sum, it is clear that more evaluations of the program are needed in the future.

**SkolKomet**

SkolKomet is a Swedish manual-based program, which targets teachers in preschool to school year 9. The theoretical idea is based on behavioral learning principles and that the adults must change their way to communicate and interact with the child to improve the classroom climate as whole. The purpose is to encourage positive child behavior, and thereby decrease problem behaviors and strengthen the social relations in the classroom (Forster and Karlberg 2005).
In a randomized control study of Skolkomet, the result showed that the teachers who randomly had been selected to Skolkomet encouraged children with behavioral problems more over time, and used fewer admonitions and reprimands. Children who had been in the program, showed less externalizing behavior problems, and overall, compared with the control group, there was a friendlier classroom climate in class. Likewise, in the follow-up study eight months later, the result persisted, and the teachers had changed their way of communicating. In sum, the key issue is whether the teachers managed to cut down on negative communication, while the direct effects of positive communication are more difficult to interpret (Forster et al. 2012). In Karlstad municipality, the teachers were trained by instructors from the municipal child and youth administration to bring the new knowledge back to the schools, and in turn instruct teachers in their school (Hagquist et al. 2012, Karlstads kommun 2012). In Karlstad municipality the training in the program started in 2006 (Hagquist et al. 2012).

**Classroom Management**

Classroom Management (CM) is a program designed for school leaders and teachers and is based on the principle of reducing risk factors in the classroom by supporting salutary factors. It aims to strengthen the role of teachers as leaders able to create a better classroom climate. The idea is that if the teacher can meet, acknowledge and encourage the children in a thoughtful way, it would reduce the risk of these children ending up as outsiders, thus preventing school failure, absence and abuse. To ensure security, teachers are expected to establish and maintain clear “social rules” known to everybody in the classroom. The program has a focus on developing the potential of each child, working with the consequences of different behaviors, and improving the communication between teachers and children (Kimber 2008b).

A recent study on classroom management has, for example, shown good effects on newly educated teacher’s classroom management skills. A classroom management program, implemented for two and a half working days had a significant positive effect on beginning teachers’ perceived classroom management skills and their well-being, helped to counteract a reality shock, and supported new teachers in
creating a beneficial classroom climate (Dicke et al. 2015). In Karlstad municipality the training in the program started in 2009 (Hagquist et al. 2012).

**Earlier research from the PS-project**

Two previous theses have been published based on data from the investigation of the PS-project in Karlstad municipality. The first to defend her thesis (2013) titled “Traditional bullying and cyberbullying among Swedish adolescents: Gender differences and associations with mental health”, was Beckman. The result showed, among other things, that bully-victims are more likely to experience levels of psychosomatic health problems compared to others involved in bullying (either victims or bullies). In spring 2015, Hellström (2015) published her thesis titled “Measuring peer victimization and school leadership - A study of definitions, measurement methods and associations with psychosomatic health”. The main result was that excluding other forms of peer-victimizations than bullying has serious implications for the identification of victims and may underestimate the full impact of peer-victimization on children. The present thesis is the third public health sciences’ thesis based on the PS-project in Karlstad municipality, and, compared to the previous ones, it has a focus on school health promotion and the school environment, instead of bullying and peer victimization.

**Public health sciences**

This is a thesis in public health sciences, which is an interdisciplinary research field. It includes, among other disciplines, epidemiology, medicine, psychology, sociology, and social and behavioral sciences, and its main purpose is to reduce inequalities in health from a population perspective (Janlert 2000, Regeringens proposition 2007). The earliest definition of public health can be ascribed to Winslow in 1920, which is similar to how the World Health Organization (WHO) (2015a) today defines public health, p.1: “Public health refers to all organized measures (whether public or private) to prevent disease, promote health, and prolong life among the population as a whole.” From a historical perspective, a typical example of successful public health work is John Snow’s board street pump in London in late 1800s. Snow was a physician, who discovered that a street pump was contaminated with cholera, and many got infected and died. Snow located the
geographical area where most people got sick and died, and identified the street pump whose water was infected. As a result, and to end the epidemic, the locals were forced to fetch water at other locations in London (Denver 1980).

**Public health problems**

Public health includes efforts to combat different types of public health problems in the community (WHO 2015a). The definition of a public health problem depends on how common it is, the degree of severity, if it increases or decreases, and its distribution in society. The consequences of the problem need to be taken into consideration, and finally if the health concern is possible to combat (Folkhälso gruppen 1991). The major public health problems in Sweden are, for example, cardiovascular diseases, cancers, mental health illnesses and allergies. In addition, there are infectious diseases and public health problems related to different lifestyle habits: food, exercise, alcohol and smoking habits, and drug abuse that can be seen as public health problems because their consequences may lead to severe health problems (Folkhälsomyndigheten 2014b).

**Health**

Both the English word ‘health’ and the Swedish ‘hälsa’ derive from a word meaning ‘wholeness’, which is associated with “happiness”. There are several definitions of health in the literature, but the most well-known definition of health was first defined in 1946, after World War II, by WHO as follows, p.1: “A state of complete physical, mental and social well-being, and not merely the absence of disease” (WHO 1948). However, this definition has been criticized over the years for being too static, and when the National Public Health Committee in Sweden, had to draw up national public health objectives and strategies for achieving them, they chose not to define health. Instead, it was said that health is a subjective phenomenon about which each individual has their own view (SOU 2000). Therefore, there is no definition of health in the Swedish Government bill, titled “A renewed public health policy”, specifying the national public health goals. The bill emphasizes that health is something that in a broad sense includes everything from nutrition, physical activity to external environments, relationships, social and economic
conditions, work environment and consistently being allowed to live as healthy a life as possible (Regeringens proposition 2007).

**Social health determinants**

An individual’s health is as complex as the human being itself; it is influenced by several factors, both of internal and external character, called the health determinants (WHO 1999). Especially the social determinants of health (SDH) are vital in the context of child health and the school setting (Carleby 2012), because they concern the environments in which people are born, grow, live, work and age. Likewise, these environments are shaped by the distribution of money, power and resources at global, national and local levels (WHO 2015b). The social determinants of health are mostly responsible for health inequities such as the unfair differences in health status within and between countries. Therefore, the social determinants of health are, together with health equity, seen as critical components of global and national sustainable development today and in the future. However, if health inequalities are to be reduced, SDH needs to be addressed in integrated and systematic ways (WHO 2015b). These factors should be taken into account if ill-health is to be prevented, and health be maintained and promoted (WHO 1999, Marmot 2004).

Specifically from a child perspective, *education* is recognized as one of the most vital social determinants of health, in both a short and long time perspective. Education and the opportunities children are given to succeed are important because of the strong correlations between health, social position and work (Marmot 2004).

**Children’s health status**

It has been thirty years since the first international survey on children’s health, in collaboration with the WHO, was implemented in Sweden, called Health Behavior in School-Aged Children (HBSC). The Swedish participation in the HBSC-study is a part of the task to understand the development of the health determinants, and to recommend future measures related to children’s health. The survey is carried out in forty different countries or regions every fourth year, and the latest was in 2013/2014. Nearly 8 000 (69 percent) of the Swedish children aged 11, 13 and 15 participated in the survey. The Swedish results are presented in a report by the Swedish Public Health Agency and are directed to decision makers at the national,
regional and local level, and others (researchers, school health services and school staff etcetera) who are working to improve children’s health, living conditions, and lifestyles. The latest results showed an increase in Swedish children’s mental health problems (Folkhälsomyndigheten 2014c).

**Mental health and well-being**

About 20 percent of Nordic children suffer from mental health problems (Hagquist 2015), which is a number consistent with other international surveys (OECD 2015). Mental health is an integral part of the general health definition and includes more than the absence of mental disorders. WHO conceptualized mental health as a state of *well-being* in which individuals manage the normal stressors of life on their own, can work successfully and are able to take part in community life. This view of mental health is a re-orientation from a pathogenic (focus on illness) perspective to a salutogenic perspective (focus on well-being) (WHO 1986, 2001).

**Mental health problems**

Mental health problems can appear in many different forms, for example, in the form of *internal* psychosomatic problems such as head ache, depression, stomach ache and feeling giddy during a longer period, to more *external* problems such as aggression and impulsiveness (Socialstyrelsen 2005, SOU 2006, SBU 2010). More serious mental health problems are those that meet the criteria of psychiatric disorders (Bremberg and Dalman 2015). In an OECD report of Hewlett and Moran (2014) it is described that half of adults with a mental illness developed it before the age of 15, so early identification and treatment is of importance for future health status and public health. Poor mental health also has broader societal impacts, for example, adults that suffer from mental illness are often poorer than the general population, experience higher rates of unemployment, have reduced productivity at work and suffer from more work absence. Likewise, many in need of treatment go without. These factors lead to considerable indirect economic costs such as informal care provided by family members and the full accounting of the costs of poor mental health includes the cost of, for example, increased homelessness and crime (Hewlett and Moran 2014). However, researchers such as Cederblad (2013) question if the mental health problems really are so problematic?
Cederblad agrees that children’s mental health status has not developed in a positive way during the last couple of years. Still, she asks if it is even possible, from only “self-reported” behavioral symptoms, to draw any conclusions about mental illness, especially, since there is little knowledge about how these symptoms affect children’s living and functioning from an everyday perspective (Cederblad 2013). Although, the majority of the literature on the subject instead pronounces that; children’s mental health problems are an alarming public health issue that needs to be taken into consideration (Regeringens proposition 2007, Gustafsson et al. 2010, Folkhälsomyndigheten 2014c, Hewlett and Moran 2014, Hagquist 2015, OCED 2015).

**Increases with age**

The HBSC survey shows that the level of poor self-rated health, mental problems and low general well-being all increase with age. There are also differences between the sexes. Girls report poorer mental health and experience more mental problems than boys. During the 1980s and 1990s, mental problems increased among both girls and boys, except for the 11-year-olds. However, there are differences between the former study carried out in 2009/10, which showed that the increase of self-reported mental problems had leveled off and in some cases decreased. Hence, the results of 2014 show that self-reported mental problems have increased again, especially among 13- and 15-year-old girls. Nearly 40 percent of the 15-year-old girls report feeling miserable/depressed and having sleeping problems. Of the boys, nearly 15 percent report being miserable/depressed and about one in three have sleeping problems (Folkhälsomyndigheten 2014c).

**School related pressure**

One possible explanation to girls’ increasing mental health problems could be that they feel more pressured by schoolwork than boys. For example, the proportion of girls (13-year-olds) that feel pressured by schoolwork has doubled in four years, and the share of children with multiple health complaints has increased considerably during the same period. The proportion of 13-year-old children who feel pressured by schoolwork has increased compared to 2009. The share has doubled in
four years, among both girls and boys. The proportion of children who feel pressured is the largest among 15-year-olds, but has not increased significantly in the last four years. In all age groups a higher share of girls than boys report school-related pressure. For example, of the 15-year-old girls about 40 percent report this, and around every third boy. The Swedish primary schools have also been reformed in recent years, which may have contributed to the negative development. Likewise, it is deliberated in the literature that today the child must take greater responsibility than before for his/her overall well-being, and for the school enrollment in general (Folkhälsomyndigheten 2014c, Hagquist 2015).

**Physical health**

The physical aspect of the health concept refers to general health outcomes in all features, for example, musculoskeletal disorders, disabilities, diabetes, asthma, allergy, severe symptoms of high blood pressure and eczema (Folkhälsomyndigheten 2015). The HBSC survey shows that about 20 percent of all age groups report that they suffer from a chronic disease, which in turn can have a negative effect on both the mental and social aspects of health (Folkhälsomyndigheten 2014c). Moreover, pharmaceutical use has increased in recent years, especially among boys. Gusmão et al. (2013) point out that the increase is particularly sharp for drugs used for depression diseases, and in terms of medication for diagnoses such as ADHD (Zetterquist et al. 2012).

**Social health, social relations and the classroom climate**

Social health can be defined as the degree to which individual’s functions adequately and as characteristics of the community (Renne 1974). A good social climate is positively related to children’s social functioning, mental health and academic achievement (Holen et al., 2012). The social relations are of importance to the school environment and particularly the perceived classroom climate (comprising both the social relations and the learning environment in the classroom (Wilson et al. 2007, Allodi 2010). In school, the classroom is where children spend most of their time, and a beneficial classroom climate, free from noise and disruption, is of substantial importance in establishing a health supportive school environment (WHO 1986, 1991, St Leger et al. 2009, Persson and Haraldsson 2013, Persson and
Svensson 2015, Hagquist 2015, OCED 2015). For example, how well classmates bond with one another will generate more or less, positive or negative sets of behaviors, expectations, ambitions and resources among the children in the school class (Östberg and Modin 2007). Children’s perceived classroom climate, classmates’ characteristics and class composition is further studied in study III.

Generally, friends are vital to the mental health of children (Beckman et al. 2012, Carleby 2012), and friends become increasingly important with age. Between the ages 11 and 15 both sexes find it more difficult to talk to their parents, but easier to talk to their friends about issues that really trouble them (Folkhälsomyndigheten 2014c). For example, a study of Östberg and Lennartsson (2007) shows that having different kinds of social support resources are important for the perceived health, and especially prominent is to have someone to discuss personal problems with. Further, the HBSC survey displays that daily electronic media contact (EMC) with friends increases with age from 11 to 15 (Folkhälsomyndigheten 2014c).

Furthermore, the proportion of children who report being bullied at school is still low and also compared with other countries. About 5-7 percent report being bullied and the numbers are constant over time. This also applies to the proportion of children reporting that they are being exposed to cyber-bullying (Folkhälsomyndigheten 2014c), although cyber-bullying seems to be more common among girls (Beckman et al. 2012).

**Social relations and school satisfaction**

A threat to children’s’ enjoyment at school is negative social relations, such as bullying, which has a harmful impact on children’s mental health (Beckman et al. 2012, Carleby 2012) and capacity to learn, as well as on the overall school environment (Gustafsson et al. 2010). It is vital to a child’s academic achievement and well-being to enjoy school and to have functioning social relations with peers in school (Bond et al. 2007, Gorard and Huat See 2011). Barker (1998) defines school satisfaction as a child’s subjective and cognitive appraisal of the quality of school life. About 45 percent of the Swedish children in school year 5, aged 10-11 years,
enjoy school ‘very much’, which is an increase with eight percent since the late 80s. However, only every fifth 15-year-old enjoys school very much. Summing up, the proportion of children reporting that they like school has increased over time among 13- and 15-year-olds (Folkhälsomyndigheten 2014c). Children’s suggestions for improvement regarding social relations and school satisfaction are studied in study II in this thesis.

Social health and child involvement

Another vital part of the social health aspect is children’s involvement in the schoolwork and it is vital for a school to be health promotive (General Assembly 1989, Gådin-Gillander et al. 2009, WHO 2000b, SFS 2010:800). Child involvement is essential to, for example, social status and positive life skills (Mager and Nowak 2012). Every second Swedish child, aged 13 to 16, thinks that they can influence who to work with, and approximately 70 percent of the Swedish children report that they sometimes or often can influence their classroom environment (Skolverket 2013). Study II addresses this subject further and in relation to school health promotion.

The new public health and health promotion

In Government documents, the new public health is used as an umbrella term to encompass health promotion (Naidoo and Wills 2005). Lalonde’s document “A new perspective on the health of Canadians” published in 1974 and The WHO conference in Alma Ata on primary health care in 1978- had both an impact on health promotion development; as it was declared that the work of improving people’s health is not just a health care responsibility (Lalonde 1974, WHO 1978). There are several definitions of health promotion in the literature, but the most commonly used is the WHO definition, thus health promotion was first defined in the Ottawa Charter (WHO 1986) as being; concerned with helping (empowering) people to take greater control over their health and improve it. This includes a range of strategies to strengthen communities, develop supportive environments as well as inform and educate people about health issues. The concept of health promotion research moves beyond a focus on individual behavior towards a wide
range of social and environmental activities (Naidoo and Will 2005). Health promotion is based on theories of organizational behavior, sociology, social psychology, psychology, anthropology, education, economics and political sciences (Lindström and Eriksson 2008). Even though health promotion and public health sciences have different origins, they are now seen as two complementary and overlapping areas of practice (Naidoo and Wills 2005).

**The growth of health promotion**

To date, there have been eight crucial international health promotion conferences organized by WHO, which have been central to the growth of health promotion, and also ultimately to school health promotion. The *first* international conference on health promotion in Ottawa, 1986, was primarily a response to growing anticipation of a new public health movement around the world. Discussions focused on the needs in industrialized countries, but took into account similar concerns in all other regions. The concept was defined and the importance of starting health promotion at an early age and that school is an important arena to focus on was highlighted (WHO 1986). The *second* international health promotion conference in Adelaide 1988, focused on recommendations to develop a healthy public policy. The conference charter identified among other things the importance of creating supportive environments and strengthening community action (WHO 1988).

The *third* conference was the conference on supportive environments for health held in Sundsvall 1991. From a health perspective a supportive environment refers to both the physical and the social aspects of our surroundings (where people live, work, and their local community). School and education are recognized as vital in this context. Action to create supportive environments includes many and closely linked aspects, such as physical, social, spiritual, economic and political. It requires local, regional, national and global efforts to reach solutions that are sustainable (WHO 1991). Further, the conference generated the report; “We can do it!”- comprising health promotion models for how to build supportive environments for health, like HELPSAM (Health Promotion Strategy Analysis Model) and SESAME (Supportive EnviromentS Action ModEl) (Haglund et al. 1992).
The fourth conference on health promotion held in Jakarta 1997 focused mainly on identifying possible strategies to achieve success in health promotion. This is perhaps the most essential conference regarding health promotion linked to the school setting. The importance of school health promotion was emphasized, in terms of the need to develop “Health Promoting Schools” (HPS). In this respect, governments, organizations, compounds and communities were encouraged to support health promotion in schools (WHO 1997). The fifth conference on health promotion in Mexico City 2000 centered on actions to bridge the equity gap in health (WHO 2000a).

Further, the sixth conference in Bangkok 2005 dealt with the challenges, actions and commitments required to address the determinants of health by reaching people, groups and organizations that are critical of the achievements of health (WHO 2005). The seventh conference on health promotion held in Nairobi 2009 had a focus on the urgency of health promotion and health threats, such as global warming and financial crisis. The latest conference in Helsinki in 2013 embraced the Health in All Policies (HiPA) initiative and concentrated on the implementation, “the how-to”, which involves recognizing opportunities to implement the recommendations of the Commission on Social Determinants of Health through HiPA (WHO 2013). Altogether, this is a field in movement and in 2016 there will be a ninth WHO conference on health promotion, held in China (WHO 2016).

**Key principles of health promotion**

A great deal has happened in the field of health promotion during the last thirty years, not least have key principles to serve as foundation and to permeate all health promotion efforts been identified, the purpose of which is to reach all sectors where people work, live and play. Thus, health is created by people in the settings of their everyday lives (WHO 1986). The principles state that all health promotion efforts should aim to be equitable, empowering, participatory, holistic, intersectional, sustainable and multistrategic (Rootman et al. 2001). Moreover, the principles and approaches that derive from health promotion are now also embedded in the modern view of public health, such as involving people and communities, collaborating across boundaries and partnerships, empowering people, and being con-
cerned with the structural causes of health inequalities (Naidoo and Wills 2005). The principles are vital in trying to define what health promotion involves, because there is still no fully accepted health promotion theory (Antonovsky 1996, Korp 2004, Lindström and Eriksson 2008).

The salutogenic model in health promotion
Good health is a vital resource in everyone’s life, not least for full participation in society. This view of health as a resource, functions as the theoretical basis of the thesis, and draws on the theory developed by Israeli theorist and professor of medical sociology, Aaron Antonovsky, called the theory of the salutogenic perspective. He viewed health as a resource, and presented health as two ends on a continuum from total health to total absence of health. Movement on the continuum toward total health can be influenced by enhancing salutary factors rather than by decreasing risk factors. He thought that it was vital in helping people to mobilize and to develop resistance resources to cope with stressors which would help them move toward total health. Also, in spite of a diagnosed disease, people can be healthy (Antonovsky 1987). Accurately, Antonovsky (1996) recognized similarities between the salutogenic perspective and health promotion. He also thought that health promotion lacked a theoretical foundation, and therefore, he introduced the salutogenic model in health promotion. He declared that it is not a theory that aims to keep people healthy; instead it is a theory that derives from studying the strengths and the weaknesses of promotive, preventive, curative and rehabilitative ideas and practices. This is vital to consider in regard to child health and the school as setting in public health. In sum, the model harmonizes well with the essence of the Ottawa Charter for health promotion (WHO 1986, Antonovsky 1996), and that children need to be healthy in order to learn (Lindström and Eriksson 2008). The theory has since then been developed by others (for example, Lindström and Eriksson 2011).

Public health policies
Public health policies have also shifted focus from the individual approach of curing and preventing disease to the present-day community- and population-based approach, focusing on health promotion comprising both individual and environ-
mental factors (Regeringens proposition 2007). Today, there are specifically formulated international as well as national public health targets, which rest on the key determinants of human health, and which each country should implement to promote health and prevent illness (WHO 1999, Regeringens proposition 2007). The Swedish targets for public health, partly rest on the WHO target document.

**International public health targets**

In 1998, WHO adopted new targets for the “Health for All” initiative, called “Health for All in the 2000s” (WHO 1999). The target document includes 21 target areas with related sub-targets that are central to health. The fourth target “Health of young people” is crucial in this context, and involves the aim that children in the European region should be healthier and better prepared to assimilate their roles in society by the year 2020. The related sub-targets suggest that by then children should have better life experiences and make healthier choices. The 13th target “Arenas for health” is also relevant, since it involves the goal that individuals in the region should have a greater chance of living in a healthy physical and social environment at home, in school and in the local community (WHO 1999). For example, the target document states that 95 percent of all young people should be able to get an education in a health promoting school. The purpose is to improve children’s health related habits, increasing their chances of a healthy lifestyle and prevent accidents (WHO 1999). Each country should encourage this in legislation and regulations related to school (WHO 1997, Rowling and Jefferys 2000).

**National public health targets**

The national targets include creating conditions for health on equal terms in society for the entire population and counteracting health inequalities. In order to achieve the overall goal, eleven target areas for public health were developed. For children there is a specific public health goal called “Children and young people’s living conditions”, and is specifically meant to ensure that children are considered in decision making. The goal states that children need a safe and stable upbringing to enjoy good health. The family and school context is especially emphasized as important for a positive development of child health and parent support, and children’s mental health is a prioritized area (Regeringens proposition 2007). Swedish
schools are also obliged, under the Education Act to pay heed to health promotion activities, concerning physical, emotional and social behavior, as well as the overall school environment (SFS 2010:800).

**The rights of the child**

From a public health perspective and in relation to the school setting it is vital to consider the The UN Convention on the Rights of the Child (UNCRC). The Convention was established in 1989, and is important in the development towards better life conditions for children, as children are often seen as a minority group not given full societal value. Likewise, the Convention defines the child chronologically as a member of society under the age of 18 (General Assembly 1989). Approximately every fifth person is below the age of 18 in Sweden, and at the end of 2012, there were over 1.9 million children (~49 percent girls) (SCB 2015). Sweden adopted the Convention in 1990 and is since then bound to follow and implement it. The convention is normative and functions as an instrument of guidance and requires countries that have signed it to follow it. The convention comprises the following main principles: all children are equal; the child’s best interests should be the focus; the child’s physical, mental, social, spiritual and moral development and the right to freely express their opinions should always be taken into account in every activity, decision and intervention that concern them; and all members of society have the same right to be heard and respected (General Assembly 1989). The principles of child rights are moreover important in endeavors for a better public health, and are closely linked to the main principles of health promotion described earlier (for example, participation and empowerment) and the content of the Swedish education act and the Swedish curricula (SFS 2010:800, Skolverket 2011).

**From health education to school health promotion**

Just as the public health policies have switched the focus to a more health promotive view of health, including both individual and environmental factors, the same change can be found in the school setting. See Figure 2 for the public health movement and the school health development. Because, there are differences between schools addressing health from a more educational perspective compared to those adopting a school health promotion framework (St Leger and Young 2009):
Health education in a school is a communication activity which involves learning and teaching related to knowledge, beliefs, attitudes, values, skills and competencies. It is often focused on particular topics such as tobacco, alcohol and nutrition. In Sweden the concept has been used since the 1940s (Hammarberg 2014). 2) School health promotion, on the other hand, aims to protect or improve the health of all school users and is based on the health promotion principles described earlier (WHO 2000b). The concept has been shaped by the health sector and has used in Sweden since early 1990th. It is explicitly designed to facilitate health gains, and to assist schools to take a more integrated and comprehensive view of health, than solid health topics (St Leger 2009).

Overlapping themes at a theoretical and a pedagogical level

The education sector seldom differentiates between health education and health promotion in the same way as in the health sector. St. Leger and Young (2009) argue that this is not necessarily a problem, but that it requires respect for each other’s conceptual frameworks and “associated language” when working in partnerships. However, as St Leger et al. (2009) describes, that there are overlapping themes at a theoretical and pedagogical level. Solely, the life skills and competencies that children develop in health promotive schools can be fruitful to all health topics (in health education). Examples of such skills are; self-confidence or developing critical reflection on their role as individuals, in a complex society that has
conflicting values about health. Summing up, school health promotion is a broader concept than health education. Health education can be problematic or ineffective if based on assumptions relating to human behavior, which are difficult to change. Additionally, there is a risk that the individual behavior is seen only at the individual level, when in fact, the social environment is vital in determining behavior (St Leger et al. 2009). This knowledge may be valuable to have in mind when trying to build supportive environments for health, in the future.

**Building supportive environments to health in school**

The concept of health promoting school, effective schools and health literacy are three phenomena, not to forget the health promotion models in the report of Haglund et al. (1992), which can relate to the school setting in a public health context and which can contribute to providing supportive environments for child health.

**The Health Promoting School**

To begin with, the WHO has played a key role in shaping the directions of school health all over the world. However, the tentative beginning of the health promoting school concept (in Swedish: hälsofrämjande skola) has its roots in 1950. By that time, the WHO had established an Expert Committee on School Health Services (WHO 1951). In 1954, the committee produced a central report, which consisted of comprehensive curriculum programs in health, involving teaching and learning methods; which were less instructional, but emphasized health training for teachers. The report was central to the growth of school health promotion, emphasizing that those involved in both the school and non-school sectors in health education activities, should work more closely together, mainly through education and training activities (WHO 1954). Further, in the beginning of the 1960s, the WHO and the United Nations Education, Scientific and Cultural Organization (UNESCO) organized a number of conferences and meetings to delineate how school health could be improved. In 1966 a publication was issued, which was one of the first international documents of school health programs, with the focus on planning and implementing school health (WHO 1966).
The declaration of Alma Ata 1978 was another important injunction to all Governments to formulate national policies, strategies and plans of action to develop a multisectorial approach to involving citizens in planning, organizing and controlling health problems (WHO 1978). The Ottawa Charter for Health Promotion (WHO 1986) was a breakthrough in the formation of health promoting schools. Its five recommended areas of action – build healthy public policy, create supportive environments, strengthen community action, develop personal skills, and reorient health services – established a framework for the development of health promoting schools together with the other documents described above. School health promotion involves advocacy, empowerment and support (Dhillon and Tolsma 1992, WHO 2000b).

The European Network for Health Promoting Schools

In 1991, the European Network for Health Promoting Schools (ENHPS) was established in Copenhagen, Denmark. This is a main reason why even researchers, politicians, agencies, school leaders and school health services in Sweden started to pay attention to school health promotion. It was a collaboration project between the Council of Europe, the European Commission and the WHO Regional Office for Europe. They initiated a pilot project in Poland, Hungary and Czechoslovakia in 1991. Many schools joined the project in 1992, and since then over 50 countries are participating in the project, in varying degrees. Furthermore, the legitimacy of health promoting schools is to be found in a key policy document “New Horizons in Health” which was adopted in 1995. The framework of guidelines consists of components and checkpoints for health promoting schools in six areas (WHO 1996): Healthy school policies, the physical environment of the school, the schools social environment, community relationships, personal health skills, and school health care. This framework was the actual start of the new paradigm for compre-

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9 Advocacy concerns intensifying public awareness and impelling social forces that influence public policy and resources to support health. Empowerment, on the other hand, is to help individuals develop knowledge and skills to make positive health choices and the ability to act individually and collectively to improve health. Lastly, support concerns fostering health giving social norms, alliances and systems that are responsive to and take the health needs of people into consideration (WHO 1986).
hensive school health, moving from health education to school health promotion, from formal instruction to needs-driven, skill based classroom education, from health information to health attitude and value clarification (Jackson 1994).

Moreover, schools are only selected if they meet a number of key guidelines (McDonald and Ziglio 1994, WHO 2000b) which are: committing to 3- to 5-years involvement, being prepared to follow the guidelines for health promoting schools, allocating local resources to health initiatives, identifying health promoting schools, establishing intersectional partnerships with relevant local groups, tackling local health issues in the context of wider European issues, developing high quality practices, implementing actions to improve the health of the young, developing and upholding principles of ecological and social responsibility for personal and community health, and effectively managing the project, and facilitating evaluation and disseminating results (WHO 2000b). Likewise, research has shown that both school achievements and health outcomes are improved if the school uses the health promoting school approach in addressing health related issues in an educational context. Further, using multifaceted approaches seems to be more effective in achieving health and educational outcomes than classroom only or single intervention approaches (Stewart-Brown 2006).

**Effective schools**

To begin with, maximizing learning outcomes is a fundamental business of schools and healthy children learn better (Jackson et al. 2015). In a document written by the American educational researcher Lezotte (2001) about the originator of the concept “Effective Schools” (in Swedish: framgångsrika skolor), it is reported that the concept was developed as a result of the Coleman et al. report in 1966, “The Equal Educational Opportunity Survey”. The report revolved around the assumption that the crucial determinant of child achievement was the family background and not the school (Colman et al. 1966). Coleman’s report contributed to the formation of the “compensatory education programs” that informed school improvement at this time. Edmonds is another prominent figure in school improvement development, primarily because of the program “Title I of the Elementary Secondary Education Act”, which taught low-income children to learn in ways that conformed to the
preferred ways of teaching in most schools (Lezotte 2001). The focus of the improvement programs was to change children’s behavior to compensate for their disadvantaged backgrounds, but no efforts were made to change school behavior. By giving official credibility to the notion that “schools didn’t make a difference” in predicting child achievement, the report encouraged a strong reaction, and became the spark of many of the studies that would later define the research base of the Effective Schools movement (Lezotte 2001).

*What makes a school effective – the strong leadership*

The primary task of the effective school researchers was to identify schools that were successful “effective schools” in teaching *all* children regardless of their socioeconomic status or family background. Such examples of effective schools were found, in different locations (both in large and small communities). Secondly, after identifying these “effective schools”, the second task was to find out what they had in common (like policies and practices) (Lezotte 2001). Researchers, such as Edmonds, Bookover and Lezotte, found that “effective schools” have first and foremost a strong instructional leadership, a strong sense of mission, demonstrated effective instructional behaviors, high expectations on *all* children, frequent monitoring of child achievement, and operate in a safe and orderly climate. These attributes eventually became known as the “Correlates of Effective Schools” and were first presented in a report by Edmunds in 1982, known as “Programs of School Improvement: An Overview” (Edmunds 1982). Today, the aim of effective schools is to give children opportunities to form their educational and health assets. It centers on using evidence-based learning and teaching methods, always involving children in creating learning experiences, enabling cooperation between children, providing feedback to children, offering capacity-building experiences for all staff, establishing and promoting high expectations, respecting dissimilar talents and ways of learning, permitting adequate time for learning tasks, ensuring that there is consultation between parents, children and teachers in establishing the school direction, as well as ensuring programs and accommodations for children with special needs (Lezotte 2001).
Effective schools in a Swedish context
From a Swedish perspective the educational researcher Lennart Grosin (2004), Stockholm University, has long examined the “Effective School” phenomenon in the Swedish context. In a research report on “School climate, school achievement and school adjustment” he finds remarkable effects of the pedagogical and social climate on the children’s (n720) school achievements, social and personal school adjustment in the “effective schools” (n20 different schools in Stockholm). The effective pedagogical and social school level climate here involves that the school leaders and school staff have high expectations on children’s school achievements regardless of their background (social status and academic knowledge). Grosin (2004) describes that the factors characterizing Swedish effective schools are that; all school staff prioritize the educational objectives, care for and treat the children in a positive manner (creating a “warm climate”), and that there are well-established social rules of mutual respect at the school (between children, and between the school staff and children) (Grosin 2004). Finally, a school community that uses the evidence of effectiveness can possibly enhance their learning processes and goals for all children by creating an effective school approach (St Leger et al. 2009, St Leger and Young 2009).

Health literacy
Alongside the health promotion school- and the effective school concept, there is a growing interest in health literacy (in Swedish: hälsoförmåga). Health literacy can be seen as a health promoting approach, recognized as a valuable resource to improve health for the individual as well as for the population in general (Olander et al. 2014). Literacy refers to “a tangible set of skills in reading and writing”, and health literacy speaking from a health promotion view is defined as a possession of literacy skills (reading and writing) and the ability to undertake knowledge-based literacy tasks (understanding and using information) that are required to make health related considerations. Literacy levels in a population are associated with a range of health outcomes (Nutbeam 2015). Especially children with poor literacy seem to be less responsive to school health activities, less likely to manage chronic diseases successfully, and are less likely to use disease prevention services (Berkman 2011).
Three aspects of health literacy

Three different aspects are commonly used when measuring health literacy: functional, interactive and critical health literacy (Nutbeam 2000): 1) Functional health literacy involves basic health literacy skills such as the ability to obtain relevant health information (e.g. about health risks). 2) Interactive health literacy concerns advanced skills that enable the individual to extract information and derive meaning from different forms of communication (e.g. interpersonal and or mass-media) and to apply new information to changing circumstances. 3) Critical health literacy describes more advanced cognitive skills, which, together with social skills, can be used to critically analyze information that will help to exert greater control over life events and situations (e.g. to interact independently and with greater confidence with information providers such as health care professionals) (Nutbeam 2015).

The different aspects of health literacy gradually allow for greater autonomy in decision making and empowerment. Improvements in health literacy are closely tied to more general strategies to promote literacy, numeracy and language skills in populations. Such an approach of improving health literacy can be more broadly implemented in schools. Yet, this more holistic model of health literacy remains a powerful idea even though it is starting to be more and more accepted. Further research is needed to develop the empirical basis of the concept (Nutbeam 2015). Altogether, the concepts of the health promotion school, effective schools and health literacy, can be vital to consider even more in the future, not least in improving the Swedish school community and the school environment in particular. Health literacy can, for example, be developed and improved through health education (Nutbeam 1998, Nutbeam 2015), thus these skills give children better chances to develop their knowledge, and enhance their potential to achieve individual goals (Nutbeam 2015).

Summarized problem formulation

Since long, school has been known as an important setting in public health because it has a unique opportunity to spread knowledge and raise awareness of health from an early age. Health is created within the settings of their everyday lives. Health and education are strongly connected, and childhood is a critical period when fu-
ture health habits are being formed. About two million Swedish children go to school every day of the week, and besides the home and family context, children spend most of their waking time at school, which affects their health and well-being in beneficial as well as detrimental ways. School health programs can help to foster a supportive environment for health. Consequently, a good health status can function as a resource in achieving learning outcomes and life goals in general.

However, recently it has been reported, that the Swedish school system (and the school environment in particular), is not nearly as satisfactory as it has been or could be. Children are suffering from school achievement pressure and mental illness to a greater extent today than before, and at the same time Swedish children’s school achievements are declining. In addition, there are reports of problems with disruptive classroom climates, bullying and deteriorating physical school environments. The Swedish Government has invested millions to promote children’s well-being; for example almost 50 million SEK, to improve the school environment and children’s well-being, via the PS-project, which likewise functions as a basis for this thesis.

The schools managers are thus obliged to initiate health promotion; however, we do not know what they are actually prioritizing or doing (study I). There is further a need to feedback survey results to children in health promotion, and at the same time children are expressing that they want to have more of a say about their school situation and how it could be improved (study II). Also, we need to know more about how children perceive their classroom climate, and possibly why they might perceive the classroom climate as more or less disruptive (study III). Finally, but not least, we need to be better at following-up school health programs and monitoring changes over time, here with a focus on the school environment (IV). Ultimately, as deliberated in this thesis we need to be better in creating supportive health environments, including what can we learn from previous experiences and research and what we need to focus on more in the future (study I-IV).
OVERALL AIM

The overall aim of this thesis is to examine, from different perspectives, the health promotion activities that were implemented in the Karlstad municipality primary schools 2006-2012, with a special focus on the school environment.

The specific aims of studies I-IV are:

Study I: To explore the school managers’ views on what health promotion in schools includes.

Study II: To examine children’s views on how to increase school satisfaction and improve social relations among peers at school.

Study III: To explore the relation between the classmate characteristics and the perceived classroom disruption.

Study IV: To examine if the PS-project was accompanied by any evidence of favorable changes over time in terms of the school environment, after the implementation of programs in the project municipality schools, and in relation to the non-project municipalities in the same county.
MATERIAL AND METHODS

Tab. 1: Overview of study aims, subjects and methods.

<table>
<thead>
<tr>
<th>Study</th>
<th>Aim</th>
<th>Study design</th>
<th>Study population</th>
<th>Analysis</th>
<th>Years of data collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>To examine children’s views on how to increase school satisfaction and improve social relations among peers at school.</td>
<td>Qualitative study with open ended questions.</td>
<td>Children in school years 5-6. Participation rate: 68% (n 66) six classes from three schools.</td>
<td>Qualitative content analysis.</td>
<td>Nov. 2011 PS-data.</td>
</tr>
<tr>
<td>IV</td>
<td>To examine if the PS-project was accompanied by any evidence of favorable changes over time in terms of the school environment, after the implementation of programs in the project municipality schools, and in relation to the non-project municipalities in the same county.</td>
<td>Cross-sectional population-based study with questionnaire.</td>
<td>Children in school years 7-9. Participation rate: 86.1% (n 2664) in 2005, 84.3% (n 2653) in 2008 and 83.4% (n 2246) in 2011.</td>
<td>Multinomial logistic regression analysis.</td>
<td>April 2005, 2008, 2011. Young in Värmland-data.</td>
</tr>
</tbody>
</table>

Study I

**Design and method description**

The study is of a qualitative nature and has an explorative design. Qualitative content analysis was used (Hsieh and Shannon 2005). The study was conducted in all 13 school districts with children aged 1-16 in the municipality. All school districts were approximately equal in geographical size and number of children, but differ
when it comes to student retention and socioeconomic status. Of the 13 school districts, 4 were country districts, and the rest were city districts. The school districts had both preschools and primary schools in their area. Qualitative content analysis was chosen to map the school manager’s views on what health promotion in schools includes, because this method has particular focus on language as communication and further on the content of a text or a context and conforms to the guidelines of Graneheim and Lundman (2004).

**Sample and data collection**

All the 13 school managers (women and men) in charge of a school district in the municipality participated in the study. The school managers had the main administrative responsibility for the schools in their district, including staff (for example, principals and teachers) and the children. All of them had a background as a principal. The school managers received an email information letter about the study, which was later followed up with an informative telephone call. They were all in favor of participating in the study and taking part in individual interviews. The interviews, lasting an hour, took place in undisturbed settings at school and were audio-taped. All interviews started with an open-ended question: Can you tell me about your view of what health promotion in school includes? In order to clarify and deepen the understanding of the school managers’ responses, questions about relations in school, the school environment, mental health promotion in school and the role of the school manager and health promotion followed. The interviews were conducted by the first author. A pilot interview was done and researcher, the second author, with experience of qualitative methods, attended the first interviews to ensure that the interview guide functioned as intended. The interviews were transcribed verbatim by the first author.

**Data analysis**

The analysis consisted of both manifest and latent content (Graneheim and Lundman 2004). First, the transcription of each interview was read through several times to become familiar with the content. Secondly, meaning-carrying units, which corresponded with the aim of the study, were extracted. Thirdly, the meaning carrying units were condensed and abstracted into codes. To identify similari-
ties and differences, the codes were compared and then sorted into categories. Comparisons were made with the context in each step of the analysis to verify the empirical base of the data (Graneheim and Lundman 2004). Another researcher experienced in the method participated in both the research design and data analysis process. The first two steps in the analysis were conducted separately by both researchers and then compared and agreed on before the last step, which was done together in order to increase the trustworthiness of the study. For examples of the analysis process, see table 2.

**Tab 2. Examples of the analysis process.**

<table>
<thead>
<tr>
<th>Meaning unit</th>
<th>Condensed meaning unit</th>
<th>Code</th>
<th>Sub-category</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health promotion activities involve many different aspects that already are included in our core mission, it's everything from the school health services work, it's about healthy eating habits, it is about exercise, it involves social training, and then it's about work concerning values such as how to treat each other. And, about a good learning environment and school satisfaction. There is a very wide range of issues.</td>
<td>Health promotion activities involve many different aspects, everything from the work of the school health services, healthy eating habits, exercise, social training, work on values, the learning environment and school satisfaction. It includes a wide range of issues, which are part of the core mission.</td>
<td>Health promotion includes many aspects, and is a part of the core mission.</td>
<td>Policy and leadership</td>
<td>Organization and collaboration.</td>
</tr>
<tr>
<td>We took initiatives already in 1994-1995, when we got the new curriculum and then we introduced something called &quot;Environment and Health&quot;,</td>
<td>We introduced a profile, &quot;Environment and Health&quot;, and took time from other subjects for health education: exercise,</td>
<td>Profile about “Environment and health” as health education.</td>
<td>Learning about health</td>
<td>Strengthening the individual</td>
</tr>
</tbody>
</table>
Study II

**Design and method description**

This study has an explorative design and takes a qualitative approach to data, using qualitative content analysis (Hsieh and Shannon 2005). Data were gathered in November 2011 at three different primary schools in one-fifth grade class and one-sixth grade class at each school. The participants in the classes were aged 10-11 in grade 5 and aged 11-12 in grade 6. The schools are in a mid-Swedish municipality with a population of ~100,000. The inclusion criteria were that the schools had participated in the initial cross-sectional survey and were located in different school districts with diverse features in terms of geographical area (city and country side), socioeconomic status and child intake.

**Sample and data collection**

All children (n92) in the six school classes were asked to participate in the study. On average, there were 15 children in each of the two classes in the three schools (six school classes in total). A total of 66 schoolchildren (61 percent girls) participated, aged between 10 to 12 and in school years 5-6. Their participation had to be approved by their parents. Parents and children were given written information about the study, and the letter contained a consent slip to be signed by the parents and returned to the teacher. The consent slips were collected on the day of the data collection. Data were fed back to the children, who also had been given the opportunity to participate in a comprehensive survey, as a part of the examination of the PS-project, in May 2011, with a cross-sectional design (Figure 3). The survey had a total of 1247 participating children (49 percent girls), aged between ten and eleven, in school years 4-5, and the response rate was 84 percent. It consisted of questions...
about school satisfaction and negative social relations, for example, with the questions framed in terms of bullying at school. Because of the negative responses, and in the light of earlier research, these questions were chosen as a platform for feedback data and written suggestions for improvement (Table 3). In order to present and collect the data, a feedback model was developed and used (Figure 4). The data were fed back using Microsoft Power Point and a projector in a classroom setting during regular class hours. Each Power Point slide represented statistics from one survey question. The presentation, the slides, and the question form were similar and adapted to the age group. All slides in the presentation and on the form had two related questions.

Questions about what children and/or the school staff can do to increase school satisfaction or improve social relations among peers were put to the children in connection with each presented data item or slide. For every slide shown, the presentation stopped, and the children were given time to write down their suggestions in the appropriate slot on the form. The presentation and data collection took about an hour. A research colleague was present as a resource person for the data collection. The suggestions were later transcribed verbatim. All participants received both written and verbal information about the aim of the study, its design, the voluntary nature of participation, the opportunity to withdraw their participation at any time, the anonymity of answers and the confidential treatment of data.

Model of research procedure

<table>
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<tr>
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<tbody>
<tr>
<td>Comprehensive survey on school satisfaction and social relations, directed to all children, aged ten to twelve, in the municipality</td>
<td></td>
<td>Feedback of survey data from the survey in May 2011 and data collection, directed to children in six school classes in the municipality, which also had the opportunity to participate in the initial survey</td>
</tr>
</tbody>
</table>

Fig. 3. Model of the research procedure.
The Health Promotion Feedback Model

Fig. 4. The five stages of the Health Promotion Feedback Model.

Data analysis
The analysis followed the steps described above for study I, that is, careful reading for overview, extracting and coding meaning-carrying units, comparing codes to discern similarities and dissimilarities and sorting and abstracting subcategories
and categories. In order to verify the empirical basis of the data, comparisons were made with the context in each step of the analysis (Graneheim and Lundman 2004). Apart from the first author, the second and third authors also participated in the analysis process to increase the trustworthiness and the reliability of the study. The first and the second author identified meaning units separately, condensed the units and made codes, and then compared them together and discussed and sorted the codes to find appropriate subcategories and categories. The subcategories and categories yielded were later discussed with the third author in order to validate the result and to reach consensus.

**Study III**

**Design**
The study is a comprehensive survey with a cross-sectional design. The data collection was carried out at one and the same time in May 2011. All children in the school years 4-5, aged 10-12, in 71 school classes, in a mid-sized municipality in central Sweden were asked to participate.

**Sample**
A total of 1247 children (49% were girls) aged 10-12, in school years 4-5, 71 school classes from all 21 elementary schools in the municipality participated. The response rate was 84 percent. Due to the low age of the participants, a signed informed consent from the parents was required in order for the child to participate in the study. The informed consent was handed in to the teacher and later collected on the investigation day by the researchers. All participants received both written and verbal information about the aim of the study, the design, the voluntary nature of participation, that they could withdraw their participation at any time, and the confidential treatment of data.

**Data collection**
A questionnaire was distributed to the children in a classroom setting by research members, during regular class hours. A research member was always present when the children completed the questionnaire to answer any potential questions regarding the survey. The questionnaire took about 60 minutes to complete, and included
questions about school satisfaction, social relationships and school climate. All answers were anonymous and the children had the chance to drop out at any time.

**Instrument**

The questionnaire was developed by CFBUPH for the examination of the PS-project, school years 4-5. The questionnaire had also been tested earlier on children in school year 4 in 2010 (as a part of the PS-project), without remarks. The outcome question of interests was: “Do you think it is messy and disorderly in the classroom?” (“Often”, “Sometimes”, “Seldom”, “Never”). Accordingly, the background questions of interest were: sex (boy/girl), school year (4, 5), country of birth (“In which country were you born?”; “In which country was your mother born”; “In which country was your father born?”) with five response alternatives (“Sweden”; “Denmark, Norway, Finland or Iceland”; “Other country in Europe”; “Other country in the world”; “Don’t know”) and family structure. The variable “Family structure” was addressed with two questions. First, the participants were asked if they lived with both their parents. If so, they were asked whether they had always done so (“Always together with mother and father”) or lived with one parent at a time (“Mostly with my mother, sometimes with my father”; “Mostly with my father, sometimes with my mother”; or “About the same with mother and father, for example, alternating weeks”). There was no follow-up question if they answered that they lived with only one parent or no parent. See table 4 for the summary statistics.
Tab. 4. Summary statistics.

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Description</th>
<th>Proportions</th>
</tr>
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<tbody>
<tr>
<td><strong>Outcome variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom disruption</td>
<td>=1 if mostly or sometimes messy and disorderly in the classroom</td>
<td>0.60</td>
</tr>
<tr>
<td><strong>Individual level explanatory variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 5</td>
<td>=1 if child in grade 5, 0 if child in grade 4</td>
<td>0.49</td>
</tr>
<tr>
<td>Girl</td>
<td>=1 if child is a girl</td>
<td>0.49</td>
</tr>
<tr>
<td>Immigrant</td>
<td>=1 if child is first or second generation immigrant</td>
<td>0.19</td>
</tr>
<tr>
<td>Single parent</td>
<td>=1 if child lives in a single-parent household</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Class level explanatory variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High girl share</td>
<td>=1 if share of girls among classmates &gt; 60%</td>
<td>0.17</td>
</tr>
<tr>
<td>Low girl share</td>
<td>=1 if share of girls among classmates &lt; 40%</td>
<td>0.19</td>
</tr>
<tr>
<td>Immigrant share</td>
<td>Proportion of immigrants among classmates</td>
<td>0.19</td>
</tr>
<tr>
<td>Single parent share</td>
<td>Proportion of single parent households among classmates</td>
<td>0.16</td>
</tr>
</tbody>
</table>

**Statistical analysis**

Descriptive statistics was used, and the estimations in the study were performed using the binary response multilevel model routine in Stata v.13. The outcome variable was equal to 1 if the child perceived the classroom climate to be disruptive, and equal to 0 if not. Therefore models for dichotomous or binary responses were used. Moreover, a random effect approach and a random-intercept multilevel logit model were used. The first level in the model was the individual-level variables and the second level was the schools. Fixed effects at both the individual level (e.g. sex of the child) and the class level (e.g. share of girls among classmates) were estimated, and at the same time a random effect at the class level were estimated, and in essence the intercept was allowed at the class level, to vary across classes, and to vary across schools. The random effect can be interpreted as the sum of combined effects of omitted child specific covariates that are correlated within classes that cause some children to perceive the classroom climate to be more or less disruptive. In sum, the benefits of the multilevel approach include the possibility to control for dependencies in the data that are a result of the fact that children in the same class share the same classroom environment (affecting the relationships...
of interest) and fixed effects both at the individual and class level were included (Rabe-Hesketh and Skrondal 2008).³

**Study IV**

**Design**
The study builds on cross-sectional data from; the year before the project started (2005), during ongoing project (2008), and the same year as the project ended (2011).

**Sample**
Data were collected from grade 9 students, aged 15-16, from 14 out of 16 municipalities in the county of Värmland, Sweden. The participation rate was 86.1% (n=2664, 51.1% girls) in 2005, 84.3% (n=2653, 51.7% girls) in 2008 and 83.4% (n=2246, 49.3% girls) in 2011, after the exclusion of 22 questionnaires in 2005, 45 questionnaires in 2008 and 49 questionnaires in 2011. Excluded questionnaires had very one-sided response patterns, such as consistent extreme responses, and many questions unanswered. The survey includes both schools run by the municipalities and independent but publicly funded schools.

**Data collection**
This study is based on data from the survey, Young in Värmland, which has been repeated every third year since the late 80s (Hagquist 2012). Data were collected by CFBUPH, and the procedure was the same for the three years. The questionnaires were distributed to the children in a classroom setting by their teacher during regular class hours. All participants received both written and oral information about the aim of the study, the design, the voluntary nature of participation, the right to withdraw their participation at any time, and the confidential treatment of data. The questionnaire had questions about school-life and health, and took about 60 minutes to complete.

³ Given the data it would be possible to consider a three-level mixed model where each child is clustered within classes and within schools. However, the analyses showed that there was no significant benefit in introducing the school-level effect once the class-level was introduced. Hence, we stayed with the two-level model where each child is clustered within classes.
**Instrument**

Questions about the school environment, i.e. the physical school environment and psychosocial school environment, were used as dependent variables, as they are closely connected to the project purpose, aiming to improve the overall school environment in the municipality’s schools. The questions about the *physical school environment* were: “How often are you disturbed by littering/damage/noise during a school day?” The question related to the *psychosocial school environment* was: “How often is there a disruptive classroom climate?” The response options were: “Never, Seldom, Sometimes, Often, and Always”. In the multinomial logistic regression analyses we included the following independent variables: sex, country of birth (in which country were you/your mother/father born?) and choice of study programs in upper secondary school (“Which is your first choice when it comes to upper secondary school programs?”). The responses for the last question were combined into two main categories, theoretical programs and non-theoretical programs. Immigrant student was defined as a first or second generation immigrant if the student was born in another country or if at least one of the parents was born in another country (regardless of which country).

**Statistical analysis**

Firstly, at the municipality level of analysis, changes in the school environment across years of investigations in the project municipality were compared the non-project municipalities using graphical displays of data covering the entire project period 2006-2011. Data are reported for 2005 (the year prior to the start of the school project 2006), for 2008 (during ongoing project) and 2011 (the final year of the project). Secondly, the associations between four school environment variables and year of investigation (2005/2008/2011), municipality (project municipality; non-project municipalities), controlling for\(^4\); sex (boy/girl), immigrant status (non-immigrant/immigrant) and choice of upper secondary school program (theoretical and non-theoretical oriented programs) were analyzed using multinomial logistic regression. The dependent variables comprised three response categories: “Never

\(^4\) Sex, immigrant status and choice of upper-secondary school program, only functions as control variables are not further commented on in the result section.
and seldom”, “Sometimes” and “Often and always”. Multivariate models including both main and interaction effects were applied. Because, the log likelihood ratio tests showed significantly better fit (goodness of fit improved) for the models including a year by municipality interaction effect, the results from models including only main effects are not reported. Thirdly, to study the changes over the years at the school-level, descriptive statistics, such as prevalence rates distributed by the project years and the project municipality secondary schools (A-H, n8) were utilized, also in relation to how the schools had worked with the PS-programs. Moreover, the eight schools were ranked (1-8) based their progress, change in percent regarding the school environment throughout the time period (05-08, 08-11 and 05-11). SPSS Version 22 was used to analyze the data.

Ethical considerations of the studies (I-IV)

Ethical considerations were taken into account throughout the examination of the project and ethical issues were discussed. To begin with, the studies I-II and IV were reviewed by the Ethics Committee at Karlstad University (code number: C2010/707 (study I), C2012/193 (study II) C2005/209, C2008/144 and C2011/135 (study IV)) and study III was reviewed by the Ethics Committee at Uppsala University (C2009/623) and no objections were raised in either case. All respondents in study I-IV received both written and verbal information about the aim of the study, the design, the voluntary nature of participation, the anonymity, their liberty to withdraw their participation at any time and the confidential treatment of data. Due to the low age of the participants (under 15 years) a signed informed consent of the parents in study II-III was required in order for the child to participate in the study. The informed consent was handed in to the teacher and later collected on the investigation day by the researchers.
MAIN RESULTS

- The categories ‘Organization and Collaboration’, ‘Optimize the arena’ and ‘Strengthening the individual’, with ten subcategories, emerged as vital by the school managers in school health promotion to enable ‘Opportunities for learning and a good life’, which defines the latent content of these categories (study I).

- Two categories emerged from the analysis: ‘Psychosocial climate’ (with the subcategories ‘adults’ roles and responsibilities’ and ‘classmates’ norms and values’) and ‘Influence’ (with the subcategories ‘changes in the physical environment’ and ‘flexible learning’). From a child’s point-of-view, these categories are seen as important to increase school satisfaction and improve social relations among peers at school (study II).

- A class with a higher share of girls was associated with a lower likelihood of perceiving the classroom climate as disruptive. Moreover, a higher share of immigrant children in a class was associated with a perception of a more disruptive classroom among non-immigrant children, but not among immigrant children themselves (study III).

- Both the physical and psychosocial school environment improved during the project period 2006-2011 in the project municipality between the years, and in comparison with the other municipalities in the county. The improvements were significantly greater in the project municipality than in the other municipalities in the county. Schools who had implemented PS-programs or similar programs on the schedule were generally better in improving the school environment (study IV).
Study I

Study I has a focus on school managers’ views of what health promotion in schools includes. Three categories emerged from the analysis: ‘Organization and collaboration’, ‘Optimize the arena’ and ‘Strengthening the individual’. The latent content of these categories are described in terms of the theme ‘Opportunities for learning and a good life’ (Figure 5). The result demonstrates categories that, both separately and together, emerged as important for health promotion and for enabling learning and a good life.

Theme: Opportunities for learning and a good life

<table>
<thead>
<tr>
<th>Category</th>
<th>Organization and Collaboration</th>
<th>Optimize the arena</th>
<th>Strengthening the individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub categories</td>
<td>Policy and leadership</td>
<td>Student participation</td>
<td>Confirmation</td>
</tr>
<tr>
<td></td>
<td>Partnerships</td>
<td>Working climate</td>
<td>Support</td>
</tr>
<tr>
<td></td>
<td>Competence</td>
<td>Social networks</td>
<td>Care and trust</td>
</tr>
</tbody>
</table>

Fig. 5: Categories that individually and together emerged as important in school health promotion to enable opportunities for learning and a good life.

Organization and collaboration

The category organization and collaboration was described as central to health promotion in schools and consisted of policy and leadership, partnerships and competence. Policy and leadership included the school’s legal duty to work with health promotion. They had set up policies, plans, objectives and surveys for health promotion, to meet the overall goal of health promotion. Matters of particular interest included healthy eating, outdoor teaching, students’ mental health, increased physical training, values and equality, safety and security, students’ behavior, cooperation with parents, and how to deal with problems such as infringement of personal rights and bullying. Being genuinely interested and arguing for its importance was described as crucial to success. Further, establishing partnerships with parents and the local community emerged as vital to organization and collaboration in health promotion. The school managers believed that forming partnerships with parents should begin soon after the start of every new academic year. Teachers were recognized as key persons when establishing partnerships with parents. Moreover partnerships with sports clubs gave students opportunities to develop
interests in new sports. This was described as valuable for opening up immigrant girls’ first contact with sport clubs. The school managers further described *competence* as a vital factor in organization and collaboration in health promotion. Competence included the idea that the school managers as well as school staff needed to be competent role models, who were continually training their leadership skills to progress and succeed with regular schoolwork and health promotion.

**Optimize the arena**

This category describes the importance of school as a setting for health promotion. Student participation, working climate and social networks in school were recognized as central in optimizing the arena in health promotion. It emerged from the school managers that *student participation* in health promotion involved listening to other students’ opinions concerning their schoolwork and school activities, and the school environment overall. Student representation in the school council as well as in the canteen and school environment committees was the most important areas of student participation. The school managers described how they made decisions, addressed specific topics and made changes on the basis of students’ comments. Likewise, the *working climate* was seen as central to optimizing the arena in health promotion. It was about creating a working climate that improved students’ sense of security and desire to learn, had a beneficial physical school environment and helped students to strive for a climate free of competition, where everyone was recognized for their abilities. Furthermore, building *social networks* emerged to be essential for optimizing the arena and health promotion, mainly between students, but also between students and staff. Building social networks could be done in various ways: by having student mentors in school, whose task it was to create a good team spirit, by having special days with companionship as a theme or by arranging meetings between students, or by occasionally establishing new classes.

**Strengthening the individual**

This category comprises components that are significant for strengthening the individual in health promotion such as: confirmation, support, care and trust and learning about health. Teachers that confirmed students’ sense of themselves by showing respect for every person and by talking and listening to the student during the
school day were recognized as central in health promotion. Overall, to support the individual throughout his or her years at school was likewise vital in health promotion. The individual teacher was acknowledged as key-person in supporting the child in health promotion. Care and trust was described by the school managers as valuable in strengthening the individual in health promotion. Caring for the individual was about creating a trusting relationship between teachers and students, so that they can feel safe and secure, helping them to perform optimally in their schoolwork. Private conversations were described to be the most effective, and during that time the teacher could get an overall picture of the student’s life, and the student’s perspective on it. Moreover, the school managers highlighted the importance of strengthening the individual in health promotion in order to give students solid knowledge of health competence issues. Learning about health was seen as a broad concept with the overall purpose to teach students how to be concerned and respectful citizens, and to show them the connection between health and performance in school. This included learning about human rights, and the importance of voicing your opinion and standing up for the welfare of others. Furthermore, increasing students’ learning about health, could be done by generally talking more about health in class, by having theme weeks on health, by having discussions groups or group work on health, by having health-care staff inform students on how to adopt a healthier lifestyle, by spending time outdoors and learning more about nature, or by serving ecological food in the school canteen, and at the same time explaining why it is healthy.

Study II
Study II explores children’s views on how to increase school satisfaction and improve social relations among peers at school. Two categories emerged from the analysis: I) ‘Psychosocial climate’, which included the subcategories ‘adults’ roles and responsibilities’ and ‘classmates’ norms and values’; II) ‘Influence’, which included the subcategories ‘changes in the physical environment’ and ‘flexible learning’ (Figure 6).
The analysis results

<table>
<thead>
<tr>
<th>Category</th>
<th>Psychosocial climate</th>
<th>Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub categories</td>
<td>Adults’ roles and responsibilities</td>
<td>Changes in the physical environment</td>
</tr>
<tr>
<td></td>
<td>Classmates’ norms and values</td>
<td>Flexible learning</td>
</tr>
</tbody>
</table>

**Fig. 6.** Categories emerging as important to increase school satisfaction and improve social relations among peers.

**Psychosocial climate**

The category ‘psychosocial climate’ describes the importance of a good psychosocial climate for increased school satisfaction and social relations among peers and included adults’ roles and responsibilities and classmates’ norms and values. The subcategory of adults’ roles and responsibilities consisted of suggestions about the presence of adults at school, both inside and outside the school building during recess, for example. The children wanted more adult supervision to detect and prevent bullying. Adults could, for example, be quicker to help victims of bullying, taking up the matter with the offender and the bully’s parents, as well as getting the principal involved. Also, the teacher should spend more time in the classroom, be nice, but stricter in maintaining peace and quiet. The subcategory of classmates’ norms and values involved children’s wish to have rules of conduct and well-defined consequences for victimization and/or bullying, as well as the importance of having friends at school. The rules and consequences, it was suggested, must be made known to all at school.

Respecting and caring more for each other, and being nicer and friendlier to others were vital. Children should also behave properly in the classroom. They should only talk when they were supposed to, sit still, and raise their hand if they wanted something, use proper language, do what they are told, not run around and not disturb others, concentrate on their schoolwork, take more responsibility for themselves, listen more to the teacher, be kind and calm, and make the most of tedious tasks. Training in how to be a good friend was also proposed. The children wanted the teacher to talk more about this in class and help children to form friendships.
Influence

The category of ‘influence’ describes the importance of children’s wish for and opportunities to influence their school situation to increase school satisfaction and improve social relations among peers, and includes changes in the physical environment and flexible learning. Concerning the changes in the physical environment, the children requested a more brightly coloured school and fresher toilets. They suggested cleaning days with children taking turns in cleaning the classroom to improve school well-being. The school canteen should also serve a better and tastier school meal. Concerning the playground, children wanted, for example, more and better equipment, equipment which would allow more children to play at the same time. Furthermore, the children wanted a more flexible learning situation, and classes in things that they were interested in, such as mathematics, crafts, sports, music, painting, computer science, chemistry, and outdoor activities. They especially mentioned theme days such as ‘outdoor days’, ‘companion days’ or ‘football days’. These days were considered particularly enjoyable. They liked learning new things and expected to do so, but wanted more enjoyable lessons that appealed more to children. More than just theoretical knowledge was proposed, and they wanted more individualized tasks and more challenges when needed. The children wished to have more of a say in deciding what to do during the school day.

Study III

Study III centers on the relationship between the classmate characteristics and the perceived classroom disruption. Table 5 below shows the results of three different logit models. In model (a) the individual level of being a girl is statistically significantly related to a higher likelihood of perceiving the classroom climate as disruptive with an odds-ratio (OR) of 1.95. Other individual-level variables are not statistically significantly related to the outcome variable. In model (b) the statistically significant results show that children attending a class where the share of girls is high are more likely to consider the classroom climate to be less disruptive (OR: 0.42). Finally, in model (c) the results show that both effects that were statistically significant in model (a) and (b) come out as statistically significant in a model controlling for both individual and class level variables. Regarding the class-level vari-
ables, the only statistically significant effect is that attending a class with a high share of girls is related to perceiving the classroom climate as less disruptive.

**Table 5:** Multilevel regression results on outcome variable “Classroom disruption”.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model (a)</th>
<th>Model (b)</th>
<th>Model (c)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds Ratio (95% CI)</td>
<td>Odds Ratio (95% CI)</td>
<td>Odds Ratio (95% CI)</td>
</tr>
<tr>
<td>Grade 5</td>
<td>1.25</td>
<td>-</td>
<td>1.27</td>
</tr>
<tr>
<td></td>
<td>(0.76 – 2.05)</td>
<td>-</td>
<td>(0.77 – 0.207)</td>
</tr>
<tr>
<td>Girl</td>
<td>1.95***</td>
<td>-</td>
<td>1.94***</td>
</tr>
<tr>
<td></td>
<td>(1.50 – 2.56)</td>
<td>-</td>
<td>(1.47 – 2.55)</td>
</tr>
<tr>
<td>Immigrant</td>
<td>1.08</td>
<td>-</td>
<td>1.07</td>
</tr>
<tr>
<td></td>
<td>(0.75 – 1.54)</td>
<td>-</td>
<td>(0.75 – 1.54)</td>
</tr>
<tr>
<td>Single parent</td>
<td>1.08</td>
<td>-</td>
<td>1.12</td>
</tr>
<tr>
<td></td>
<td>(0.74 – 1.55)</td>
<td>-</td>
<td>(0.76 – 1.65)</td>
</tr>
<tr>
<td>High girl share &gt; 60%</td>
<td>-</td>
<td>0.42***</td>
<td>0.47**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.23 – 0.78)</td>
<td>(0.25 – 0.88)</td>
</tr>
<tr>
<td>Low girl share &lt; 40%</td>
<td>-</td>
<td>0.90</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.52 – 1.56)</td>
<td>(0.40 – 1.27)</td>
</tr>
<tr>
<td>Immigrant share</td>
<td>-</td>
<td>0.47</td>
<td>2.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.10 – 2.29)</td>
<td>(0.47 – 11.88)</td>
</tr>
<tr>
<td>Single parent share</td>
<td>-</td>
<td>0.38</td>
<td>2.36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.04 – 4.00)</td>
<td>(0.19 – 28.90)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.08</td>
<td>1.46</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>(0.72 – 1.60)</td>
<td>(0.89 – 2.40)</td>
<td>(0.53 – 1.67)</td>
</tr>
<tr>
<td>Random-intercept Estimate</td>
<td>1.09***</td>
<td>1.03***</td>
<td>1.05**</td>
</tr>
<tr>
<td></td>
<td>(0.86 – 1.37)</td>
<td>(0.81 – 1.31)</td>
<td>(0.83 – 1.34)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-742.91</td>
<td>-751.11</td>
<td>-738.68</td>
</tr>
<tr>
<td>Intra-Class Correlation</td>
<td>0.27***</td>
<td>0.24***</td>
<td>0.25***</td>
</tr>
</tbody>
</table>

**Note:** *p<0.01, p<0.05, p<0.10. The model is based on 1232 children divided into 71 classes.

Table 6 shows the regression results of the analyses, including interaction effects between the individual and the respective class-level variable. The results in Table 6 reveal two additional findings compared to Table 5. The relationship that the children perceive classrooms with a higher share of girls as less disruptive holds for both girls and boys, namely there is no difference between the sexes in this result. The second noteworthy result shown in table 6 refers to statistical significances, and in terms of statistical relevance and magnitude, large interaction effect between being an immigrant and the share of immigrants among classmates. The main effect of Immigrant share in model (c2) and (c4) is that children attending a class with a higher share of immigrant classmates are more likely to perceive the classroom climate as disruptive. However, this effect completely disappears (and is almost reversed) if we correlate the share of immigrants with whether or not the child is an immigrant him/herself.
Tab. 6. Regression results with interaction effects between individual and class level variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio</th>
<th>Odds Ratio</th>
<th>Odds Ratio</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model (c1)</td>
<td>Model (c2)</td>
<td>Model (c3)</td>
<td>Model (c4)</td>
</tr>
<tr>
<td>Grade 5</td>
<td>1.28</td>
<td>1.31</td>
<td>1.28</td>
<td>1.32</td>
</tr>
<tr>
<td>Girl</td>
<td>2.10**</td>
<td>1.95***</td>
<td>1.95***</td>
<td>2.10***</td>
</tr>
<tr>
<td>Immigrant</td>
<td>1.07</td>
<td>2.25***</td>
<td>1.07</td>
<td>2.20***</td>
</tr>
<tr>
<td>Single parent</td>
<td>1.12</td>
<td>1.07</td>
<td>1.59</td>
<td>1.47</td>
</tr>
<tr>
<td>High girl share &gt; 60%</td>
<td>0.53*</td>
<td>0.48**</td>
<td>0.47**</td>
<td>0.53*</td>
</tr>
<tr>
<td>Low girl share &lt; 40%</td>
<td>0.78</td>
<td>0.73</td>
<td>0.70</td>
<td>0.78</td>
</tr>
<tr>
<td>Immigrant share</td>
<td>2.33</td>
<td>11.22**</td>
<td>2.55</td>
<td>11.34**</td>
</tr>
<tr>
<td>Single parent share</td>
<td>2.44</td>
<td>3.42</td>
<td>3.36</td>
<td>4.70</td>
</tr>
<tr>
<td>Girl × High girl share</td>
<td>0.78</td>
<td>-</td>
<td>-</td>
<td>0.79</td>
</tr>
<tr>
<td>Girl × Low girl share</td>
<td>0.82</td>
<td>-</td>
<td>-</td>
<td>0.85</td>
</tr>
<tr>
<td>Immigrant × Immigrant share</td>
<td>-</td>
<td>0.04***</td>
<td>-</td>
<td>0.05***</td>
</tr>
<tr>
<td>Single parent × Single parent</td>
<td>-</td>
<td>-</td>
<td>0.14</td>
<td>0.18</td>
</tr>
<tr>
<td>Constant</td>
<td>0.90</td>
<td>0.68</td>
<td>0.87</td>
<td>0.62</td>
</tr>
<tr>
<td>Random-intercept</td>
<td>1.06**</td>
<td>1.08**</td>
<td>1.05***</td>
<td>1.08***</td>
</tr>
<tr>
<td>Estimate</td>
<td>Log-likelihood</td>
<td>-738.43</td>
<td>-733.49</td>
<td>-737.80</td>
</tr>
</tbody>
</table>

Note: p < 0.01, ** p < 0.05, * p < 0.10. The model is based on 1232 students divided into 71 classes.

Study IV

Figure 3a-d shows descriptively, illustrated with graphical displays, the proportions over time, between 2005 and 2011, in different aspects of the school environment, contrasting the project municipality with 13/14 other municipalities in the county of Värmland. At first, figure 3a displays that between 2005 and 2011, there has been an increase in the proportions of students that seldom or never are disturbed by littering; in the project municipality (from 36% to 57%) and in the non-project municipalities (from 40% to 50%). Also, as shown in figure 3b there has been an increase of students reporting being seldom or never disturbed by damage during the school day; 2005 to 2011, there has been an increase from 38 % to 58% in the project municipality and from 37% and 50% in the non-project municipalities. Figure 3c shows the proportion of students who stated that they were seldom or never disturbed by noise during their school day between 2005 and 2011, which increased in the project municipality (from 22% to 38%), as well as in the non-project municipalities (32% to 34%). Lastly, figure 3d demonstrates the proportion of students in grade 9 who perceived that there was seldom or never a disruptive climate in the classroom in the project municipality and in the non-project municipalities. The proportion of students who reported that it was seldom or never a dis-
ruptive classroom climate, increased from 2005 to 2011, from 22% to 40% in the project municipality, and from 25% to 34% in the non-project municipalities.

Moreover, the result of the multinomial regression analysis of four school environment variables; using municipality, year of investigation, sex, country of birth and the choice of upper-secondary school program as independent variables, showed that; the interaction effect for all four dependent variables the odds for decreasing environmental problems in school between 2005 and 2011 are significantly higher in the project municipality than in the non-project municipalities, and after controlling for municipality, year of investigation, sex, immigrant status and the choice of upper-secondary school program.
Furthermore, at a school-level, as shown in tables 7-8 all schools (A-H) improved their school environment during the time period 2005-2011. There are two schools (A and B) that have made outstanding improvements of both their physical- and psychosocial school environment. These two schools are the schools which have worked most systematic focusing on one program during scheduled school time throughout the project period. In table 8, the result shows that all schools (A-H) have improved their school environment during the time period 2005-2011. There are though two schools (A and B) that have made outstanding improvements of both their physical- and psychosocial school environment (have the best scores in total 2011). These two schools are also the schools which have worked most systematic focusing on one program during scheduled school time throughout the project period. Likewise, table 8 shows that in three of the schools A, B (which have worked with scheduled and repetitive lessons on life-values for all students), and E (which worked with three different PS-programs, but only one on the schedule for two years, SET) – major improvements of the perceived psychosocial classroom environment as well as the perceived physical school environment took place in between 2005 and 2011, in particular in school A.

In school A, the perceived physical environment improved in between 2005 and 2008, as well as in between 2008 and 2011, but the improvements were much bigger for the second time period. For school A and changes in the psychosocial environment there was a small down turn in the first time period and the entire improvement thus pertains to the second time period. However, School G and H in tables 7-8 are those two schools of the eight secondary schools, which have worked less intensive with the PS-programs or similar programs overall, during the project period and which do not show any exceptional, positive, change in the school environment. School G started to educate school staff in SET 2009 but stooped because of the criticism that was directed toward the program in 2010. School H on the other hand, first educated their school staff in CM (2009-2010), in the later period of the PS-project.
Tab. 7: Proportions of students in grade 9 experiencing littering, damage, noise and classroom disruption seldom or never at each year of investigation, distributed by the participating schools in the project municipality. Also, presented for each school (A-H) are the PS-programs that were run during 2006-2011.

<table>
<thead>
<tr>
<th>School</th>
<th>PS-program 2006-2011</th>
<th>Seldom or never Littering</th>
<th>Seldom or never Damage</th>
<th>Seldom or never Noise</th>
<th>Seldom or never Classroom disruption</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Set Mod(^5) on the schedule since 8 years back.</td>
<td>30.5</td>
<td>37</td>
<td>70.2</td>
<td>37.3</td>
</tr>
<tr>
<td>B</td>
<td>SET on the schedule (09-)</td>
<td>36</td>
<td>27.3</td>
<td>58.7</td>
<td>39.1</td>
</tr>
<tr>
<td>C</td>
<td>SET on the schedule (08-) SkolKomet CM</td>
<td>17.2</td>
<td>53.2</td>
<td>66</td>
<td>41.9</td>
</tr>
<tr>
<td>D</td>
<td>SET SkolKomet CM</td>
<td>40</td>
<td>34.3</td>
<td>62.8</td>
<td>40.6</td>
</tr>
<tr>
<td>E</td>
<td>SET on the schedule (08-10) SkolKomet CM</td>
<td>12.1</td>
<td>36.8</td>
<td>50.9</td>
<td>8.6</td>
</tr>
<tr>
<td>F</td>
<td>SET on the schedule (08-) CM</td>
<td>49.1</td>
<td>47.7</td>
<td>56.9</td>
<td>50</td>
</tr>
<tr>
<td>G</td>
<td>SET SkolKomet</td>
<td>29.5</td>
<td>45.4</td>
<td>53.5</td>
<td>38.5</td>
</tr>
<tr>
<td>H</td>
<td>CM</td>
<td>41.1</td>
<td>44.2</td>
<td>35.9</td>
<td>39.5</td>
</tr>
</tbody>
</table>

\(^5\) This is a value-based lesson, unique for the school; where the school has on their own initiative introduced this lesson on the schedule, in order to systematically work with different themes in relation to the curricula and the health promotion mission. The school’s own follow-up surveys based on a questionnaire on Mod, shows that the students a most satisfied with these lessons.
Tab. 8: The changes in the school environment, for each of the eight secondary school 2005-2011 (A-H), distributed according to the internal ranking on scores (1-8), depending on how well each school perform every year. The lower score on every year and variable the better ranking in total.

For example, school A in the table above, has the ranking of the eight schools (1-8), distributed on the different variables, for each year:

<table>
<thead>
<tr>
<th>School</th>
<th>Littering Rank</th>
<th>Damage Rank</th>
<th>Noise Rank</th>
<th>Classroom disruption Rank</th>
<th>Total score 2005</th>
<th>Total score 2008</th>
<th>Total score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5 5 1</td>
<td>7 2 1</td>
<td>6 7 1</td>
<td>5 4 2</td>
<td>23</td>
<td>18</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>4 8 4</td>
<td>5 7 2</td>
<td>1 6 3</td>
<td>3 8 1</td>
<td>13</td>
<td>29</td>
<td>10</td>
</tr>
<tr>
<td>C</td>
<td>7 1 2</td>
<td>2 1 3</td>
<td>5 3 2</td>
<td>1 5 6</td>
<td>15</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>D</td>
<td>3 7 3</td>
<td>3 6 5</td>
<td>3 8 6</td>
<td>7 3 5</td>
<td>16</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>E</td>
<td>8 6 7</td>
<td>8 5 4</td>
<td>8 1 5</td>
<td>6 2 3</td>
<td>30</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>F</td>
<td>1 2 5</td>
<td>1 5 7</td>
<td>2 5 7</td>
<td>8 6 3</td>
<td>12</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td>G</td>
<td>6 3 6</td>
<td>6 3 6</td>
<td>7 2 4</td>
<td>2 1 7</td>
<td>21</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>H</td>
<td>2 4 8</td>
<td>4 4 8</td>
<td>4 4 8</td>
<td>4 7 4</td>
<td>18</td>
<td>23</td>
<td>28</td>
</tr>
</tbody>
</table>

6 For example, school A in the table above, has the ranking of the eight schools (1-8), distributed on the different variables, for each year:

Total score 2005 = 5/8+7/8+6/8+5/8=23
Total score 2008 = 5/8+2/8+7/8+4/8=18
Total score 2011 = 1/8+1/8+1/8+2/8=5
DISCUSSION

The PS-project, the studies and the school environment

This thesis contributes to the public health field by showing, from different perspectives, what is needed to enhance the future school health promotion and the school environment in particular, to improve Swedish schoolchildren’s opportunities for learning and achieving a good life. This is of importance to public health in general. In 2006 the PS-project was implemented in the municipality schools in the city of Karlstad in Sweden. Improving the school environment with a primary focus on the classroom climate was prioritized. For these reasons popular programs to implement within the schools were: SET, SkolKomet and CM. In 2009 Karlstad University (CFBUPH) received funding to examine the project aimed to improve the school environment and particularly the classroom climate. This thesis is also a result of my participation in the examination of the PS-project 2009-2012, and the data in study I-III were gathered during the examination of the project (study IV builds on data from the Young in Värmland survey). Altogether, the overall aim of this thesis and the studies (I-IV) were formed on the basis of the PS-project. The studies (two qualitative and two quantitative in nature) were carefully planned and performed with specific purposes both to relate to the examination of the PS-project and to be part of the thesis.

Health promotion in schools – school managers views (I)

The purpose of this study was to compensate for the lack of research with a more detailed picture of how school managers work with health promotion and in a Swedish context. This study describes the views of school managers about what their health promotion work include, and it concerned the categories; organization and collaboration, optimize the arena and strengthening the individual. These categories, taken separately and together, emerged as vital for school health promotion as regards the enabling of learning and a good life. They are in line with the salutogenic approach to health promotion, which aims to enhance health and well-being in schools (Eriksson and Lindström 2008). Further, the result supports the concept of “healthy learning” which has started to gain ground within the salutogenic approach to public health, in the Ottawa Charter for health promotion (Lindström and
Eriksson 2011); because an individual needs to feel well in order to learn (Lindström and Eriksson 2011). It is about creating an atmosphere in school where students are comfortable, and can learn and perform optimally.

The results show that the school managers have a good understanding about what a health promoting school should be. Some of the results address the criteria that need be met in order to be a Health-Promoting School (HPS) (WHO 2000b, Lee et al. 2007). However, in comparison to the criteria or guidelines for; HSP (WHO 2000b), Effective schools (Leozetti 2001, Grosin 2004) as well as the concept of Health literacy (Nutbeam 2015), the school managers could extend their health promotion even more in the future. Additionally, as described earlier in the thesis, a great deal needs to be done in the future when it comes to school health promotion (Hagquist 2015, OECD 2015, Skolinspektionen 2015).

The school managers stressed the importance of having a long-term health policy for the whole school to succeed in health promotion, much alike WHO (2000b), Leozetti (2001), Grosin (2004), Leithwood et al. (2006) and Julious et al. (2007) underscore the same. Likewise, the teachers’ leadership style was recognized as vital in health promotion, which is what the PS-programs SkolKomet and CM also address (the importance of the teacher as a role model and valuable leader in the classroom), and for example Leozetti (2001), Grosin (2004), Hattie (2009, 2012) and Moos (2011) have identified similar important aspects.

Overall, it seems that the school managers recognize school health promotion as something that is much broader than what the Swedish National Agency for Education and the curricula say that school health promotion should include (SFS 2010:800, Skolverket 2011, 2015a). For example, only the category ‘Strengthening the individual’ comprised aspects that The Swedish National Agency of Education describe as potential or required elements of the overall school health promotion (Skolverket 2015b). And, as a comparison a study of Nabe-Nilsen et al. (2015) on health promotion in Danish primary and secondary schools, showed that the health activities mostly targeted physical activity and bullying. Meanwhile, the school managers in this study view school health promotion some something broader,
from laws and regulations, leadership to each individual child. The school managers ultimately emphasized the school environment as vital in school health promotion.

**Children’s suggestions for a better school environment (II)**

School managers in study I described the importance of school satisfaction, a good learning environment and having positive social relations in health promotion to enable opportunities for learning and a good life. This led to the wish to explore children’s views on these issues (study II). Social relations in school and school satisfaction deserve more research attention from a public health perspective (WHO 2000b). Letting children give their improvement suggestions on the subjects of behavior is a way of taking a health promotive (participatory) and salutogenic approach to the data (Antonovsky 1996, Gådin-Gillander et al. 2009, Lindström and Eriksson 2011, Warne 2013). Furthermore, earlier research on children’s school satisfaction and social relations among peers is rather scant, mostly targeting adolescents and is often quantitative in kind (Hui and Sun 2010, Gorard and Huat See 2011, Mager and Nowak 2012). These issues needed to be further investigated in a Swedish context, not least in view of the importance placed on school satisfaction and social relationships in the Swedish education act, and in the national public health targets (SFS 2010:800, Regeringens proposition 2007).

In addition, study II served another crucial purpose, which was an important part in the examination of the PS-project, namely feedback of survey data to participants in the school years 4-5 (who had had the opportunity to participate in the PS-survey based on a questionnaire 2011). For this particular reason, the feedback model was developed.

The main result of study II is that the children’s suggestions indicated the categories ‘a good psychosocial climate’ and ‘influence’ as vital to increase school satisfaction and to improve social relations. To begin with adults’ roles and responsibilities emerged as essential in creating a good psychosocial climate, which also the school managers described in study I and which the PS-programs SkolKomet and CM aimed to improve. But this is probably an issue that could be further improved,
as we can understand by the children’s suggestions, and especially since the children in study III similarly perceived the classroom climate as disruptive (Persson and Svensson 2015). Moreover, a Swedish qualitative study of Warne et al. (2013) describe that a supportive school environment, builds upon teachers who see and respect the children as well as strengthening their sense of motivation and drive. This was vital for helping children to develop a sense of health and well-being. Because, when the children felt encouraged by the environment and the teachers, they were more motivated to engage in school, which the also the children in study II highlight as essential to increase school satisfaction and to improve social relations between peers (Persson et al. 2016).

Further, a study of Gådin-Gillander et al. (2009) share some similarities with this study, their study resulted in that the children asked for a better structure and orderliness in the school overall for improved social relations, like the children in this study. Moreover, in the study of Warne et al. (2013) it emerged that the adolescents thought that classroom disruption was common, and that it often was the result, of teachers giving monotonous assignments or unclear instructions. Likewise, as mentioned before, the leadership style is recognized as vital in order to create a beneficial learning environment (for example Lezotte 2001, Grosin 2004, Ärlestin and Johansson 2011, Hattie 2009, 2012, Persson and Haraldsson 2013).

Overall the children in study II wanted a better classroom climate, and therefore requested stricter rules and clearly defined penalties for breaking them and that signs highlighting the rules should be on display. Similarly, the criteria for Effective schools Leozetti (2001) and a study of Ediger (2009) argue that this could be a successful method of preventing misbehavior. Hence, the children in study II recognized their own responsibility in trying to improve the classroom climate, suggesting, for example, that they should mind their behavior in the classroom and concentrate more on the school work.

Furthermore, the Australian professor of education, John Hattie, describes in his book Visible learning for teachers that quality in education builds on teachers and children, determining together what factors could be defined as “crucial” in the
learning process (Hattie 2012). Likewise studies of Gådin-Gillander et al. (2009) and Warne (2013) underline children’s wish of being more involved in the classroom activities and that it is vital with individual teacher support in order to create supportive environments for health. Participation is a key principle in health promotion and when building supportive health environments (WHO 1986, 1991). The suggestions presented in study II, may be used as a stimulus for a discussion (involving school staff, parents and children) about children’s views on how to improve social relations and increase school satisfaction as they are the experts on their environment. These findings are therefore useful from a public health perspective, because they provide basis for school leaders, educators and school health care professionals when planning, teaching and implementing health promotion activities in the future (Jensen and Simovska 2005).

Children’s perceived classroom climate (III)

Sweden is a country with a negative trend regarding classroom disruption (Skolverket 2012, OECD 2015). The classroom order in Sweden is also poor according to international comparisons (OECD 2015) and more than every second child report that there is sometimes a disruptive classroom climate (Skolverket 2013). Study III aimed to scrutinize the question of the classroom climate more deeply, also because the school managers (study I) and the children (study II) pointed to the classroom climate as an important aspect in school health promotion in need of improvement. The classroom climate was an essential issue in the overall aim of the PS-project and the programs implemented. The issue of the classroom climate has also attracted great national attention in recent years as a beneficial classroom climate is necessary for establishing health supportive environments in school (WHO 1991, OECD 2015). However, there is little knowledge of how the classmate characteristics and class composition may be related to the level of classroom disruption. Similarly, the salutogenic model in health promotion purposes to study the strengths and the weaknesses of promotive, preventive, curative and rehabilitative ideas and practices (Antonovsky 1996). This further motivated the necessity to examine the issue of the classroom climate more deeply, especially as classroom disruption, is a threat to a supportive environment and school as a healthy setting in health promotion (Warne et al. 2013, Persson et al. 2016).
Altogether, the study contributes to the field by showing that the class composition at an individual level (sex) as well as at a class level (share of girls and immigrants in a school class) and in a cross-level interaction analysis between the individual-level variables and the class-level variables is associated with perceiving the classroom climate as more or less disruptive. Accordingly, girls tended to have a higher likelihood of perceiving the classroom climate as disruptive, and likewise in line with previous research, a class with more girls is likely to be perceived as less disruptive (Lavy and Schlosser 2011). Further, non-immigrant children attending a class with a higher share of immigrant classmates were more likely to consider the classroom climate to be disruptive. For immigrant children there was no relationship between the share of immigrant classmates and perceived classroom disruption.

Likewise, a recent study has demonstrated that ethnic diversity significantly associates with classroom disruption (Veerman 2015), while a qualitative English study indicates no relationship between the share of immigrants and classroom disruption (Lupton 2005). Overall, these issues deserved more investigation, both internationally but also in a Swedish context—as further knowledge can contribute in efforts to prevent classroom disruption and thereby promote a good classroom climate in the future. This is vital for example, when planning teaching, or before implementing school activities aiming to strengthen the social relations between children in school, or when working for a more inclusive classroom climate. In short, paying attention to the classmate characteristics and the class composition might be an effective measure to improve the classroom climate in the future. It is also vital to consider the children’s experiences and perspectives as they are experts on their environment (General Assembly 1989, Brooks 2010, Boverket 2015).
**Changes in the school environment 2005-2011 (IV)**

The importance of a supportive school environment for health has been deliberated from different perspectives in the previous studies (I-III) in this thesis. Therefore, last but not least, the fourth study focus on the PS-project to ascertain if the aim of the project to improve the overall school environment, implemented in Karlstad municipality secondary schools, have contributed to any improvements in terms of the **physical school environment** (destruction, littering and noise) and the **psychosocial environment** (classroom climate). The main results showed that the school environment had been improved in the municipality schools, between the years and in relation to the non-project municipalities in the county. Further, at the school level it seems like the two schools A and B have been the most successful in their health promotion activities, thus they had worked intensive and systematic with one program, on the schedule, for all students in the school years 7-9 (school A in particular).

Moreover, the schools E and F which worked with different programs and with SET on the schedule- have been quite successful when it comes to improvements in the psychosocial school environment over time. But, the changes for the physical school environment are different for the schools. Likewise, those schools, who did not choose to be so involved in the PS-project, and or did not work with similar programs to those in the PS-project, who did not put the program into the schedule or who educated their school staff in the later PS-period, appears to show the least positive improvements of the school environment, nonetheless, these schools have improved their school environment over time. This result also holds at the municipality level and in relation to the non-project municipalities in the county of Värmland. Earlier research has for example shown that if schools intensify their health promotion activities, it can lead to better chances of improvement of children’s well-being, compared to schools that do not work as intensely with health promotion (Lee et al. 2006). Research has also shown that taking a whole-school approach with a broad spectrum of school health programs involving all in school is vital for successful health promotion (St. Leger et al. 2009).
There is a lack of studies with long-term follow-up data on the possible outcomes of school programs (Mukoma and Filsher 2004, St Leger et al. 2009, Langford et al. 2014). It is, however, central to those involved in a project (for example, politicians, school leaders, school staff, children and parents), to know if the results were successful or not (Tonnquist 2008). Likewise, there is a need to continue the efforts in improving the overall school environment, not least because of the latest reports indicating that the school environment urgently needs to be improved, and in particular the classroom climate (Björklid 2005, Skolverket 2012, Boverket 2015, OECD 2015, Persson and Svensson 2015, Persson et al. 2016). Summing up, hopefully the results reported in study IV, although tentative, will inspire school communities to further invest in and continue practicing health promotion more intensively.

Method discussion of the qualitative studies (I-II)

In qualitative studies, common criteria for assessing the trustworthiness of research findings are (Dahlgren et al. 2007): credibility (have we really measured what we set out to measure?), transferability (how applicable are our results to other subjects and other contexts?), dependability (can our findings be repeated in the same context with the same subjects?) and confirmability (to what extent are our findings affected by personal interests and biases?). Firstly, in regard to the confirmability of the studies, a neutral approach has been important to maintain throughout the research process and to data, not least when creating the interview guide (study I) and the open-ended questionnaire (study II), during the interview sessions/the data collections, during the transcriptions, in the analyses, and in the presentation of results (study I-II).

The studies were reviewed by the Ethics Committee at Karlstad University and no objections were raised. All respondents received both written and verbal information about the aim of the study, the design, the voluntary nature of participation, their liberty to withdraw their participation at any time and the confidential treatment of data. For example, the respondents received both oral and written information about the aim of the study and their ethical rights, which is important for the trustworthiness of the researcher (Dahlgren et al. 2007, Vetenskapsrådet 2011).
In addition, because of the low age of the children in study II, an informed consent from the children’s parents was handed in to the teacher, and later collected on the investigation day by the researchers.

For the credibility of the results, in qualitative content analysis, it is important to have variation and diversity in the material (Graneheim and Lundman 2004, Hsieh and Shannon 2005). This requirement was fulfilled in both studies. In study I both women and men participated and each participant represented a different school district with varying student retention rates and socioeconomic state. And, in study II this was fulfilled through the participation of three schools, all with separate locations, socioeconomic status and child intake. Both girls and boys participated, and given the children’s different backgrounds and experience of school, the research question could be approached from several angles.

In both studies the research process, including its design and implementation, has been described in detail and the steps involved in the analysis have been carefully outlined (Graneheim and Lundman, 2004), which is of importance for the transferability and the dependability of the results. Lastly, the first two steps in the analysis in study I were conducted separately by the two researchers and then compared and agreed on before the last step, which was done together; this strengthens the credibility and dependability of the results. In study II, the last two steps in the analysis were discussed by the three researchers until consensus was reached. Similarly, inclusion of citations in the result section (study I-II) facilitates the assessment of the studies credibility.

**Possible limitations and strengths**

A possible limitation of study I may be that there is more health promotion going on in the school districts than expressed by the school managers in this study. However, the aim of the study was to get an overall picture of the views of the school managers regarding what is included in health promotion in school. Several examples of health promotion activities emerged from the interviews. Furthermore, the length of the interviews, about one hour, may have been insufficient even though the interviews were content-rich and contained great variety. A pilot interview was
also done to ensure that the interview guide functioned as intended of importance for the study credibility. Further, in study II the children’s ability to write and express themselves differed; some wrote more than others for obvious reasons. This could be seen as a shortcoming, but, the empirical basis of the data was sufficient to gather a rich harvest of responses. Moreover, the question form used in study II was initially reviewed and approved by teachers of children in this age group, which is vital for the study credibility. Since there is a lack of research on feedback from surveys, especially in regard to children, and new models of feedback are called for (Bälter et al. 2012), we chose not to do individual or group interviews. However, the use of the question form as a way of collecting data made it impossible to ask supplementary questions.

Then there is the question of transferability in studies I-II, or in other words, how applicable the findings are in other context, which in quantitative studies is known as “generalization of results”. In qualitative studies, however, the goal of researchers is to perform “analytical generalizations”, that is, to work with cases in-depth, including small samples, which are not demographically representative. In qualitative studies the purpose is not to obtain a statistical generalization, because in qualitative research each subject is chosen to contribute to the theory that is being developed. The new knowledge in studies I-II is not limited to demographic characteristics, since it is the knowledge that is transferred to other context that can be identified in a larger population (Dahlgren et al. 2007).

**Method discussion of the quantitative studies (III-IV)**

In quantitative studies the commonly used criteria for assessing the trustworthiness of research findings are: Internal validity (have we measure what was intended?), external validity (how can the results apply to other subjects and contexts?), reliability (can our findings be repeated if the research was replicated in the same context and with the same subjects?) and objectivity (to what extent are the findings affected by individual interests and biases?) (Ejlertsson 2003, Dahlgren et al. 2007, Djurfeldt et al. 2009). To begin with the data collection in study III was performed by researcher from CFBUPH and it was important to be as neutral as possible in the meeting with the children during the data collection. This was never noted as a
problem. The data collections in study IV were performed by the teachers; whiteout reported problems, during regular class hours, who had been informed in advance about how to act during the data collection not to disturb the study objectivity.

Further, both studies have been reviewed by Ethics Committee’s and no objections were raised. This is of importance to the trustworthiness of the studies, as well as the researchers (Vetenskapsrådet 2011). All respondents in both studies received both written and verbal information about the aim of the study, its design, the voluntary nature of participation, the chance to withdraw their participation at any time, the anonymity of answers and the confidential treatment of data. Because of the low age of the participants (under the age of 15), a signed informed consent from the parents was required in order for a child in study III to participate in the study, which was not required in study IV. The informed consent was handed in to the teacher and later collected on the investigation day by the researchers.

In Study III, all children in grades 4-5 in the municipality were asked to participate, and in study IV all children in grade 9 in the county of Värmland were asked to participate in the studies in 2005, 2008 and 2011. This is of importance to the generalization of results and external validity as the results concern all middle school children that school year (Djurfeldt et al. 2009). In study III, the questionnaire was pre-tested on children in grades 4-5, which is important for the internal validity and reliability of the study. The schools were revisited many times in order to include those who had been absent during the ordinary session, and this is of importance for the internal validity and the study reliability. The questionnaire used in study IV has been used since the late 80ths, which is vital for the internal validity and reliability of the study (i.e. to know that the instrument functions as intended).

The surveys in studies III and IV were carried out during regular class hours, which is important for the internal validity and the study reliability. The participation rates in both studies have been relatively high. In study III, 84 percent participated in 2011 and in study IV, the rate for each of the years was around 83 percent or more, which increases the external validity and the results may be generalized to similar groups (Ejlertsson 2003). In study III, how the children perceived the questions
were checked by writing down every query that the children had about the questions (for example, which question they did not understand and why they did not understand it). This has a bearing on the internal validity. Also vital for the internal validity was that all responses from the children in all classes were reviewed, and questions which seemed to be problematic were identified by researchers from CFBUPH. All questionnaires were also checked for answer patterns important to the internal validity (Dahlgren et al. 2007). Only a few questions did not function as intended and could not be used, and none of these have been included in the analyses, which is of importance for reliability. Likewise, questionnaires were excluded in study IV: 22 questionnaires in 2005, 45 questionnaires in 2008 and 49 questionnaires in 2011. The reason was very one-sided response patterns such as consistently extreme answers, or many questions unanswered.

**Possible limitations and strengths**

The studies III-IV have a cross-sectional design, which means that it is not possible to study relationships between different time periods. This could be seen as a shortcoming. However, it captures valuable thoughts and opinions at one particular time. In study III, a possible limitation could be that more questions about the classroom climate would have yielded a more detailed picture about children’s perception of their classroom. Also, the format only allowed for a balanced number of questions, given the age of the children and the limited response time. Further, there will potentially be important unobserved heterogeneity at the school and class level that needs to be considered as well. This study centered on the associations between different individual factors and school level factors, and does not elaborate anything about the effect of these. Additionally, a potential limitation regards the dichotomization of the outcome variable. By putting the categories “mostly” and “sometime” together it may lead to an “enlarged” problem, but it is difficult to determine of what, actually, is an “acceptable” level of classroom disruption. As a robustness check, ordinal regression; with all four levels in the outcome variable, were conducted. This produced qualitatively similar results as reported in the study, i.e. the same variables were statistically significant and with the same sign.
In study IV, given the increasing attention paid to the school environment during the last decade, it may be reasonable to hypothesize that the results reported in this study partly are reflecting a nationwide secular trend. In particular, the importance of a beneficial classroom climate has gained considerable national attention and is mentioned as an important issue to address in the Education Act (SFS 2010:800). National results reported by a survey conducted by the Swedish National Agency for Education do not, however, seem to confirm this hypothesis. According to that study there has been an increase in the proportions of students that are disturbed by annoying noise between 2009 and 2012 (Skolverket 2013). Though, the present study shows significant improvements of the school environment, not just in the project municipality, but also in the non-project municipalities in the county it would be wisely not to completely rule out that the changes may have been affected by secular trends. At the same time, the significant differences in changes between the project community and non-project communities in the county clearly indicate that factors beyond the national level are likely to have affected the results.

Likewise, because of the study design, the differences in the changes between the project municipality and the non-project municipalities cannot be considered a true measure of how successful the municipality project has been. The non-project municipalities cannot strictly be regarded as “control municipalities” to the “project municipality”. Three overreaching programs were also implemented in the municipality schools, all aiming to improve the school environment with a special focus on improving the classroom climate. It is important to underline that it has been questioned if the programs are evidence based. In particular one of the implemented programs, SET, become strongly criticized and questioned concerning the lack of evidence about whether the program actually functioned as intended (SBU 2010).

The differences over time in the project municipality (and for each of the municipality schools) compared to other municipalities in the county demonstrate a more optimistic direction for the project municipality during 2005-2011. This study does not rely on an experimental design, but is more of a post hoc analysis; therefore only tentative conclusions can draw from the present study. Although the methodo-
logical limitations of the study, it may be reasonable to conclude that the differences in changes between the project municipality and the other municipalities are likely to be accounted by the programs aiming to improve the school environment (the classroom climate in particular). However, it cannot be excluded that other factors may have played a role. Given the post hoc approach of the study, a strength is that the study consists of data from three years that are timely, with the PS-project: namely the year before the programs were implemented (2005), in mid-project (2008), and lastly at the end of the project (2011). This enabled comparisons across strategically relevant time points. It would be interesting to continue following the trend developments on a municipality- and on a school-level, especially since the positive changes of a project, may appear sometime after the project closure (Tonnquist 2008).

CONCLUSIONS AND IMPLICATIONS

All children have the ethical right to a safe and healthy upbringing. From both a public health and child perspective, it is vital that the school setting functions as a supportive environment to health, not least because ‘health’ is a valuable resource to achieving life goals. There is a strong connection between health and education. Sweden has since long a tradition of working with health in the school setting, but there is still more to do in order to ensure supportive environments to health and to meet present and future challenges. The mission of the school health services in the school setting is recognized as extensive but rather unspecified, and does not function as intended when it comes to issues such as handling children’s mental health. Moreover, children’s school achievements are declining, the school environment (both the physical and the psychosocial) needs to be improved, and children’s perceived mental health are decreasing with age and over time. As a result, the school settings have high societal pressures to live up to, and also from the demands of the national steering documents on democratic values and the sections on equal education in Education Act to the curricular norms and values, as well as the recommendation of the Swedish National Agency for Education on the participation of children, teachers and parents in quality assurance.
It is the principal’s task to manage all the pedagogical activities as well as organizing the school health services and to ensure that the school unit has access to the different kinds of school health service professions required under the Education Act. The principal also has the main responsibility for assuring that children can influence the education provided, including the school health services activities. This means that, if a school management fails to realize the importance of school health promotion and omits to implement measures, it will be difficult for a school to be health promotive.

School health promotion is considered a vital issue on the Swedish political and educational agenda. The Governmental investment in the PS-project made it possible to implement programs in the municipality of Karlstad, with the overall aim to improve the school environment and children’s well-being. The Government thereby enabled the municipality to build health supportive environments. Accordingly, building supportive environments (encompassing; where people live, their local community, their home, where they work and play), demands interactions and coordination at all levels in society; global, national, regional and local to establish actions that are really sustainable (WHO 1991). Altogether, building supportive school environments need to continue in the future.

**Main contributions**

The main contribution of this thesis is that it provides a deeper understanding of the Swedish school setting as a supportive health environment, and provides knowledge about the school environment in general. More specifically, the studies add new knowledge, providing the following findings (study I-IV):

1) A more complete picture of the views of school managers on what school health promotion includes in a Swedish context. Three categories with ten subcategories emerged from the analysis: Organization and collaboration (with the subcategories; policy and leadership, partnerships and competence), Optimize the arena (with the subcategories; student participation, working climate and social networks) and Strengthening the individual (with the subcategories; confirmation, support, care and trust, and learning about health). This knowledge can function as a basis for
schools when developing their health promotion strategies in the future. Also, in relation to the HPS concept, it would better to reflect on the needs of children and raise their awareness, helping them to improve their self-esteem, self-image and be in charge of their own lives (empowerment). Ultimately, it is vital that each school manager is particularly interested in these issues and understands the value of them, and that he or she taking a whole-school approach for the best results.

II) The insight that the children wanted a better ‘psychosocial climate’ and more ‘influence’ to reach increased school satisfaction and improved social relations, is essential for the overall school environment. Young children’s views are seldom heard in school health promotion, and generally the children wanted to have more opportunities to influence the teaching. The findings complement the knowledge in the field by showing how school satisfaction and social relations might be improved from a child’s perspective. These findings are also vital from a public health perspective, because they provide an important basis for school leaders, educators and school health-care professionals when planning teaching and implementing health promotion activities in the future.

III) A school class with a higher share of boys is more likely to be associated with a higher likelihood of perceiving the classroom climate as disruptive. Secondly, a school class with a higher share of immigrant children is more perceived as a disruptive classroom among non-immigrant children than among immigrant children. The findings pinpoint that classmate characteristics and class composition might be an effective measure for preventing classroom disruption and improving the overall classroom climate, which is fundamental to children’s learning process, school achievement, school satisfaction, well-being and health.

IV) The school environment had been improved during the project period 2006-2011, at both the municipality and the school level in the project municipality and in relation to the non-project municipalities in the county schools, between the years 2005-2011. However, whether the positive changes depend on the programs implemented in the municipality or not, we cannot know for certain, although a great deal indicate that this was the case. It is, essential that the project municipali-
ty continues the efforts to improve the school environment for even better results in the future. There is generally a need for continuing the efforts in improving the overall school environment, not least because of the latest reports indicating that the school environment urgently needs to be improved, and in particular the classroom climate.

**Future directions**

Studies I-IV led to several exciting results which may lead to further studies in the field of public health sciences. In order to get a comprehensive picture and increased awareness of the importance of supporting health promotion in schools, today and in the future, it is necessary to further explore the views of school health service staff, teachers, parents and children on what health promotion in school should include and how it could be further improved from a Swedish perspective. In particular, it would be of value to examine teachers’ views on how they describe their leadership role in health promotion. Enjoying school, having friends and establishing new social networks in a school health promotion context could be studied further, and could afford a better highlighting of the concept of the Health Promoting School. There is a need of finding appropriate learning strategies and teaching methods that will encourage reflection and personal awareness in health promotion. Above all, we need to learn more from earlier research and experiences on how to improve the school environment and how to build health supportive environments in a school setting, for example, from the effective schools and health literacy models.

Other issues that deserve more research attention concern children’s views, as young children’s voices are seldom heard in research and in the school health promotion context, and generally, children want to have more of a say about their learning situation. The result of study II could be followed up with interviews with school staff and children to elaborate on the children’s suggestions. There is also a lack of research on feedback from surveys, especially in regard to children, and new models of feedback are called for which could be further developed. Further, there is a need of knowing more about children’s and teacher’s views of why boys may be perceived as more demanding in the classroom. The demands on the Swe-
dish school system to introduce, integrate and educate immigrant children will continue to increase, and few teachers think that he/she can meet these demands. This needs to be better examined in the future, and as to elaborate on the result in study III.

Besides, it would be valuable to interview teachers about their view of the use of the programs in the project municipality over the years in relation to the results in study IV. It would be useful to do further cross-sectional surveys to continue monitoring the changes in the school environment in the project municipality and in relation to the non-project municipalities in the county. Moreover, there is a need of more experimental and long-term studies with follow-up data to ensure that health promotion programs function as intended. However, as deliberated earlier, trying to investigate the settings approach in health promotion is one of the trickier research issues. From a Swedish perspective, it would be interesting determine the correlation between health promotion efforts, school leadership and children’s well-being as well as the school achievements.
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“Hey, nothing lasts forever...  
...So finally I can wave it –  
Sayonara”

Good-bye.

With love,
Louise Persson  
21th February 2016  
Karlstad
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At last…

‘One cannot stand to achieve that the objectives of mathematics is the most important, it is the values of life one must have as a child! Because it is based on these values, feeling secure and well... that actually makes you achieve high performance in every subject’.

‘It has to do with respect for children. If you have respect for children and take them seriously it will be a good school climate’.

- Citations from school managers in the thesis (study I).
Health Promotion in Schools

All children have the right to a safe school environment that promotes good health. Health promotion in schools can help to create an environment that fosters good health. The aim of this thesis was to examine the health promotion activities that have been performed in Karlstad municipality primary schools, between 2006 and 2012 from different perspectives, focusing on the school environment. The results complement with new knowledge about how schools work with health promotion, and describe how school satisfaction and social relations might be improved, if children’s perspectives are considered in the planning of health promotion. The school environment has improved in the Karlstad municipality secondary schools 2005-2011, at both the municipality- and school level. The thesis contributes to the field of public health sciences, by showing what might be needed to further enhance school health promotion in Sweden and thereby improving schoolchildren’s opportunities for learning and living a good life.