DOES THE PSYCHOSOCIAL SCHOOL ENVIRONMENT MATTER FOR HEALTH?

A study of pupils in Swedish compulsory school from a gender perspective

Katja Gillander Gådin
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Katja Gillander Gådin

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Katja Gillander Gådin, From Family Medicine, Department of Public Health and Clinical Medicine Umeå University, SE-901 87 Umeå, Sweden

Abstract

Despite the fast-growing evidence of the importance of the psychosocial work environment for the health of adults there is a lack of research about the possible health effects of the work environment among pupils, that is, their school environment. This is especially true for the psychosocial aspects of the pupils' school situation.

The overall aim of this thesis was to analyse the importance of the psychosocial school environment for the health of pupils in Swedish compulsory school from a gender perspective.

Both quantitative and qualitative methods were used. A cluster sampling technique was used in order to select six different schools in three medium-sized industrial towns in the north of Sweden. The schools were chosen to represent different socio-economic areas. A three-year prospective study was started in 1994, including a cohort of 533 pupils (261 girls, 272 boys) in grade three and grade six. With age-adjusted questionnaires self-perceived health and psychosocial school environmental factors were measured at the baseline study as well as three years later. The total non-response rate was 0.9%.

For the qualitative study, two classes (one from grade 2 and one from 5) were selected and followed with focus group interviews once a year for five years. Twenty-nine single-sex focus group interviews were conducted with themes such as: What they feel good and bad about at school; Strategies for enhanced well-being; What it means to have influence at school.

High control in combination with low demands in the school situation was associated with the best health and feelings of self-worth. Multiple regression analyses showed that problems in relations with classmates was the most recurrent psychosocial factor at school partly explaining ill health.
development and decreased self-worth. Girls had a more negative ill health development than boys between grades six and nine. A study of factors associated with ill health in grade nine showed that sexual harassment among girls and lack of classmate support among both boys and girls were significant risk factors for a high degree of psychological symptoms. Generally, social background factors were less important for pupils' health in this study than the psychosocial environment at school.

The best predictors for health behaviour among boys and girls in grade nine were factors related to earlier health/health behaviour. The results also indicated that school-related factors could predict future health behaviour, especially in relation to low physical activity among girls.

The qualitative study showed that the girls used 'alliance-building' and 'resistance', in order to increase their power, while 'responsibility-taking' and 'withdrawal' could mean maintained subordination. The boys used mastering techniques (various types of abuse, claiming to be the norm, acting-out behavior, blaming the girls, choosing boys only) to maintain their dominance. The girls' active actions for increased power could be of significant importance for their health. An interpretation of the boys' mastering techniques was that the boys' health would benefit if they gave up striving for power over others.

Thus, the psychosocial school environment in regard of demand, control, classmate relations and sexual harassment seemed to matter for pupil's health. School health promotion need to be more gender sensitive, through increasing the awareness of the gender regimes at school and addressing the asymmetric and gendered distribution of power between pupils. Democratic strategies for increased power among pupils in subordinate positions should be encouraged and methods need to be developed in order to encourage health promoting femininities and masculinities at school.

Keywords: psychosocial school environment, demand, control, social support, classmate problems, rowdiness, ill health, health behavior, power, gender
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Umeå 2002
To my beloved sons, Jesper and Andreas.
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Katja Gillander Gådin, Family Medicin, Department of Public Health and Clinical Medicine, Umeå Univeristy, SE-901 87 Umeå, Sweden

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The overall aim of this thesis was to analyse the importance of the psychosocial school environment for the health of pupils in Swedish compulsory school from a gender perspective.

Both quantitative and qualitative methods were used. A cluster sampling technique was used in order to select six different schools in three medium-sized industrial towns in the north of Sweden. The schools were chosen to represent different socio-economic areas. A three-year prospective study was started in 1994, including a cohort of 533 pupils (261 girls, 272 boys) in grade three and grade six. With age-adjusted questionnaires self-perceived health and psychosocial school environmental factors were measured at the baseline study as well as three years later. The total non-response rate was 0.9%.

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Keywords: psychosocial school environment, demand, control, social support, classmate problems, rowdiness, ill health, health behaviour, power, gender.
The thesis is based on the following papers, which are referred to in the text by their Roman numerals:


III. Gillander Gådin K. Hammarström A. Sexual harassment at school – a possible contributor to the higher degree of girls reporting psychological symptoms compared with boys in grade nine. Submitted.


Reprints were made by permission of the publishers
At the beginning of the 1990s I was working in a public health project with the focus on different life conditions for women and men. The objective was to identify factors related to gendered ill health development among adult women and men in the county where I live. It was acknowledged that Swedish women had increased their sick leave and early retirement during the 1980s, and that they reported a higher degree of ill health symptoms than men. A medical paradox was recognised, as men had a lower life expectancy rate while women were sicker.

During that project I started to think about factors during childhood and adolescence that could contribute to a gendered ill health development among adults, and my thoughts turned to school as a possible contributor. I also started to think of school as a possible contributor to gendered ill health among young people, as the same gender differences in ill health and self-esteem among adults also were found among young people. Therefore, when I was asked by Professor Anne Hammarström (AH) to join a research project on pupils’ school-related health I did not hesitate. Although the project was planned when I entered, I have been active in the whole research process, from constructing the questionnaire until the final analysis. Besides, as time went on our project changed focus. In the beginning, our project focused primarily on the health consequences of a gender equality project, but during the research process the focus shifted to the pupils’ psychosocial school environment.

Before I started as a postgraduate student in public health I was educated in behavioural sciences with a special focus on work environment research. My interest in young people’s health lies in structural and organisational factors affecting health rather than in individual factors. The perspectives chosen in this thesis are closely related to public health science, work environment theories and gender theories. Thus, my main focus is not in pedagogy, psychiatry, paediatrics or developmental psychology. I am convinced that other perspectives on the psychosocial environment at school and pupils’ health also are of interest, but I leave them to others to develop.

As this study has its main emphasis on problems in the school environment and ill health there is a risk that the presentation gives an entirely negative view of the Swedish school. Even though there is great potential for changes in the direction of a healthier school environment, my general interpretation of the situation in the schools at the time of the study was positive. The open and positive attitude from all staff and all pupils at the schools was impressive and encouraging. This interest in factors related to the pupils’ psychosocial school environment and health is a good ground for interventions and for developing a more gender sensitive health-promoting school.

During the project I have increased my understanding of gender relations, the school environment and pupils’ health and I am grateful for having had the possibility to do this work. I hope that our findings can be used in order to stimulate other research within the field and, most importantly, to improve pupils’ health.

**Sundsvall, March 2002**
INTRODUCTION

When this study started there was a scarcity of studies relating pupils’ health to their work environment, i.e. their school situation. This was especially true for the psychosocial aspects of their school environment. The health situation of Swedish children and adolescents could be summarised as relatively good with regard to severe diseases, although there are signs of an increase in self-reported complaints as well as of more risky health behaviours since the 1980s (National Board of Health and Welfare, 2001). During the last few years the focus on school as a contributor to health and ill health among pupils has increased, but overall there is still a lack of research within this field. Besides, public health research has so far not been very interested in the gender differences in pupils’ school-related health.

The general pattern of somatic and psychological symptoms is that girls report a higher degree of symptoms than boys and that the differences increase during adolescence (Jonsson et. al., 2001; Sweeting, 1995). More girls than boys report that they feel stressed (National Agency for Education, 2001), and gender differences in self-esteem show the same pattern as somatic and psychological symptoms and feelings of stress (Sweeting, 1995).

I start this thesis with a brief description of the gender-theoretical point of departure in my research. This is followed by a description of why I think school is important for public health and the work environment theories I use for my theoretical understanding of the psychosocial school environment and health among pupils. As social inequities are an important issue in public health, I briefly describe social background factors and health in relation to children and adolescents. The introduction ends with a description of the Swedish school and I also give a short description of a gender equality project. After a presentation of methods and results I discuss the results in relation to the methods followed by a discussion of the results in relation to other studies. Finally, I discuss implications of the results for school health promotion.

Gender-theoretical point of departure

When the study started, my gender perspective was inspired by women’s studies in psychology by, for example, Carol Gilligan (Gilligan, 1982) and Jean Baker Miller (Miller, 1976). Both of them criticised the male norm within psychology as well as the devaluation of girls and women. Traditional psychological research about identity development had, for example, mainly emphasised the need for separation, while Miller’s research highlighted that this was a male bias (Miller, 1976). Miller proclaimed that the core element of women’s identity development is not separation but rather a need for deepened relationship between the little girl and her caregiver. Thus, women are socialised to appreciate different goals from men, at the same time as these goals are less valued in society (Miller, 1976).
The possible health effects of this gendered socialisation process was one of the primary interests at the beginning of the study, for example, the negative consequences for boys of being brought up to be separate and to be active in different fields but not to give priority to relations and feelings (Bergman, 1991; Askew and Ross, 1988). The gender equality project, described at the end of the Introduction section, with its separate training of boys in relational orientation and of girls in self-confidence, seemed to be an interesting project to evaluate from a public health perspective.

However, during my theoretical journey I became more and more critical of this way of regarding identity development among boys and girls. The main reason was the essentialist approach to analysing gendered identity development, without recognising the possible differences within the group of boys and within the group of girls. The risk of overgeneralisations was obvious when differences within the group of men and within the group of women (with regard to socio-economic position, age, ethnic background etc.) were not taken into account. Another critique against Carol Gilligan was that she tended to ignore power relationships, and also that she had a complementary view of women and men (Evans, 1995).

I also became critical to the concept of "sex role", which is a frequently used term in medical and psychological research. Women's sex role is assumed to contribute to their higher degree of ill health compared with men. Sex role is also used as an explanation for a view that men do not seek health care as they ought to due to an adjustment to "the masculine sex role". Role theories assume a complementarity and a harmony between men and women that plays down social conflicts and differences.

The theory of sex roles could be strongly criticised for using roles as an explanation for gender constructions and discrimination against women and for simply describing miserable situations, where women were passive objects of social norms (Hammarström, Östlin and Härenstam 2001). Moreover, the focus was frequently put on women's internal conflicts in such a way as to implicate women, rather than the gendered imbalance of power, as the source of the problem. Critics felt that material conditions of society rather than forms of consciousness should form the starting point for analysis. Sex role theory also lacks a potential for grasping changes in gender practice through history, and it lacks a potential to analyse resistance as well as an aspiration for changed power relations between men and women in society (Connell, 1987).

**Gender as a relationship and a construction**

My thesis is mainly built on the analysis of gender as an organisational principle, as a power relationship and as a construction, and I will now describe these points of departure in more detail.

Gender as a power factor and as a relationship has been highlighted by the Australian gender researcher Robert Connell (Connell, 1987). He discusses gender as a way of organising society and has introduced the concepts gender regime and gender order.
The gender order of a society goes beyond the gender regimes and is the overall way of organising gender in a given society. The gender order is not the same in all societies but there are some common principles; the relationships between men and women are organised in relations to the division of labour (woman and men are segregated in working life as well as in domestic life), power relations (men in general have more power in society than women have), resources (in general men have more resources than women) and cathexis, i.e. patterns of emotions in a society (Connell, 1987).

The way gender is produced and reproduced in different institutions could be called its "gender regime". If school is taken as an example of a gender regime, this is a setting where pupils as well as teachers constantly negotiate the meanings of gender. One kind of relationships within the gender regime at school includes power relations and refers to the gendered division of influence and control among teachers as well as the gendered division of patterns of dominance, harassment and control over resources among pupils. Men are represented as staff to a higher degree in higher education and women to a higher degree in kindergarten and elementary teaching. Another relationship refers to division of labour. In the school situation this includes segregation of educational programmes due to gender, with more girls in e.g. caring sciences, and more boys in technical education. It also refers to informal specialisation among pupils, e.g. asking a girl to help a boy with his tasks. Symbolisation of gender at school is greatly influenced by the wider culture, but there are specific codes at school too, e.g. dress codes. Definitions of certain subjects at school as feminine and others as masculine are also a part of the symbolic structure.

I agree with Connell that gender is not a one-dimensional category, but split into multiple forms of masculinities and femininities (Connell, 1987). The construction of gender is a continuous process, to which we all contribute in different ways. It is also of great importance to recognise how men and women differ with regard to e.g. ethnicity, social class and age as well as how gender interacts with these conditions (Hammarström, Härenstam and Östlin, 2001).

The process of becoming a gendered person starts at an early age, in fact as soon as the little baby is born. Girls and boys are dressed differently and the colours of their clothes is in accordance with our society’s definition of symbolic gender-proper colours. Boys and girls, however, do not passively adjust to prescribed patterns, but constantly negotiate the meanings of masculinity and femininity in an ongoing process (Connell, 1987).

Connell has described different forms of masculinities such as hegemonic masculinity, subordinated masculinity, compliant masculinity, and marginalised masculinity (Connell, 1995). The concept of hegemonic masculinity refers to the dominant and dominating form of masculinity, which claims the highest status and exercises the greatest influence and authority in society. Compliant masculinity is a form a masculinity which is compliant with the hegemonic form of masculinity, but not necessarily in all contexts and in all situations, e.g. in the family. Subordinated
masculinity are at the bottom of the male gender hierarchy and is oppressed by hegemonic masculinity. Hegemonic, compliant and subordinated masculinities interact with other structures in society such as race and class and become marginalised masculinities.

According to Connell (Connell, 1987), all forms of femininity are constructed in the context of the overall subordination of women to men. There is no femininity that is hegemonic in the sense that the dominant form of masculinity is hegemonic among men. This lack of a corresponding hegemonic masculinity could allow more diverse femininities than actual masculinities. Emphasised femininity is produced among girls and women who have complied with a subordinated position in relation to men. Other femininities are defined by strategies of resistance or other non-complying forms. The construction of femininities could be defined by complex strategic combinations of compliance, resistance and co-operation with different potential for changing the gender regimes and orders.

The school could be a powerful agent in the construction and reconstruction of masculinities and femininities as well as power relations. The next section will give a brief overview of the extensive research of gendered processes at school.

School as an agent for gendered processes

For children and young people of school age, school is not the only, but still one of the most important settings in the production of masculinities and femininities.

Schools have been considered to be important agents in the construction of gender, by creating institutional definitions of masculinities and femininities (Gilbert and Gilbert, 1999; Mac an Ghaill, 1994; Walkerdine, 1990; Connell, 1996b). The extensive research carried out on gender issues in schools shows how discursive practices within education influence the positioning of boys and girls at school, as well as in society more generally (Spender, 1982; Askew and Ross, 1988; Davies, 1989; Jones, 1993; Corson, 1997; Paechter, 1998). The construction of gender within schools is an ongoing process, where boys and girls use different strategies in their struggle to maintain or gain control and power (Berge and Ve, 2000; Mahony, 1985; Gordon, 1996; Gulbrandsen, 1994; Thorne, 1993; Öhrn, 1993; Francis, 1997).

In this process the interactions between the teachers and the pupils are of vital concern. Walkerdine (Walkerdine, 1989) has examined problems surrounding the debates about girls’ lower mathematical performance in comparison with boys. She found that the teachers in her study thought of boys as competent and smart in spite of not performing well, while competent girls were thought of as hard-working, but not smart. According to Walkerdine there is a gendered practice around performance, questioning and devaluing competent girls.

Gender researchers in education have shown how boys and girls are treated differently at school (Spender, 1982). The teachers interact more with the boys in the classroom; meet the demands of the boys more quickly and more frequently; have a better
personal knowledge of the male pupils; give them more challenging material; and see male experiences as more interesting. Boys are more likely to be disruptive if their interests are not addressed, which means that they have a greater influence on the curriculum.

Gender is also negotiated and influenced by age, ethnicity, race, sexuality and social class, and changes with social context (Thorne, 1993). The focus on social context is a way of examining gender without pre-assumptions of boys being e.g. achievement-oriented and girls being relation-oriented, and instead asking which boys or girls, where, when, and in what circumstances.

Gender research has demonstrated girls’ and boys’ different life conditions in society as well as at school. While extensive research in disciplines such as pedagogy, sociology and psychology has been carried out on gender issues at school, there is a lack of studies in public health linking pupils’ health with their gendered situation at school.

**Pupils’ psychosocial environment at school from a public health perspective**

Gendered work environment research among adults is difficult to perform due to the gendered division of work, with men and women working in different structures. However, in the Swedish compulsory school system all pupils, regardless of gender, have to attend the same classes.

A public health perspective on pupils’ health has a focus on structural and organisational factors in society and in the environment where pupils live and act (Baum, 1998). As school is an environment where children and adolescents spend several hours a day, there is reason to believe that their health is related to the physical as well as to the psychosocial environment at school.

School is important from a public health perspective in at least three different ways. First, the opportunity for education is a prerequisite for good health. Education plays a considerable role in determining employment opportunities and also increasing a person’s knowledge, which may in turn improve health (Baum, 1998). As school in the western world reaches all children of certain ages, it has an opportunity to give all pupils, regardless of social background, a common ground. Thus, education has an important link to health, and also to equity (Stewart, 1997). Second, schools provide an important arena for health promotion, i.e., the process of enabling pupils to increase control over the determinants of health, and thereby improve their health (Nutbeam, 1997). School is a setting where around 15% of the population in post-industrial countries, can be reached (St Leger and Nutbeam, 2000). Third, the school environment can be a producer of ill health among pupils, just as the work environment can be harmful for adults (Bremberg, 1998; Rudd and Chapman, 1993).
The psychosocial school environment has not received the same attention in public health research as the physical school environment, such as factors related to indoor climate (Andersson 1998; Perzanovski et al. 1999) and injuries (Laflamme, Menckel and Aldenberg, 1998).

Since 1990 the Work Environment Act in Sweden has included pupils of all ages. Thus, school principals carry the responsibilities of an employer not only for school staff but also for all pupils. One of these responsibilities is the prevention of ill health related to the school situation. The school environment must be organised in a way that gives pupils influence over their school situation and that minimises deleterious physical and psychological exposure and demands. The Work Environment Act also proclaims the importance of positive social relations and requires that opportunities must be given for co-operative interaction. According to an ordinance by the Swedish Board of Occupational Safety and Health (1993), the employer must plan and organise the work setting so that bullying is prevented. In the case of the school environment it is the principal’s task to make it clear that bullying is not acceptable in that setting.

There is no doubt that there is an interplay between the psychosocial environment at adults’ workplaces and health (Theorell, 1995) and there is reason to believe that there is also a relationship between the school environment and health among pupils as well. Some of the most important factors in adults’ psychosocial work environment will be described below, and discussed in relation to their possible impact on pupils’ school environment.

**Stressors in the psychosocial work environment**

Stress is a concept referring to a wide range of phenomena threatening health and well-being as well as individual and physiological reactions to them (Hart, 1985). There are several definitions of stress, but in spite of the diversity, all stress models recognise the environment as the source (albeit not the sole source) and the individual as the target (Karasek and Theorell, 1990).

Conditions that give rise to stress responses are described as stressors. Stressors in the work environment that will be described in this section in relation to pupils’ health are lack of control, demands, lack of support and rowdiness.

Feelings of stress are more common among 13–18-year-olds than among 10–12-year-olds, and more common among girls than boys (Jonsson et al., 2001). This is in accordance with an attitude study among pupils in compulsory and senior high school, which shows that 46% of the girls and 26% of the boys reported that they “often” or “always” felt stressed at school (National Agency for Education, 2001). The study also shows an increase in stress experienced at school between 1997 and 2000 in both compulsory and upper secondary school (ibid.).

The reasons for the higher degree of stress reported by girls compared with boys are not yet understood. Gore, Aseltine and Colton (1992) suggest that there is no gender difference in relation to vulnerability to stress. Instead, girls are believed to be more
exposed to different stressors. According to Frankenhaeuser (1991), control and support have the same buffering effects on men and women. Therefore, she suggests that gender differences in stress will decrease concomitantly with increasing similarities in demands and challenges in men’s and women’s life.

Research about stress with a wide focus on stress-related events has identified factors at school as being among several other stressors in adolescents. Problems in adjustments to school, such as no interest in some subjects, dislike of studying and worrying about grades have been identified as school-related stress among both boys and girls (Puskar and Lamb, 1991).

The links between perceived control in a work situation and health have so far only been studied among adults in relation to psycho-physiological processes. Low control is associated with bodily reactions such as increased catecholamine excretion, blood pressure elevation and a low pain threshold. A hypothesis is that low control is associated with an increased vulnerability of the organ systems (Theorell, 1997). Psychological theories have also linked lack of control to reactions such as learned helplessness, anxiety, depression, and somatic problems (Aronsson, 1989).

Hall (1989) has examined the differential distribution of work control among Swedish working men and women. Work control was found to be consistently higher among white-collar workers than blue-collar workers, among workers in male-segregated jobs (where at least 80% of the workers are men) than among workers in female-segregated jobs (where at least 80% of the workers are women) and among men than women. The lowest level of control was found among blue-collar women in male-segregated jobs.

Self-reported lack of control at school has been analysed in a study of school leavers and found to be of importance for their future health and health behaviour (Hammarström, Janlert and Theorell 1988; Samdal et. al. 2000) have identified school autonomy/control as having the strongest relationship with alcohol consumption and smoking. Other studies have failed to show a similar effect (Natvig et. al., 1999).

Pupils’ demands at school can be related to the amount of work and homework they have, to the time limits of these tasks, as well as to the difficulty of the tasks. The demands increase with the grades. Accordingly, the older the pupils are, the more demands they experience at school. Excessively high levels of demands is related to feelings of stress among the pupils at school (National Agency for Education, 2001). Stress-related factors in the school environment, such as experiencing high demands, have been shown to increase the risk of psychosomatic symptoms (Natvig et. al., 1999). A Swedish study of pupils in grade nine shows that pupils “always” or “often” experiencing very high demands from the teachers reported somatic and psychological symptoms more frequently than other pupils (Hagquist, Starrin and Sundh, 1990).
The demand-control model

The demand-control model is probably the most frequently used model for analysing the health effects of the psychosocial work environment among adults. The four-field model for analysis of the respective levels of demand and control has been proposed by Karasek (1979) and has been used extensively in studies of the influence of the psychosocial work environment on health among adults (Karasek and Theorell, 1990).

In this model a "high-strain" work situation is characterised by low control and high demands, an "active" work situation by high control and high demands, a "relaxed" situation by high control and low demands, and finally a "passive" situation by low control and low demands.

Karasek used the term job decision latitude (control), which comprises a combination of intellectual discretion and decision authority (Karasek, 1979). The first component refers to the possibility that the individual has to utilise and develop his/her own skill. The other factor has to do with the way in which decisions are taken at the work site.

The terms control and decision latitude are used interchangeably in this model to refer to the worker’s ability to control his or her own activities and skill usage and is not related to controlling others (Karasek and Theorell, 1990).

The model implies that increasing demands increase the risk of developing ill health. The higher degree of control the worker experiences, the smaller the risk. Studies on adults show that a strained work situation increases the risk of diseases, such as coronary heart disease and depression. Besides, there are other risks related to a lower activity level in leisure time, lower participation in political activity and a more negative health behaviour (ibid.).

The demand-control model has been used to a much lesser extent in studies of young people, but as pupils experience demands at school and their possibilities to influence...
conditions at school vary, it is hypothetically possible to use the same theories among pupils at school (Theorell, 1995).

**Social relations**

In adult work environment research, relationships with others are of central importance in discussions of health-related factors. Although social relations with other people outside work are the most important ones for many, relations at work can be the most important ones for others. People in the work force spend a great deal of time at work, and relations at work will anyhow have a potential to be important. This section will delineate supportive as well as harmful relations at work and their potential consequences for health among pupils at school.

**Social support**

A distinction is often made between qualitative and quantitative dimensions of social support. While the quantitative dimension could be referred to as social network (the number of friends and supporters you have as well as the number of interactions with other people), the concept of social support often refers to the qualitative dimension (Östergren, 1991).

Social support has been shown in various studies to be an important aspect of the work environment for adult health (House 1981; Karasek and Theorell, 1990; Östergren, 1991). Johnson (1986) has expanded the demand-control model developed by Karasek by adding social support as a third dimension. This model has added more direct social processes at the workplace, and Johnson showed that workers who reported high demands, low control and poor social support also reported more ill health as well as diseases such as heart disease.

The mechanisms between health and social support are not yet fully understood. Berkman (1995) suggests a direct relationship between poor social relationships and neuroendocrine or immunologic function. But there are also other possible mechanisms, such as changed health behaviour (Östergren, 1991). The mechanisms of social support at work can be direct, in meeting human needs for security, social contact, belonging, approval and affection. An indirect effect of social support can be to buffer the effects of stress on health, which means that support can modify the relationship between stress and health. Social support could also improve possibilities to control one's life, which can imply another indirect effect on health (House, 1981).

Good social relations can be viewed as a health potential (Noack, 1991), and supportive relations can enhance the sense of personal worth and importance (House and Kahn, 1985).

Transferred to the pupils' school environment, social support from teachers and other staff can be comparable with social support from superiors at the workplace, while social support from classmates can be comparable with support from workmates.
Social support and good relations to parents have been shown to have positive consequences for reported symptoms (Garnefski, and Diekstra, 1996; Patten et. al., 1997) as well as for health behaviour (Ross-Petersen, Holstein and Due, 1995).

**Bullying and classmate problems**

Classmate relations can be supportive and thus theoretically have the same relation to improved health among children and adolescents as supportive relations among adults. Classmate problems, on the other hand, can have negative consequences for health.

Bullying among pupils at schools has been highlighted in Swedish media in recent years and it is found to be a significant and pervasive problem. A frequently used definition of bullying at school is: “A student is being bullied or victimised when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more students” (Olweus 1994a, p. 1173).

Bullying among pupils is a problem that is reported to decrease with age (Olweus, 1994a). In most studies boys have been found to be more exposed to bulling and also more often being bullies than girls are (Whitney and Smith, 1993).

There are several studies showing an association between bullying and ill health as well as unfavourable health behaviour. Bullying has been shown to be associated with increased somatic and psychological symptoms (King et. al., 1996; Williams et. al., 1996; Forero et. al. 1999; Rigby, 1999), decreased self-esteem (Olweus, 1994b) as well as increased risk of suicide (Kaltiala-Heino et. al., 1999). While pupils who are bullied smoke and drink less than others, being a bully is associated with unfavourable health behaviour (Due, Holstein and Schultz, 1999).

The definition of bullying leads to an exclusion of other factors related to the social climate, which can have consequences for pupils’ health. One can be afraid of one or more pupils at school, without being exposed oneself, yet still be affected in a negative way. Not having as many friends as you want, feeling alone or outside the group does not necessarily mean that you are bullied. A situation like that can lead to a feeling of isolation, which can be conceived both as absence of a resource and as a factor contributing to psychosocial demands (Steptoe, 1991) and thus have negative impact on health.

So far, only a few studies have analysed the health impact of classmate relational problems, and found them to have similar negative health consequences as bullying (Timko, Moos and Michelson, 1993; Östberg, 1999).

Health behaviour can likewise be affected by the social climate at school. Kunesh, Basbrook, and Lewthwaite (1992) found that negative peer interactions lead to avoidance of future involvement in physical activity, and also that boys are the major source of negative peer treatment of girls. Adolescents who have problems with social relations with peers are less involved in physical activities that include participation in teams (Page and Tucker, 1994).
Sexual harassment

Sexual harassment is a gendered phenomenon defined as unwanted and unwelcome sex-related comments or conduct. Sexual harassment is a form of gender-based bullying, and, like bullying, it has to do with unequal power relationships (Equal Opportunities Ombudsman, 2000).

Sexual harassment at schools is a reality for young adolescents, and girls are exposed more often than boys (Fineran and Bennett, 1999; Roscoe, Strouse and Goodwin, 1994).

Although there are studies showing that sexual harassment at the workplace has negative health consequences for women (Fitzgerald, 1993; Schneider, Swan and Fitzgerald, 1997), little research has been done on the health consequences of sexual harassment at school for pupils. One of the few studies in the field shows that girls in grades 7 to 12 who reported often being sexually assaulted or harassed were significantly more likely to report emotional disorders and suicidal behaviours than pupils who were harassed less frequently or not at all (Bagley, Bolitho and Bertrand, 1997). A focus group study among girls aged 11–16 revealed some of the more indirect health consequences of sexual harassment, such as feelings of a diminished sense of self, intimidation as well as decreased decision latitude when trying to avoid being sexually harassed (Berman et. al., 2000).

Rowdiness

Although high levels of noise are a well recognised work environment hazard at adult workplaces (WHO, 1980), little interest has been directed towards the health effects on pupils because of rowdiness in the classroom.

A Swedish welfare study on children and adolescents (Jonsson et. al., 2001) found that only half of the pupils find the lessons calm, and also that rowdiness was the most frequent psychosocial problem among pupils in the Swedish compulsory school.

One of the few studies of the health consequences of rowdiness in compulsory school showed that rowdiness in the classroom was strongly associated with psychosomatic symptoms (such as headache) and depression among both boys and girls (Hagquist, 1994). A negative impact of large size of both the class and the school for pupils’ health was shown in one study (Carlsson, 1996), and it is likely that there is more disturbing noise in large classes.

Social background and health among children and adolescents

Among adults there is a vast amount of epidemiological studies showing that morbidity and mortality are related to social position in society (National Board of
The mechanisms between inequities in socio-economic status and health are not yet fully understood, but it has been shown that not only the absolute but also the relative distribution of resources in society is of importance for inequities in health (Wilkinson, 1992).

The relationship between social background factors and ill health among children and adolescents is less obvious than among adults. Some studies show that unfavourable social background among parents (e.g. being unemployed, divorced, a manual worker, or/and immigrant) has proved to be of importance for the health of children and adolescents (Alfvén, 1993; Berg Kelly, 1991; Berntsson and Köhler, 2001; Östberg, 1992).

Other studies have not been able to show any relations, or just weak ones, between social background factors and ill health (Grufman et. al. 1999; Macintyre, and West, 1991; Rahkonen and Lahelma, 1992; Jonsson et. al., 2001; West, 1997). A general understanding is that the relationship between socio-economic differences and health is less significant among children and adolescents than among adults (Vågerö, 1992).

There are several reasons to believe that the school can have a role as an equaliser in health during the school years. A study in schools in Stockholm shows that school-related factors such as less than 500 pupils, influence on school work and leisure activities at school were protective factors for psychological health, regardless of the general social status of the area surrounding the school (Öfverberg and Bremberg, 2000). There seems to be an equalisation in health during the school years, and factors related to status in the peer group and cross-cultural influences are possible explanations for the levelling-out of differences in health (West, 1997).

A Swiss study has investigated the role of schools as equalisers of health and concluded that schools can level out differences due to social background factors, but that they are less successful in relation to gender differences in health (Vuille and Schenkel, 2001).

The Swedish compulsory school

For readers not familiar with the Swedish school, a brief presentation of the Swedish school system may be useful. School in Sweden is compulsory for all children between the ages of 7 and 16. If parents so wish, the children may start school when they are six. Schools are co-educational and the school system is public. Most children attend a municipal school near their homes, but pupils and their parents have the right to select another municipal school, or a school independent of the local authority. Slightly more than 2% of pupils in compulsory basic school in 1995 attended one of the approved independent schools. All public-sector schooling is free of all charges, including textbooks and other educational material, school health care and school lunches. The parliament and the
government define the curricula, including the objectives and the guidelines for state schooling in Sweden. In 1994 a new national curriculum was introduced, stating that all schools should work against all discrimination related to gender, class and ethnicity (Ministry of Education and Science, 1994). Equality between boys and girls is stressed in the curricula as a basic value and as a pedagogical question, which must be visible in the instruction and the schools’ planning and operations. The new curriculum establishes that

“The schools shall actively and consciously promote the equal rights and opportunities of women and men. The way in which girls and boys are treated and judged in school and the demands and expectations placed on them contribute to the formation of what is feminine and masculine. The schools have a responsibility to counteract traditional gender-based patterns. They are to provide freedom for the pupils to test and develop their abilities and their interests, regardless of gender.” (ibid., p. 6)

A gender equality project

Even though the national curricula stress gender equality between boys and girls, it is not easy to achieve this. There have been several projects aiming at gender equality between boys and girls over the years. Here I will briefly describe the gender equality project which inspired our study.

Teachers in the elementary school in a municipality in the north of Sweden had recognised that the boys in many of their classes tended to dominate and that the girls often became quiet and withdrawn. They started an equal opportunity project in 1990 with the aim of changing the unequal situation in the classes, decreasing boys’ dominance and increasing girls’ self-esteem and power. In 1993 they started a three-year action research project together with two gender researchers in pedagogy and sociology (Berge and Ve, 2000). The aim was to develop pedagogic methods promoting equal opportunity between boys and girls and to develop theories about equal opportunity work at school based on feminist gender research and in accordance with the aim of the Swedish New Equal Opportunities Act. This act defines equal opportunities between men and women in the following way: men and women have equal rights, responsibilities and opportunities (1) to pursue work which provides economic independence; (2) to care for children and the home; (3) to participate in politics, unions, and other public activities. Equal opportunities have a quantitative aspect (equal distribution of women and men in all areas in society) and a qualitative aspect (values of both women and men are given equal weight and used to enrich and direct all areas of society) (Statistics Sweden, 2000).

Although the pupils in the gender equality project were also included in our study, the action research project was entirely separated from our public health study regarding school-related health.
OBJECTIVES

The overall aim of this thesis was to analyse the importance of the psychosocial school environment for the health of pupils in Swedish compulsory school from a gender perspective.

The more specific research questions were:

1. Did high demands in combination with low control at school matter for the pupils’ ill health development?

2. Were other school-related factors, such as classmate relations and rowdiness, of importance for the pupils’ health?

3. Was sexual harassment at school associated with girls’ higher degree of psychological symptoms compared with boys in grade nine?

4. Could confounders be identified in relation to social background?

5. Could school-related factors predict future health behaviour among the pupils?

6. What was the meaning and importance of pupils’ gendered strategies in their negotiation of power in the classroom?

7. What are the implications of our findings for school health promotion?

METHODS

A three-year prospective quantitative study was started in 1994, including 533 pupils (261 girls and 272 boys) from six different schools (25 different classes) in grades three and six, see Figure 2. The four-year prospective qualitative study started one year before.

![Figure 2. Pathway of data collection in the quantitative and qualitative cohort study](image)
Choice of methods

The most prevalent method in this thesis is quantitative, based on self-reporting by pupils. One study emanates from focus group interviews and is thus paradigmatically different from the quantitative approach. The two methods were supposed to enrich each other; results from the questionnaire study could be better understood through the pupils' narratives and questions relevant to the pupils discovered during the interviews in the pilot study could be included in the questionnaire. The focus group interviews have also been used to validate concepts used in the questionnaire (see Appendix 1).

The quantitative method made it possible to draw conclusions that were valid for a larger population than the one sampled and to estimate associations and interactions between the variables chosen in this study. The longitudinal quantitative design also increased the possibility of analysing a possible cause and effect.

The qualitative method was chosen as the research area was new and few concepts in relation to gendered health among pupils as well as to the psychosocial school environment were developed in the field of public health research. A qualitative approach made it possible to describe strategies among pupils in the school environment that could not be outlined in a quantitative study.

Focus-group interviews were used in order to search for common experiences in a social context, emerging from the discussion with other classmates (Patton, 1990). In focus groups it is possible to use the group interaction to produce data that would be less accessible without the interaction found in a group (Morgan, 1988). Other reasons were to diminish the pupils' subordination in relation to the interviewers, and to make the interviews more enjoyable for the children.

Gender perspectives in scientific methodology have mostly been discussed in relation to qualitative research, but there are voices proclaiming the advantages of combining qualitative and quantitative methods and regarding them as complementary (Malterud, 2001). I see the choice of method as a matter defined by the research question, although one has to be aware of the strengths as well as the weaknesses of the chosen method. The research question, not the perspective, should decide what method to use.

Children as informants about their health

When the study started most research data on children's health were collected from their parents or teachers (Angold, 1988; Offord, 1987). Children's ability to adapt was often used a measure of psychological ill health and boys were found to have a worse situation than girls. Thus, young people were not included as informants about their own health. According to La Greca (1990) it is easier to let parents and teachers assess externalising problems (e.g. conduct problems and hyperactivity) than more internalising problems (e.g. physical and psychological symptoms). However, teachers' and parents' report on children's health have not been found to correspond
well with children’s self-reports (Hammarström, 1986; Sweeting and West, 1997). Internalising symptoms are generally more common among girls, while boys are reported to have more externalising behaviour (National Board of Health and Welfare, 2001).

There are several reasons why it is important to acknowledge children as informants in research. First of all, in questions concerning feelings, subjective states and self-perception the children must be the most likely to know about them. Second, children are defined as able participants in health-promotion actions (de Winter, Baerveldt and Kooistra, 1999) and as it is their health that is of interest, research must increase the knowledge of children’s own views of their health and health-related factors. A bottom-up perspective in, for example, health promotion does not see children as passive objects, but as active participants (Hagquist and Starrin, 1997).

The well-known Ottawa Charter (WHO, 1986) (where health promotion is defined as 'the process of enabling people to increase control over, and to improve, their health’) has been criticised for a view of children as passive receivers of health care, performed by others (Hart-Zeldin et. al. 1990). Children have been given rights as human beings through the Universal Declaration of the Rights of the Child (UNICEF, 1989), and being an active participant for a healthy environment is both a right and a prerequisite for promotion of health and well-being, even for children.

**Cognitive developmental issues**

There are of course also difficulties in using children as informants about their health. When interviewing children one needs to consider several developmental issues. In our study the child is seen as developing as a part of a social context where the child is an active agent in interaction with the surrounding environment. The development of children and young people could be described as a process of mutual interaction between the child and his/her environment (de Winter, Baerveldt and Kooistra, 1999). The developmental process is channelled through the possibilities and limitations that the environment offers the children, and disorders are developed in an interactional process between the individual and his/her environment.

In interviews with children it is more important than in interviews with adults to adjust the interviewing methods to the communicative competencies of the respondents (Garbarino and Stott, 1992). Between the age of seven and eleven, the children have developed a concept of self that includes self-descriptions e.g. incorporating psychological characteristics. They have acquired an awareness of different components of self and they are able to differentiate between mental and physical aspects of self (Stone and Lemanek, 1990). According to Harter (Harter, 1986) children can estimate their self-concept at the age of eight. As children reach school age, perception, memory, and reasoning begin a gradual transformation. They become better able to focus attention and integrate an increasing amount of information in their memories (Garbarino and Stott, 1992).
There are also developmental issues to consider when children use self-report instruments. We have to consider their reading ability, vocabulary level, that the questions are connected to their experiences, limited attention span and language skills. For young pupils, not yet satisfactory readers, it is advocated to read the questions aloud (Stone and Lemanek, 1990). The wording of the questions must be age-appropriate, and the questions cannot tap information that exceeds the child’s memory capacity (Flanery, 1990) A questionnaire for children should not be too extensive. Besides, it is important not only to use an adjusted vocabulary but also to have a simple typographic style and simple scales (Hartman, 1988).

During middle childhood (six to twelve years) children develop their perception and can manage tasks that are less directly tied to their own experience. They can also coordinate information from different perspectives and they can make logical inferences based on reasoning about what they know must be true and not only what they perceive at the moment. The tasks, however, cannot be too complex (Garbarino and Stott, 1992). Last but not least, the individual differences in cognitive development between the children must be acknowledged.

**Settings**

The six schools in our study are situated in three different municipalities (A, B and C) in the northern part of Sweden, in areas traditionally dominated by the timber industry. All schools have paper mills in the area and are situated in or close to the largest towns in the counties. The number of inhabitants in municipalities A, B and C are 9 000, 93 000 and 18 000, respectively. All schools are situated close to a university, although the university in municipality B (situated close to municipality C) is smaller and less significant for the social structure. The municipalities are situated in counties with a lower degree of immigrants and a generally higher degree of unemployment than national figures. The school in municipality A has a socio-economic structure above average in Sweden with respect to employment, nuclear families, natives, education as well as own housing (Berge and Ve, 2000).

**Population**

As shown in Figure 2, there are two populations to describe in this thesis, both consisting of a group of younger and a group of older pupils: (1) the population for the quantitative cohort study and (2) the population for the qualitative cohort study.

1) The six classes in the gender equality project (described in introduction section) were asked to participate in the quantitative study and the other classes were selected with these classes as a point of departure. At baseline, 25 classes in six schools were selected in the three different municipalities described above. A cluster sampling technique was used. The schools were chosen to represent pupils from different socio-economic areas. In grade seven all pupils in the older cohort entered new schools and
most of them also entered new classes, while the pupils in the younger cohort stayed in the same school and in the same class.

At the three-year follow-up, pupils who had moved within Sweden, (n=33) were contacted again and included in the study.

The study population included in the different papers is presented in detail in Figure 3.

2) The participants in the qualitative cohort study were selected from two of the six gender equality project classes (12 girls and 12 boys in grade two, 13 boys and 8 girls in grade five). These classes were selected as they had the most explicit gender equality pedagogy. The reason for selecting classes from the equal opportunity project was to study pupils who were thought to be more aware of gendered dominance processes than pupils in general. The qualitative study included all pupils in the classes present at school during the days the interviews were performed. The class in the older cohort was not mixed with other classes, in grade seven. Pupils who had moved into the two classes (and their parents) were informed about the study and asked to participate. Of the 29 interviews performed, two had technical problems in their recordings and could therefore not be used. For the analysis of this study, relevant parts of 27 interviews were used.

Non-response rate
One pupil among those who had moved to another town within Sweden refused to participate at the follow-up. Because of the differences in school systems, the four pupils who had moved abroad during the follow-up period were not asked to participate. The external non-response rate in the cohort-study was 0.9%.

The quantitative study

Construction of the questionnaires

The majority of the questions in the questionnaire were derived from well-known and validated studies (Andersson, Grönberg and Hibell, 1998; Berg Kelly, 1991; Hagquist, Starrin and Sundh, 1990; Halvarsson, Lunner and Sjödén 2000; Hammarström, Janlert and Theorell, 1988; Harter, 1985; Marklund and Strandell, 1989; Olweus, 1986; Ouvinen-Birgerstam, 1985; Wernersson 1977).

As there was a lack of questionnaires regarding the psychosocial school environment and health for pupils as young as in our study, we adjusted the questions for the youngest age group.

Particularly among the youngest pupils, we thought it was important to have an easy design of the questionnaire, with a lot of drawings on every page to make it look
Figure 3. Population and number of subjects in the quantitative studies.
attractive. We chose the same typography as they had in their reading books to make it as easy as possible for them to read. See Appendix 2.

**Pilot study 1**

One class each in grades 2 and 5 respectively in a school not included in the present study, volunteered to help us in the work with the development of the questionnaires. When the first draft of the questionnaires was prepared they were tested in these two classes. After the pupils had answered the questions AH discussed each question with the pupils in smaller groups. The pupils’ understanding of the questions was in focus, which resulted in some of the questions being reworded while others were excluded from the final version.

The scales were tested in a similar way. Two classes, one in grade two and one in grade five in a separate school, tested different scales e.g. a visual analogue scale and an adjectival scale. The adjective scale, where the pupils answered always, often, sometimes, seldom and never, had the highest reliability in a one-week test-retest.

**Pilot study 2**

A second and more extensive pilot study was performed during autumn 1993 among 277 pupils (137 girls and 140 boys) in grades two and five (Gillander Gådin and Hammarström, 1994). Pupils from the six gender equality classes were chosen together with an equal amount of pupils in municipalities A and B. The teachers helped us to divide the classes into two groups depending on their reading ability. The pupils who could not read had the questions read to them in a group by their teacher or by one of the researchers. The pilot study indicated that most of the questions were age-adjusted and a few questions were excluded from the questionnaire in the baseline study.

**Scales**

As one objective of the questionnaire study was to measure changes over time in health and psychosocial factors, we wanted to have as many scale steps as possible. That was the reason for generally choosing five or more scale steps.

Due to the young ages in grade three, their questionnaires mostly had five answer alternatives (always, often, sometimes, seldom and never). The pupils in grade six and nine received questionnaires with the same wordings, but with nine-point scales.

Some questions regarding attitudes, e.g. attitude towards physical education, had nine different faces, from very sad to very happy, even in grade three, see Appendix 2. The original scale was developed as a measure of pain in children (McGrath and Unruh 1987).

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1 The study was originally thought to be the base-line investigation in the cohort study, but the selection of classes turned out to be socially skewed. Therefore, next year more schools were included in the study population, in order to represent pupils from different socio-economic areas.
The questions about alcohol and tobacco in grade nine had similar scales as the national statistics from Swedish Council for Information on Alcohol and other Drugs (Andersson, Grönberg and Hibell, 1998). The question regarding how often they had drunk alcohol during the last 12 months had a nine point scale (I do not drink alcohol - I drink alcohol every day) and the question how often they felt intoxicated had six answer alternatives (I do not drink alcohol - I get intoxicated every time). The two questions regarding tobacco (moist oral snuff and cigarettes) had six alternatives regarding how often they used it: Never, I've just tried, I've quitted, I use it on special occasions, I use it almost every day, I use it every day. The question of how often they exercised during leisure time had a seven point scale (every day - never).

The question regarding bullying had three answer alternatives (never, once, several times). The question whether they were afraid of any pupils at school had four alternatives (none, one, some, many).

The questions about sexual harassment had three answer alternatives (never, few times, several times).

Most other questions (with the exception of social background questions) had a five point scale in grade three and a nine point scale in grade six and grade nine.

**Procedure**

The first step was to ask the principals of the schools for permission to perform the study. All principals were positive to the study and the next step was to ask the teachers if they wanted their classes to participate. All teachers in the selected classes approved the study. The teachers administered a letter to the parents with information about the purpose of the study as well as the procedure, and stating that their children’s participation was voluntary. The addresses and phone numbers to the researchers were included, so that they could contact us if they had any questions. The parents in the gender equality project were informed about the study at a meeting with the local Parents Association as well. No parent ever called or articulated any negative attitude towards the study.

Thereafter we visited all the classes, in order to inform the pupils about the study and ask them if they volunteered to participate. The pupils were given the same information once again when we visited the classes during the data collection.

To increase the likelihood that the pupils wanted to participate in the study, the questionnaires were scheduled in lessons they had several times a week. Thus, they never missed any of the more popular subjects such as home economics or music.

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2 A national organisation for parents to schoolchildren, aiming at improving the collaboration between the parents and the school.

3 The parents to the new pupils in the follow-up study got letters sent home by mail with the same information as the other pupils.
lessons. For the younger pupils it was important that they did not answer the questionnaire in the lesson before lunchtime, when they were hungry, or at the very end of the day, when they were tired. If the school timetable allowed, the classes were divided into halves in order to increase the possibility of achieving a calm environment. Besides, small groups made it easier for the pupils to ask questions. The pupils were instructed to separate their benches, if possible, or otherwise put a folder or books between them to increase the privacy.

One of the researchers was present in the different classes during the whole data collection, also distributing and collecting the questionnaires. Thus, the pupils could ask about questions which they did not understand. We could also take a quick look through each questionnaire when the pupils handed them over to us, in order to detect forgotten questions and thus decrease the internal non-response rate. Overall, it was calm and quiet in the classes during data collection. Pupils who completed the questionnaire before the others always had regular school tasks to do during the rest of the lesson, so that all pupils had enough time to answer the questions without being disturbed.

All pupils that participated received a small gift (such as a pencil, a rubber, a reflector tag or a postcard) when they had answered the questionnaire.

In grade three there were some pupils who still could not read very well, and one of the researchers or a remedial teacher read the questions word by word together with the answer alternatives for those pupils.

In grade nine a small group of boys had decided not to answer the questions seriously. It was easily recognised by the researcher in the classroom as the pupils laughed and conferred with each other. After the lessons they apologised and volunteered to fill in a new questionnaire.

Pupils who were absent at the time of the data collection filled in the questionnaire when they came back to school. Their form teacher gave them the questionnaire and a stamped envelope, which they answered and sealed themselves.

At the follow-up we included for both cohorts more questions, regarding especially demand, control, sexual harassment and in the older cohort also health behaviour. The extended questionnaire was tested in a class with grade six pupils at a school not included in the present study with the purpose of ensuring that not too many questions were included for this age group. All pupils managed to answer the questions within the time for a normal lesson (40 minutes).

The baseline study resulted in a report to the participating pupils in the study as well as to the school staff (Gillander Gådin and Hammarström, 1997). The report was adjusted to the pupils' age with regard to the language and the result presentation. The purpose was to give the participants information about the results as well as to give them a tool
to improve their own psychosocial school environment. The report was distributed to all pupils during the spring term before the follow-up study.

The baseline as well as the three years follow-up questionnaire studies were both accomplished at the end of the autumn term.

**Test-retest**
At the baseline investigation, the questionnaires to both cohorts were repeated to a subsample ($n = 58$ in grade three and $n = 39$ in grade six) after one week. Intraclass correlation for one week test-retest of the questionnaire was used to calculate the test-retest agreement (Shrout and Fleiss, 1979).

The factor scales had a satisfactory one-week test-retest reliability in both age groups for all indices, except for the question of self-worth in the third grade. Intra-class correlations for indices and separate variables used in this thesis are presented in Appendix 3.

**Validation through interviews**
The pupils' understanding of some of the most important questions in the questionnaire were discussed in the focus group interviews. The results are shortly presented in Appendix 1.

**Descriptions of concepts and variables in the questionnaire**
A broad definition of health has been used in this study. It was defined as a dimension referring to a person’s physical and psychological condition (Janlert, 2000). Most health outcomes were measured as negative constructs (psychological and somatic symptoms, and feelings of stress) while self-worth can be defined more as a positive health construct. In this thesis the bodily and psychological symptoms were analysed separately. A recent cross-national comparison of subjective health complaints in adolescents shows that somatic and psychological symptoms differ qualitatively and the researchers suggest that the two symptoms are separate dimensions (Haugland et. al., 2001).

The somatic ill health index was measured with two questions in grade three (headache and stomachache) and with two additional questions in grades six and nine (nausea and backache). The psychological ill health index was measured with three questions in grade three (depression, anxiety, difficulties in falling asleep) and with one additional question in grades six and nine (sad at school). In the cross-sectional study in grade nine the psychological symptom index was extended to include three nervous symptoms (anxiety, worries, and nervousness) and three depressive symptoms (depression, insomnia, sense of guilt,). At the baseline study tiredness was used as an indicator of psychological ill health in both cohorts. The self-worth index was constructed from questions that reflected the pupils’ inner feelings of worth, which is an important component in the concept of self-esteem (Harter, 1985). Self-worth was measured with one question in grade three (Do you think that you are good enough as you are?) and with an additional question in grades six and nine (Do you feel worth
less than your classmates?). Stress was identified as a separate factor in the factor analysis and measured with one question regarding how often they felt stressed in both cohorts.

As health behaviours in grade nine we studied tobacco consumption (smoking cigarettes and/or use moist snuff every day, almost every day or at special occasions), high alcohol consumption (drunk alcohol once a month or more often in the last 12 months and who also felt intoxicated every or almost every time), physical activity (exercising in leisure time once a week or less) and weight concern. The weight concern index consists of three questions: Do you eat less to lose weight? Do you wish that you weighed less? Are you concerned with what you ought to eat in order not to become fat?

The demand concept can be divided into questions about qualitative and quantitative demands (Karasek and Theorell, 1990). In the third grade, pupils in Swedish schools do not have much homework, so only qualitative demands were considered in this group. In the sixth grade pupils get more homework. Consequently, a question about quantitative demands was included for this group.

For all age groups two questions about the pupils’ opportunity to influence their school situation were asked (Do you ask your teachers if you do not understand? Do your teachers care about your opinion?). In grades six and nine an additional question was included (learning anything at school that might be useful for them as grown-ups).

Social support was measured by asking questions in all age groups about support from parents, siblings and friends.

In the baseline study, classmate relations at school were measured with five questions: being bullied, being afraid of other pupils, not having as many friends as wanted, feeling outside the group and being called names. The question about bullying measured the cumulative incidence (Occasionally a group of pupils together tease and quarrel with someone. Have you ever experienced that other pupils have done that to you?) and was therefore excluded in the longitudinal analysis of differences in prevalence in Paper II.

As an introduction to the questions about sexual harassment the meaning of sexual harassment was defined in the questionnaire as “Sexual harassment means being exposed to unwanted comments about one’s looks, denigrating words with sexual connotations, pinching etc. We would like to know if you ever have been exposed to anything of the following at school or on your way to school” (1. Received unwanted comments, e.g. about your body 2. Been touched or pawed against your will).

As social background factors we have used living with both parents, any parent employed or unemployed, and either parent born abroad.

All measurements have been based on the pupils’ self-reports.
The wording of each question in the questionnaire included in this thesis are shown in Appendix 4 together with frequencies.

**Statistical analyses**

All quantitative data were analysed using a standard statistical package (SPSS for Windows version 6.0 or 9.0). In all analyses a p-value <0.05 was considered statistically significant. As a measure of significance in logistic regression analysis the 95% confidence interval was used.

Factor analysis (varimax rotation) - based on a theoretical analysis of which variables to include - was used to construct indices, and items with factor loadings of 0.50 or more were included in the indices. An exception was the lack of classmate support index in Paper III, which included the question whether they talked about almost everything with their friend, despite a slightly lower loading.

Spearman’s correlation coefficient was used for testing the correlation between the ordinal scale level independent variables in the multiple regression analysis as well as in the logistic regression analysis. Correlations stronger than 0.30 between the independent variables were not accepted.

When scales with different scale steps were used they were standardised according to the formula $X - M/SD$ (X= the score, M= the mean, SD = standard deviation).

Frequency analyses of variables were generally presented as proportions giving the answers “always” or “often”. The comparisons between boys and girls in the cross-sectional studies (Papers I and III) were illustrated as analyses with p-values from chi-square tests. In Paper II age and gender differences were tested with confidence interval from t-tests and paired sample t-tests.

The dichotomisations were most often performed according to the median split, which facilitated an equal distribution of the observations and could also impede the effects of skewed distribution. The analysis of the dichotomised variables in the demand-control model included only pupils with increased or decreased demand-control during the period 1994 and 1997, not those with stable values. In Paper IV the health risk behaviour was dichotomised according to an estimation of the level where the pupils were considered to be at risk. An exception was the index of weight concern, which because of the unequal gendered distribution was defined as the upper quartile for each sex separately.

In Paper II the relationship in Figure 1 was analysed with chi-square test for trend (Mantel Haentzel). The independent variables were trichotomised at the tercile, while the dependent variables were dichotomised at zero, i.e. the pupils who reported e.g. increased somatic symptoms were given the value 1, while all other pupils were given the value 0.
In Paper III the psychological symptom index was dichotomised at the upper quartile, in order to analyse pupils with the highest degree of psychological symptoms.

The two variables regarding sexual harassment were dichotomised (never been harassed = zero, ever been harassed = 1) and summed.

Multiple regression technique was used in the analyses in Paper I and Paper II in order to study how much of the variance in the dependent variables could be explained by the chosen independent variables. The independent variables were used as continuous or dummy variables.

Logistic regression analysis was used in Paper III in order to study how different moderating and confounding factors influenced the probability of reporting a high degree of psychological symptoms. The results are presented as odds ratios.

A prediction analysis of future risk behaviour in grade nine was performed using predictors from grade six.

The qualitative study

Procedure

After receiving approval for the qualitative study from the principal, we informed the teachers, the parents and the pupils about the study and its longitudinal design, including ethical issues (such as the voluntariness of participation). The pupils in the two selected classes were willing to participate. No negative comments were heard from the teachers, the parents or the pupils.

Before the study started we learned to know more about the school environment. It is important, particularly in interviews with the youngest children to know more about the school environment, e.g. what the schoolyard, the gym, etc. looked like. Then it was easier to follow their narratives about things that had happened, e.g. during breaks. We also visited some lessons to become more familiar with the classes and the teachers.

The study was performed through thematic focus group interviews. The aim of this technique is to focus on one subject at a time in a group discussion (Patton, 1990). One of us (myself or AH), acted as moderators, using open-ended questions and trying to support the discussions as well as trying to allow everybody to have their voices heard.

The pupils were divided into smaller groups of 5–8 pupils in each. As we wanted to bring up gendered issues, each group was single-sex. The pupils were used to single-sex discussions, as they participated in the gender equality project. In the younger class the boys and girls could choose which group they wanted to belong to. In the older class the teacher divided the boys from the class list, while the girls were few enough to be in one group.
Before the interviews were performed, the teachers informed the pupils about which subject would be in focus in the next interview, so that they could prepare themselves for what they wanted to bring up. In the first year the pupils were also given a task to do before the interview: they were asked to think about factors that made them feel good and which made them feel bad at school. The pupils in grade two were asked to draw pictures that they brought to the interview, while the pupils in grade five could choose between producing a drawing or writing a text.

As it is important for the interview situation not to be interrupted (Doverborg and Pramling, 1985) we always informed the school principal in advance that we would come and that we needed a separate room. Due to overcrowded conditions at the elementary and intermediate school it was in practice impossible to get a room at the school where we could perform the interviews without being interrupted. During two interviews we even had to change rooms in the middle of the session. The pupils seemed to be more used to being interrupted in this way than we researchers were.

Thematically structured interviews were performed, with AH and myself alternating as active and structuring moderators. One recurrent theme during the interviews was the questions about what made them feel good and bad at school. As these pupils were included in the gender equality project, the relations between the boys and the girls was a recurrent theme as well. The first year we had a special focus on some of the concepts used in the questionnaire; what it meant to be stressed and what it meant to have self-esteem. From grade three we put more focus on what it meant for them to have influence in the school situation, as well as which strategies they used for acquiring more influence or for enhancing their school related well-being.

Each time it was as important for the pupils to be acquainted with the tape recorder before the interview started. They wanted to listen to themselves and the interview sessions started with a couple of minutes when the pupils, one at a time, said something short and then listened to themselves. Afterwards the tape recorder was out of focus for the rest of the interview.

The instruction to the pupils was that that all pupils should be able to speak in turn in the order they sat around the table, and that all pupils should be able to finish what they had to say, before others could comment upon the present issue.

In the first two years we conducted the interviews together, while in the next three years AH mainly interviewed the girls and I mainly interviewed the boys. Doing the first interviews together was useful as we could discuss the interviews and interview techniques. As we were relatively concordant as interviewers we could then part and do the interviews unaccompanied.

Each participant in the focus group interviews received a small gift (pencil, rubber, etc.)
Each interview lasted for about a lesson (40 minutes). The focus group interviews were performed once a year during five years, from grade two and five until grade six and nine respectively. Each time, they were performed in the same season (at the end of the spring term).

**Analysis**

The interviews were tape-recorded and transcribed verbatim by a secretary who did not know the pupils in these classes and had no information about the pupils' identity.

The interviews were analysed in accordance with procedures and techniques in grounded theory (Strauss and Corbin, 1990).

The transcripts were read through several times to obtain a whole picture of the interviews. The text was then scrutinised in an open coding line by line in the computer program Open Code. AH and I coded the material independently and thereafter we compared and discussed the codes and categories until agreement was reached. It was an interview with a group of girls in grade eight that put the focus on the study objective presented in this thesis. A girl claimed that the most important kind of influence at school was to have power in relation to the boys in the class, and the other girls in her class agreed. In the next interviews (grade nine and grade six) the power relations and strategies used to get power between boys and girls were deepened.

The texts were reread and selectively coded in order to find codes and categories relating to strategies in the negotiation of power between boys and girls in the classes.

When the core categories were found these were also presented in an interpretation seminar with a group of gender researchers in public health. The citations and codes were discussed as well as other possible interpretations of the text. The seminar did not, however, give rise to any changes of the original categorisation.

In Grounded theory it is recommended to collect and analyse data parallel, with data collection dominating in the earlier phases and analysis dominating the later ones. However, because of lack of resources this was only partly done, with most of the analyses being done at the end of the study.

**Ethical considerations**

The study was approved by the Ethics Committee of Umeå University (930914 §153/93) as being in accordance with ethical standards.

Even though the study follows the ethical standard, there were reasons to reflect more on ethical considerations, with the participants being children. The asymmetric power relation between adults and children is difficult to overcome.
Informed consent means that the children know that they have a choice to say no if they do not want to participate in the research, that they know that they have the right to withdraw from the research at any time they wish, and that they know exactly what their role in the research process is, that is what they must do if they chose to participate (Greig and Taylor, 1999). As children have not reached lawful age, their parents must give their consent (Holmes, 1998). In reality, due to power relations or due to the child’s belief of the adult as an authority, young children have few possibilities to refuse to participate in a study (Lindh-Munther, 1989).

However, children are less likely to reveal information and be verbal if they have a feeling that it is forced upon them (Garbarino and Stott, 1992). Therefore it is important, not only from an ethical point of view, that the pupils feel that it is voluntary and not a formal requirement.

The unequal situation between an adult interviewer and a child can decrease in focus group interviews as the children have a better chance to assert themselves against the adult when they are in a majority. Group interviews can use the dynamic in a group to discover phenomenon from the perspective of the children, and they can fill in each other’s statements. Group interviews can also be supportive in order for the pupils to develop a question together (Qvarsell, 1978). However, there must be an awareness of the emotional risks that children carry in focus groups due to power imbalances within the group of pupils (Duncan, 1999). The risk was diminished in the younger cohort as they chose their group themselves.

The questionnaire study implies some ethical considerations as well. Was there a possibility that the children became psychologically distressed as a result of answering our questions? If e.g. a pupil is bullied at school the questions about classmate relations could cause negative feelings. To decrease the potential harm of our questionnaire study we gave them our telephone numbers so that they could reach us during certain hours if they had any questions or felt bad about anything. Besides, we tried to stay for a while in the classroom after each follow-up, thus allowing the pupils to talk to us. To increase the possibility for the pupils to have positive thoughts when they had answered the questions, we ended the questionnaire with an open question where they could reflect on, e.g. positive things at school or had the possibility to give suggestions as to how school could be improved.

There are little empirical data on potential harm to children from answering questionnaires, but further investigation of the impact of self-report assessment would be welcome (La Greca, 1990). If it had been unpleasant to answer the questions someone ought to have protested at least once during the years the study was going on, but there was a positive attitude throughout, both in the quantitative and the qualitative study.

Questions about tobacco, alcohol and other drugs also induced ethical considerations. How can we ask young pupils questions about risk behaviours without legitimising the behaviour? Even though there are pupils of young ages who smoke and drink alcohol
we decided to wait until grade nine to ask these questions. In grade six we asked a question about smoking but formulated it so that the pupils would understand that smoking was unacceptable, although having tried it not was so serious.

RESULTS

A descriptive analysis of the answers of all the questions used in this thesis is presented in Appendix 4.

Did high demands in combination with low control matter for pupils' ill health development? (Paper I and II)

The demand-control model was analysed for different dependent variables in both cohorts.

The results of the longitudinal analysis in the older cohort are shown in Table 1. In the younger cohort the results were not significant, because of the small changes between grade three and grade six.

Table 1. Distribution (percentage) of girls and boys reporting increased ill health symptoms and decreased self-worth in relation to the change in different demand-control situations at school between grade six and grade nine. P-values from chi-square tests.

<table>
<thead>
<tr>
<th>The demand/control model</th>
<th>Increased somatic symptoms</th>
<th>Increased psychological symptoms</th>
<th>Increased tiredness</th>
<th>Decreased self-worth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N&lt;sub&gt;girls&lt;/sub&gt;</td>
<td>N&lt;sub&gt;boys&lt;/sub&gt;</td>
<td>Girls</td>
<td>Boys</td>
</tr>
<tr>
<td>Increased control—decreased demands</td>
<td>17</td>
<td>24</td>
<td>41.2</td>
<td>41.7</td>
</tr>
<tr>
<td>Decreased control—decreased demands</td>
<td>11</td>
<td>21</td>
<td>63.6</td>
<td>47.6</td>
</tr>
<tr>
<td>Increased control—increased demands</td>
<td>34</td>
<td>45</td>
<td>67.6</td>
<td>52.0</td>
</tr>
<tr>
<td>Decreased control—increased demands</td>
<td>51</td>
<td>46</td>
<td>72.5</td>
<td>56.5</td>
</tr>
<tr>
<td>P-values</td>
<td>0.130</td>
<td>0.682</td>
<td>0.037</td>
<td>0.046</td>
</tr>
</tbody>
</table>
Table 1 shows that a development towards a more relaxed school situation, characterised by increased influence and decreased demands, was associated with a lower degree of ill health symptoms and increased self-worth compared to a change towards a strained situation (with high demands and low control). Somatic symptoms did not differ significantly between the four control-demand situations at school, but a comparison of the relaxed and the strained situation shows that almost twice as many girls report increased somatic symptoms in the strained situation.

Psychological symptoms, tiredness and decreased self-worth were significant among both boys and girls. Between one and a half and twice as many boys and girls in the strained situation reported decreased health and self-worth compared with the relaxed situation.

The analysis shows that, among those pupils who have changed their school situation between baseline and follow-up, the most common changes went toward an active or a strained situation. About half of the girls and about a third of the boys reported a change towards a strained situation, i.e. the most unfavourable for health.

The longitudinal analyses were in accordance with the cross-sectional findings (Paper I) indicating a possible impact of demand and control for pupils' health.

Were other school-related factors, such as classmate relations and rowdiness, of importance for the pupils' health? (Paper I and Paper II)

The multiple regression analyses in Table 2 show that in both cohorts increased classmate problems were the most important factor, which partly explained the variance in the worsening health and self-esteem among both boys and girls, followed by increased demand and decreased control. This was true even after control for possible confounders such as unfavourable changes in social background, increased rowdiness, and in the older cohort also increased indoor climate problems. No major gender differences were found. The R-squares were generally low in the younger cohort (Cohort 3-6) with the exception of psychological symptoms among girls, while they were higher in the older cohort (Cohort 6-9), with the exception of somatic symptoms among boys.

Was sexual harassment at school associated with girls’ higher degree of psychological symptoms compared with boys in grade nine? (Paper III)

In the younger cohort there were no significant changes in self-worth and ill health between grade three and grade six. However, the girls had a more negative development of somatic symptoms than the boys.

In the older cohort a worsening of health between grade six and grade nine was found among girls only, with increased somatic as well as psychological symptoms. The
Table 2. Multiple regression analysis of changes in ill health and self-worth (T2-T1) in relation to change in psychosocial factors at school (T2-T1) in Cohort 3-6 and Cohort 6-9.

<table>
<thead>
<tr>
<th></th>
<th>Somatic symptoms</th>
<th></th>
<th>Psychological symptoms</th>
<th></th>
<th>Self-worth</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Girls</td>
<td>Boys</td>
<td></td>
<td>Girls</td>
<td>Boys</td>
</tr>
<tr>
<td></td>
<td>beta</td>
<td>p</td>
<td>beta</td>
<td>p</td>
<td>beta</td>
<td>p</td>
</tr>
<tr>
<td>Cohort 3-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand</td>
<td>0.240</td>
<td>0.016</td>
<td>0.074</td>
<td>0.407</td>
<td>0.256</td>
<td>0.004</td>
</tr>
<tr>
<td>Control</td>
<td>-0.095</td>
<td>0.319</td>
<td>0.163</td>
<td>0.075</td>
<td>0.109</td>
<td>0.202</td>
</tr>
<tr>
<td>Classmate problems</td>
<td>0.126</td>
<td>0.207</td>
<td>0.184</td>
<td>0.042</td>
<td>0.364</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Rowdiness</td>
<td>0.093</td>
<td>0.347</td>
<td>0.099</td>
<td>0.266</td>
<td>0.062</td>
<td>0.480</td>
</tr>
<tr>
<td>Support</td>
<td>0.037</td>
<td>0.699</td>
<td>0.057</td>
<td>0.525</td>
<td>-0.170</td>
<td>0.050</td>
</tr>
<tr>
<td>Live with both parents</td>
<td>0.043</td>
<td>0.661</td>
<td>-0.006</td>
<td>0.944</td>
<td>-0.037</td>
<td>0.675</td>
</tr>
<tr>
<td>Mother employed</td>
<td>0.046</td>
<td>0.636</td>
<td>0.112</td>
<td>0.210</td>
<td>-0.004</td>
<td>0.961</td>
</tr>
<tr>
<td>Father employed</td>
<td>-0.018</td>
<td>0.853</td>
<td>0.122</td>
<td>0.168</td>
<td>-0.099</td>
<td>0.252</td>
</tr>
<tr>
<td>R²</td>
<td>0.116</td>
<td>0.139</td>
<td>0.292</td>
<td>0.088</td>
<td>0.089</td>
<td>0.172</td>
</tr>
</tbody>
</table>

| Cohort 6-9     |                  |         |                        |         |           |         |         |          |         |
| Demand         | 0.029            | 0.733   | 0.176                  | 0.065   | 0.123     | 0.146   | 0.251   | <0.006  | -0.020   | 0.813   | -0.094  | 0.291   |
| Control        | -0.174           | 0.051   | -0.070                 | 0.459   | -0.239    | 0.007   | -0.086  | 0.338   | 0.169    | 0.169   | 0.136   | 0.125   |
| Classmate problems | 0.273      | 0.004   | 0.054                  | 0.548   | 0.215     | 0.022   | 0.316   | <0.001  | -0.263   | 0.006   | -0.396  | <0.001  |
| Rowdiness      | 0.072            | 0.382   | 0.153                  | 0.091   | -0.020    | 0.811   | -0.090  | 0.293   | -0.081   | 0.331   | -0.031  | 0.709   |
| Support        | -0.049           | 0.560   | -0.020                 | 0.832   | -0.061    | 0.464   | 0.086   | 0.333   | 0.062    | 0.463   | 0.011   | 0.902   |
| Climate factors | 0.050            | 0.558   | -0.117                 | 0.201   | -0.061    | 0.470   | -0.048  | 0.583   | -0.038   | 0.656   | 0.034   | 0.693   |
| Live with both parents | 0.091      | 0.266   | -0.106                 | 0.260   | -0.019    | 0.817   | 0.055   | 0.537   | 0.036    | 0.662   | -0.019  | 0.827   |
| Mother employed | -0.040           | 0.617   | 0.049                  | 0.598   | -0.068    | 0.391   | -0.057  | 0.520   | -0.071   | 0.375   | -0.064  | 0.460   |
| Father employed | -0.033           | 0.688   | 0.125                  | 0.170   | 0.186     | 0.023   | 0.111   | 0.199   | -0.004   | 0.961   | 0.063   | 0.460   |
| R²             | 0.204            | 0.105   | 0.223                  | 0.188   | 0.193     | 0.213   |         |         |          |         |         |
decrease in self-worth, however, did not differ between boys and girls. Thus, the longitudinal analysis showed that significant gender differences in health developed between grade six and grade nine, resulting in a poorer health among the girls compared to the boys (see Appendix 4). The gender differences in relation to psychological symptoms in the cross-sectional study in grade nine are illustrated in Figure 4.

![Figure 4. Distribution of boys and girls in grade nine who answered “always” or “often” on questions on different psychological symptoms. * p<0.05, ** p<0.01, *** p<0.001](image)

The figure shows significant gender differences in relation to all six symptoms. A logistic regression analysis, with the aim of identifying possible explanations for a high degree of psychological symptoms among boys and girls, is shown in Table 3.

The bivariate analysis shows that all included variables were significantly associated with a high degree of psychological symptoms among girls. Among boys, classmate support decreased the risk and a negative body image increased the risk of high psychological symptoms. In the multiple analysis classmate support proved to decrease the risk for high psychological symptoms among both boys and girls. For girls, being sexually harassed was strongest associated with a high degree of psychological symptoms.

Socio-economic variables such as living with both parents and any parent unemployed were included in the first analysis, but they were excluded in the final analysis due to lack of significance.
Table 3. Odds ratios (OR) and 95% confidence interval (95% CI) for reporting a high degree of psychological symptoms among boys and girls in grade nine.

<table>
<thead>
<tr>
<th></th>
<th>Girls</th>
<th></th>
<th></th>
<th>Boys</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bivariate</td>
<td>Multivariate</td>
<td></td>
<td>Bivariate</td>
<td>Multivariate</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>CI</td>
<td>OR</td>
<td>CI</td>
<td>OR</td>
</tr>
<tr>
<td>Sexual harassment</td>
<td>3.63</td>
<td>1.90-6.94</td>
<td>2.56</td>
<td>1.26-5.21</td>
<td>2.23</td>
</tr>
<tr>
<td>Lack of classmate</td>
<td>1.55</td>
<td>1.23-1.97</td>
<td>1.50</td>
<td>1.14-1.97</td>
<td>1.47</td>
</tr>
<tr>
<td>support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative body-image</td>
<td>1.25</td>
<td>1.04-1.51</td>
<td>1.14</td>
<td>0.92-1.43</td>
<td>1.27</td>
</tr>
<tr>
<td>Demand</td>
<td>1.40</td>
<td>1.11-1.77</td>
<td>1.13</td>
<td>0.87-1.47</td>
<td>1.21</td>
</tr>
<tr>
<td>Lack of teacher/staff</td>
<td>1.21</td>
<td>1.00-1.47</td>
<td>1.06</td>
<td>0.85-1.33</td>
<td>1.18</td>
</tr>
<tr>
<td>support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of parent support</td>
<td>1.20</td>
<td>1.01-1.44</td>
<td>1.08</td>
<td>0.88-1.32</td>
<td>1.08</td>
</tr>
</tbody>
</table>
Can school-related factors predict future health behaviour among young adolescents? (Paper IV)

The frequency of alcohol consumption, tobacco use, physical activity and weight concern are shown in Appendix 4.

In order to study the possibility of predicting later unfavourable health behaviour among pupils, with special focus on school-related factors, results from the three-year follow-up of the older cohort were used. The predictors in grade six were related to three different spheres (family-related, school-related and health/behaviour-related), see Table 4, which gives a comprehensive view of the results.

The table shows that most of the investigated predictors were not significant. However, many of those that were significant had high values. Overall, factors in the health and health behaviour sphere seemed to be most predictive of future health behaviour especially with regard to tobacco consumption, high-risk alcohol consumption among boys, and tobacco consumption and dieting among girls.

The single best predictor for low physical activity was earlier low physical activity (RR almost seven for girls). High alcohol consumption among girls was best predicted by experimenting with cigarettes as well as by negative attitudes to physical education.

Overall, low physical activity among girls could best be predicted by school-related factors, such as classmate problems, teasing others, rowdiness in the class and having difficulties sitting still. The most significant predictors among the school-related factors were difficulties in sitting still. Of the four family-related predictors, divorced parents were most often found to be significant.

Some variables related to the psychosocial school environment, e.g. the amount of demands and the degree of influence at school, were included in the risk ratio analysis, but were excluded in the presentation due to lack of significance.

What was the meaning and importance of pupils' gendered strategies in their negotiation of power in the classroom? (Paper V)

The interviews revealed a picture of an asymmetric distribution of power between the boys and the girls in the different classes, with the boys dominating over the girls. The results were sorted into two major categories: 1) the girls’ actions in the negotiation of power in relation to the boys in the class 2) the boys’ mastering techniques in relation to the girls.

Our results are summarised and further interpreted in Figure 5.
Table 4. Distribution of significant predictors among boys and girls within family, school and health/behaviour.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Girls</th>
<th>Boys</th>
<th>Number of significant findings</th>
</tr>
</thead>
<tbody>
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<td><strong>Family-related</strong></td>
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<td>Mother/father born abroad</td>
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<td><strong>School-related</strong></td>
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<td>Classmate problems&lt;sup&gt;a)&lt;/sup&gt;</td>
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<td>Low teacher support</td>
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<td>Teasing classmates</td>
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<td>Analgesics last two weeks</td>
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<td>Tried smoking</td>
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<td>No bike helmet</td>
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<td>Dieting</td>
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<sup>a</sup> indices
The girls’ actions

- building alliances
- resistance
- withdrawal
- responsibility-taking

The boys’ reign techniques

- abuse
- claiming to be the norm
- acting out
- blaming girls
- choosing boys

Figure 5. Gendered strategies in the negotiation of decision latitude in relation to the opposite gender.

The figure illustrates that the girls seemed to have less space at school than the boys. The girls strove for increased space and power in the classroom. Their aim was not to take over the boys’ dominant position but to bring about equal rights between the boys and the girls. The boys were more self-centred; they strove out of self-interest to assure themselves of a dominant position in relation to the girls.

Some of the girls’ actions (resistance and alliance-building) had a potential for increasing their power, and thus for reconstruction of the gendered power relations. On the other hand, the boys’ mastering techniques as well as the girls’ withdrawal and responsibility-taking could maintain, and therefore reproduce, the hierarchical and asymmetric pattern of gender relations.

DISCUSSION

In summary the results of this thesis showed that the psychosocial school environment seemed to be of importance for the pupils’ health. Problems in relations with the classmates turned out to be the most significant factor, followed by a low degree of control as well as high demands in the school situation. During the follow-up a deterioration of health was found among girls only and sexual harassment at school turned out to be one possible explanation. Overall, social background factors were of less importance. The school situation in grade six turned out to have an important role in identifying future unfavourable health behaviour among pupils in grade nine, especially in relation to low physical activity among girls. The pupils’ gendered
strategies for power in the classroom became visible in the qualitative study. Some of the girls’ strategies had a potential to increase their power and thus to improve their health. On the other hand, some of the girls’ as well as the boys’ strategies could reproduce the asymmetric pattern of gender relations, and thus maintaining gendered ill health.

The discussion section will start with methodological considerations, followed by reflections on the research process. The results will then be discussed in relation to other studies. Finally, implications for school health promotion will be discussed and conclusions will be drawn.

Methodological considerations

As four out of five papers in this thesis are quantitative and only one is qualitative, the main part of the discussion will concern methodological issues regarding the questionnaire study.

The quantitative study

Our study was one of the first to include relatively young pupils as reporters of their health and school environment. A weakness, however, is that their young age at baseline caused limitations regarding the number of questions as well as the number of answer alternatives that could be put in the questionnaire. It was not an optimal situation to use different scales in grade three and grade six. There is a possibility that the differences in the scales can contribute to explain why there were fewer differences between these age groups in Paper II. However, standardisation of the scales is an accepted method as the purpose was to measure change and not the absolute level.

The young age also made it difficult to ask about risk behaviour, such as alcohol, without legitimating the behaviour, so this was avoided. The tobacco question was formulated so that the pupils would understand that smoking was unacceptable but having tried it was not so serious. Annual school surveys on the use of alcohol, drugs, tobacco and inhalants have been carried out among pupils in Sweden in grade six and grade nine since 1971. However, I have not found any discussion in these studies regarding potential risks of asking young pupils about alcohol or tobacco.

In the analysis of predictors for future health behaviour, the risk group in the follow-up study had to be defined rather widely, owing to the small number of individuals in the most extreme values. It was also necessary to have different cut-off points for boys and girls due to the unequal gendered distribution of some of the variables. Therefore, no comparisons could be made in relation to gender between the prediction values of weight concern in Paper IV.

The method used in Paper III regarding high psychological symptoms in grade nine also warrants comments. As there were more girls than boys reporting a high degree of
psychological symptoms, the cut-off point in the index had to be adjusted so that the boys could also be included in the statistical analysis. In future research, the measurement of sexual harassment needs to be developed, as only two questions were included in the analysis and as there are several more ways to sexually harass pupils at school.

The direction of the associations also needs to be addressed in this thesis. The cross-sectional results could be interpreted as if psychosocial factors lead to a high degree of ill health symptoms or as if pupils with high rates of ill health were more prone to report negative psychosocial factors. As both our qualitative and quantitative research (the cross-sectional as well as the longitudinal data) point in the same direction our interpretation is that the school environment could have negative consequences for pupils' health. However, we do not reject the possibility that the pupils with most ill health report the worst school environment. Even so, a worsened psychosocial school environment could further deteriorate their health.

**Scientific rigour**

Much work was undertaken in order to increase the validity in this study. The strength of our study was the carefully performed longitudinal design, where the pupils themselves were used as respondents, as well as the combination of qualitative and quantitative methods. The non-response rate was negligible, which contributes to a high quality of the data.

The thorough work in the construction of the questionnaire probably increased the validity. Several pilot studies were performed, after which difficult and non-reliable questions were altered or excluded. The layout, with familiar type and a great many pictures for the younger children, increased the likelihood that they would answer all the questions despite the relatively large size of the questionnaire.

In order to increase the validity the authors participated during the data collection so that the pupils could ask if they did not understand the questions. Standardised measurement is not recommended for children under the age of eleven, but this age limit is lower if they can get help (Scott, 1997). A low internal non-response rate was ensured as the authors could ask pupils who had forgotten to answer a page or a question to complete the questionnaire.

The content validity was ensured in our study through the factor analysis, which shows that all items in the indices measure a similar skill or “trait”.

The representativeness of the sample was ensured through selection of schools from different socio-economic areas. A design effect is possible from the cluster sample that reduced the statistical independence of the subjects in the study. This could have been limited if pupils from more schools had been included. However, the relatively homogeneous structure in Swedish society, especially outside larger cities, decreases that risk. Besides, there was no loss of information due to non-response. An advantage
of the cluster sampling technique was a high response rate, as the whole class answered the questionnaire at the same time. It was preferable to include all the pupils in the classes for ethical as well as economic and practical reasons. Selected pupils did not lose more school time than their classmates, and the teachers could more easily plan time for the questionnaires as well as interviews when the whole class was involved.

A common estimate of reliability is to measure internal consistency (Cronbach’s alpha). A problem with using alphas is that alpha is dependent not only on the magnitude of the correlations among the items, but also on the number of items in the scale (Streiner and Norman, 2001). Estimates of internal consistency calculated from only a few items may be misleading (Flanery, 1990). Most of the indices in our study have fewer than five items, which is why we were able to rely on test-retest reliability only. Test-retest reliability is highly relevant to all child report measures, although many factors, such as fatigue, can greatly reduce the reliability coefficients (Flanery, 1990). On average there was a high correlation between the test-retest measurements (see Appendix 3). The question on self-worth (0.47) in grade three scored lower than the others. It is possible that some of the indices or questions, such as self-worth in grade three and also control in grade six, did not measure stable situations. Some outcome variables may instead be due to different, more or less temporary situations that affect children. It can thus be questioned whether test-retest is an adequate method for measuring the reliability of self-worth, if the construct is supposed to change over time. According to Harter (1990) a low test-retest score regarding self-worth is not necessarily a measure of low reliability.

The reliability was not tested in the final follow-up, but there is no reason to believe that the test-retest coefficient would be lower among the older pupils. On the contrary, adolescents can be used as informants, with relatively little adaptation of the instrument, in surveys designed for adults (Scott, 1997).

**Questions regarding social background**
Some methodological issues need to be brought up in relation to our findings regarding social background. The question regarding a parent’s unemployment could have been difficult to answer. Parents may be studying because of unemployment, they may be in labour market programmes or moving between unemployment and employment. The question whether the children live with both their parents also warrants a comment, as our question does not say anything about the time of the divorce. The possible health consequences of a divorce will probably differ if the parents were recently divorced compared with if the parents were divorced when the child was a toddler.

There are theoretical methodological problems in defining important social background factors or criteria of importance for children’s and adolescents’ health. There is no consensus regarding what criteria to use; is it education, income or occupation that is most important or should one base the analysis on the father, the mother or both? A suggestion is to use two different aspects. The first includes
resources (education, income, wealth) and the other status or rank (relative positions in a hierarchy, e.g. social class) (American Academy of Pediatrics, 2000). However, both of them are regarded as difficult to measure in questionnaires to children and young adolescents.

The children's own economy could also be chosen, but it has been shown that pocket money is unrelated to the family economy (Jonsson et al., 2001).

The qualitative study
Doing focus group interviews is a qualitative method distinct from individual interviews and from participatory observations. The method has its own strengths and weaknesses (Morgan, 1988). A strength with using focus group interviews in the present study was that it was a way to gather information relatively cheap and quick. Another strength was that the pupils could explore the themes introduced by the moderator, and data could be collected from group interactions and discussions. However, the most important reason was that the unequal power between the researchers and the children could decrease when they were in a numeral superiority. Besides, the group situation was also supposed to be more enjoyable for the pupils. A weakness with using focus group interviews could be that power asymmetries within the group of boys as well as within the group of girls were unacknowledged. There is a risk that the dominant discourses were expressed during the interviews. At two occasions, boys harassed other boys during the interviews. There is a need of an awareness of the emotional risks that children carry in focus groups due to power imbalances within the group of pupils, as opinions discussed in the groups can lead to later punishment (Duncan, 1999). However, we did not get any sign of negative treatment of any of the pupils as a cause of the interview. In the gender equality project the boys got used to sit in single-sex groups and discuss different issues, and therefore the boys in our study were more experienced to group discussions than boys in general.

It is possible that another sample of pupils (from classes without gender equality projects) as well as other methods (individual interviews, interviews in smaller and totally self-selected groups, or participant observations) would discover other strategies that boys and girls use to increase their power in the classes.

The qualitative study was used in order to validate the questionnaire, see Appendix 1. Here I will only briefly mention that even the youngest seemed to understand all the questions as well as the investigated concepts (self-esteem, stress and influence).

Scientific rigour
In qualitative studies there are other concepts and criteria used in the discussions of scientific rigour compared with quantitative studies. Lincoln and Guba (1985) have outlined the concepts credibility, dependability, confirmability and transferability, which have been found useful in other studies (Hamberg et al., 1994).
Credibility refers to factors related to how credible and truthful findings can be. A prerequisite is that we as researchers were able to be capable moderators in making sure that even quiet pupils had the possibility to express their opinion and that we managed to follow up important threads taken up by the pupils.

The credibility can be discussed in relation to the relations between the pupils and the researchers. The positive attitude from the pupils towards the study as well as towards us as researchers during the years spoke for an experienced confidence between the pupils and the interviewers. There was no dependence between the pupils and us as researchers. During the years the pupils probably noticed that what was discussed during the interviews never had any negative impact on them. As we focused on the school environment, the risk decreased that the informants withheld personal information.

Dependability refers to the ability to adapt to changes in the study environment and to new inputs obtained during the study period. In our study some questions and themes were focused during all interviews, while others were introduced as the study went on. The dependability could have been increased if the analytic process had started at an earlier stage of the study. This was partly done, but because of lack of resources initially the analysis could not start until quite late in the process.

Another weakness with the focus group interviews was that it did not enable us to distinguish between strategies used by different individuals within the boys' and the girls' group, e.g. in relation to social background and ethnicity. However, we found it neither ethical nor practical to perform individual interviews with some of the pupils. As the interviews were performed at the school, there was an obvious risk that the selection of some pupils in the class would raise questions regarding why some were selected while other were not.

Confirmability refers to procedures taken to ensure that other researchers can judge the analysis and the result by looking at the data. Being two researchers who were working together in the analysis with independent coding increased the confirmability. In order to increase the confirmability an interpretation seminar with other researchers in the field was arranged, where quotations and codes were discussed. Another way was to let some pupils and teachers, outside of our study, verify the findings. Finally, before the final model of the results was accepted it was presented for some of the pupils and a teacher in the gender equality project.

Transferability refers to the possibility for the results to be applicable in similar settings. To be able to define the transferability it is important to describe the context in which the study took place. To judge whether the results in our study was applicable to similar settings we presented the model for groups of boys and girls in gender equality projects (one class in grade three and one class in grade eight) in another town than the one chosen in our cohort study. As the pupils approved the model we considered that our findings were transferable to similar settings.
We proclaim that our results also could be transferred to settings without gender equality projects as well, even though other pupils may be less aware of, and therefore less likely to put words on, the gendered power strategies in the class.

**Reflections of the assessment process**

Gender researchers have called attention to the necessity of viewing the role of the researcher throughout the research process (Magnusson, 1998). Your personal experiences, theoretical point of departure and work interest will influence the intention, research questions, selection, analysis etc in your research process (Harding, 1986). So far, reflexivity has mostly been discussed within qualitative research, but there is no reason for not being aware of your role as a researcher in quantitative research.

The experience of being a mother of two boys has given me profound experience of boys’ situation at school. Our house has sometimes felt like an after-school leisure centre with between two and seven boys in the house almost every day for several years. I have asked both my own boys and their friends questions about their school situation. Thus, I have had the opportunity to follow processes in their classes. I have also spent a lot of time especially in my oldest son’s class, where harassment and conflicts were everyday experiences. My boys’ friends (boys) as well as their not so friendly classmates (mostly some boys) have given me practical examples of the theories about power relations and about construction of masculinities at school. The experiences from a former one-year period as a supply teacher together with four years’ experience of the parents’ school board in my boys’ school have given me a comprehensive knowledge of the school world. These experiences have given me a broad experience of the context in which pupils, particularly boys, live and are affected by.

My supervisor and collaborator in this study (Anne Hammarström) has long experience of qualitative as well as quantitative longitudinal studies among pupils. AH has also been active during many years in several local parents-school organisations for improving the co-operation between the school and the family. She lives in municipality A, has two daughters in about the same ages as the pupils in the present study. Both of them have gone to schools included in this study. One of her daughters was even a pupil in the study, she went to a gender equality class, although not in the class included in the qualitative study. This means that AH has thorough knowledge about the context where the qualitative study was performed and about two of the schools in the quantitative study. This circumstance, together with her long experience of accident prevention at school and her knowledge of the school context, increases the likelihood of a high competence in the interpretation and analysis in this study. Having two girls of the same age as the students in the study population increases the understanding for the everyday life for schoolgirls and their school-related health.

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4 As her daughter participated in the quantitative study I collected all data in that class.
The high participation rate in our study was probably due to several different factors. I think that the pupils found us trustworthy and that they thought it was an important study. The feeling I got from the data collection lessons was that they did accept us as well as our study and that they wanted to participate and that they found it meaningful. It is less likely that pupils want to participate if they think it is some kind of test with right and wrong answers.

The fact that we came back to the pupils six months before the follow-up with a popular report of the earlier results probably increased the likelihood that the pupils found it meaningful to participate and to answer the questionnaire once more.

At school pupils learn that adults can exert control over children, informal as well as formal (Holmes, 1998). Power relations between the pupils and us as researchers are also impossible to ignore. As researchers we have the power to decide what to ask about and how to interpret the finding. There are several ways to diminish the power asymmetry between children and adult researchers. Focus groups are one way to partly overcome that problem, with children being superior in numbers in comparison with the researchers. Another was to have the pre-understanding that the children were experts on their own environment and that they were telling us about things we did not know. Being outsiders in the school, rather than personnel with any formal authority in relation to the children, could also decrease the pupils’ feeling of dependency and powerlessness.

I had a pre-understanding that it would be more difficult to have focus group interviews with boys than with girls. This was true in one of the boys’ groups in grade two, where three of the boys were not interested in following the rules in a focus group, i.e. letting everyone talk. But in most other interview situations the boys seemed to be as interested as the girls. This could be due to the gender equality project, as one of the pedagogic methods was to have discussions with boys in groups and the boys had become more used to this kind of sessions. It can also be a consequence of asking the boys to join a group and letting them discuss things that they thought were interesting and important and giving them a possibility to reflect upon themselves and their own situation. During the interviews with the pupils I learned that most boys were as interested as the girls in interacting and relating to each other and to an adult.

On the results

Did high demands in combination with low control at school matter for pupils’ ill health development? (Paper I)

As our first study was cross-sectional, no conclusions regarding cause and effect could be drawn. The longitudinal design of our study provides the opportunity to discuss aetiology further and to suggest that the psychosocial environment as regards of demand and control has an effect on reported ill health and self-esteem. It is plausible to suggest that the associations we have found have the same direction as for adults (Karasek and Theorell, 1990).
As far as I know, the demand/control model has not previously been tested among pupils as young as those in our study. Among older pupils (in grade nine) however, there are results from a Swedish report that support our findings (Hagquist, Starrin and Sundh, 1990). A cross-sectional study which showed that the most negative combination (high demands from the teacher and a low ability to control teaching pace) was related to ill health and lack of satisfaction.

Other studies have analysed the health effects of demand and control separately. A cross-sectional study of 13–15-year-old pupils found no consistent associations between ill health and decision control (Natvig et al., 1999). While their definition of decision control was restricted to pupils’ influence over their schoolwork, our measure comprised a more general degree of influence over their school situation.

In the longitudinal study of school leavers described above, lack of control over the school situation turned out to negatively influence future employment prospects as well as future ill health development (Hammarström, Janlert and Theorell, 1988). These results are in concordance with our study.

**Were other school-related factors of importance for the pupils’ health? (Paper I–III)**

Our study emphasises the importance of a broad approach to the school environment for pupils’ health. We were able to demonstrate that, apart from changes in control and demand, the factor at school with the most negative consequences for health development in both age groups and for both boys and girls was increased classmate problems. Longitudinal studies on bullying have demonstrated the long-term effects on physical and mental health (Rigby, 1999; Olweus, 1994b). The concept of classmate problems included bullying, and also other aspects of negative classmate relations, e.g. not having as many friends as wanted and being afraid of a pupil at school.

Thus, our study broadens the perspective from bullying to problems in classmate relations, suggesting the need for a greater focus in school health promotion on the nature and quality of the interactions between pupils rather than on individual behaviour (Baum, 1998). A school climate admitting that children are outsiders is not only negative for the single child, but for the whole group (Östberg, 1999).

Negative classmate relations could also have indirect consequences for health. A Swedish study of pupils in grade seven shows that there is an increased risk of absence from lessons if the pupils have experienced situations at school such as being threatened, being hit (girls) or feeling outside the peer group (boys) (Häggquist, 2000). Teasing, defined as negative verbal feedback regarding appearance, has a strong effect on body dissatisfaction (Lunner et al., 2000).

Social support is often considered to be health promotive. In for example a cross-sectional study of 13–15-year-old pupils found that support from peers was associated
with decreased risk of psychosomatic complaints among both boys and girls (Natvig et al., 1999). In contrast to these studies, support from parents, siblings and friends was not significantly related to ill health among the pupils in our study. A possible explanation could be that the psychosocial school environment was more strongly associated with ill health, and thus diminished the impact of social support.

Samdal et al. (1998) found that teacher support is a predictor of satisfaction with school which has the potential to affect the pupils’ health in a positive way. In our study teacher support was included in Paper III (in the analysis of possible explanations for a high degree of psychological symptoms among pupils in grade nine). The bivariate analysis showed significance among the girls only. The control concept in our study included questions related to the teacher which differed from the questions included in the teacher support concept. The questions fell out in different factors in the factor analysis, but they correlated in the multivariate analysis and thus only one of the two constructs was chosen in the analyses. Johnson and Hall (1988) suggest that social support and work control are closely related and that the link between them should be considered in future studies.

In our cross-sectional analysis we found some associations between rowdiness and ill health among girls only. The analysis of changes between grade six and nine showed that boys experienced a higher degree of rowdiness. However, rowdiness was not a significant factor that contributed to ill health development or changes in self-worth in a longitudinal perspective among the pupils. It is possible that a more differentiated concept, a factor related to noise or to insecurity and conflict should be used in future studies.

The significant increase in indoor climate problems at school between 1994 and 1997 was not related to the pupils’ health development. In school surveys there are conflicting results regarding the effects of the indoor environment on self-reported health (Andersson, 1998). In accordance with our results, an incidence study of headache among school children shows only a slight tendency to correlation between the indoor climate and headache, while social, psychological and emotional factors seemed to be more important (Brattberg, 1994).

Was sexual harassment at school associated with girls’ higher degree of psychological symptoms compared with boys? (Paper III)
In the third paper we wanted to further investigate possible explanations why especially the older girls’ health became poorer during the three-year follow-up. The cross-sectional analyses showed that sexual harassment was the most important factor, which was associated with psychological symptoms among girls only.

We do not proclaim that sexual harassment does not have a negative impact on boys, but the relatively few boys in the high symptom group together with only a few boys reporting sexual harassment probably decreased the possibility to obtaining a significant result. It is, however, possible that boys do not experience sexual
harassment as a threat to the same degree as girls due to girls’ more subordinated position at school (Paechter, 1998).

Our results show that sexual harassment is a more common experience among girls than boys. These findings are in concordance with several other studies, for example two American studies (Fineran and Bennett, 1999; Roscoe, Strouse and Goodwin, 1994). Compared with our study, they found a higher prevalence of sexual harassment among the boys, which could be due to the more diverse questions used in their studies. In our measure of sexual harassment we used only questions related to the body. The reason was that verbal harassment, like calling peers “fag” or “whore”, has become so common in many schools that it almost normalised. Therefore, the pupils do not always regard them as sexual harassment.

An American study shows that the most common forms of school-based peer sexual harassment is being the target of sexual comments, jokes, gestures, or looks, and being touched, grabbed or pinched in a sexual way (Kopels, and Dupper, 1999), i.e. similar to the variables used in the index in our study. There is a need to differentiate between the perpetrators, such as whether it is same-sex harassment or if it is a peer or an adult, which can have differing significance for the experience (Fineran and Bennett, 1999). Thus, there is a need to further develop questionnaires regarding sexual harassment. The results in our study could be seen as an indicator of the importance of including sexual harassment in analyses of gendered school-related health.

The association between a negative body image and a high degree of psychological symptoms disappeared among both boys and girls in the multivariate analysis. It is likely that a negative body image partly can be explained by negative experiences connected to the body, e.g. sexual harassment (Dahinten, 1999). There are studies showing the importance of body image, especially weight concerns, for depressed mood among adolescent girls (Wichstrom, 1999). A review by Hankin et. al. (1998) concludes that a negative body image seems to mediate gender differences in depressed mood. However, as these results seem to be valid only among white girls (and not among African-Americans girls) they need to be discussed in a larger cultural context. The connection between sexual harassment and body image can be discussed in relation to theories about the gendered meaning of puberty and sexuality. During puberty adolescents are more focused on their body as well as on their sexuality. As girls develop through puberty they learn that they are headed toward a female sexuality that is derogated (Martin, 1996). Increased vulnerability due to bodily changes in puberty, together with negative actions such as sexual harassment, could be a part of the explanation for a high degree of psychological symptoms among girls in grade nine compared with boys.

The connection between sexual harassment and ill health needs to be discussed from a gendered power perspective. Francis (1997) has studied the negotiation of power between boys and girls at school and found that gender is commonly a source of discrimination, mostly practised by boys against girls. She argues that, besides enforcing power relationships by a range of practices, from verbal abuse to physical
violence, harassment may be a strategy in the construction of a masculine gender identity. Her findings is in accordance with the results from our qualitative study, which showed that one strategy used by the boys in order to gain power over the girls, was to abuse them both physically, verbally and sexually.

If sexual harassment is not taken seriously at school, or even ignored as a problem, there are several negative consequences, especially for girls. Berman et. al. (2000) have outlined factors related to a normalisation of sexual violence against girls at school. If sexual harassment is frequent, the schools ignore its occurrence, and if there are no consequences for the perpetrators there is a risk that both boys and girls get the message that this is acceptable behaviour. At the same time, girls’ experiences are trivialised, their safety is undermined and their self-worth decreases.

Could confounders be identified in relation to social background? (Papers I – IV)
With few exceptions, unfavourable social background changes were not associated with ill health in our study. In a review of social inequalities in health among young people, West (1997) concludes that there is an equalisation in health during school years. An explanation could be that the status in the peer group at school has significant consequences for psychological well-being. Thus, the cross-class influences could balance the risks of ill health. Therefore, there is a possibility that school can play an important role in reducing health inequalities among pupils, although no such conclusion can be drawn from the results of our study. A recent report from a study in Stockholm has studied psychological ill health among pupils in grade nine in different socio-economic areas (Öfverberg and Bremberg, 2000). The authors found that structural, organisational and pedagogic factors at the schools were more important for the prevalence of psychological symptoms among pupils than the socio-economic status in the area. Potential gender differences in this study were not analysed.

Some studies suggest that the effect of social background varies for boys and girls. Gore, Aseltine and Colton (1992) found that boys in stepparent households under conditions of moderate family economic resources were particularly distressed, but the analysis did not show this relationship for girls. They also found that a lower socio-economic family situation was associated with mental health among girls only. Paper IV showed that there were a few predictors in grade six related to family factors. Tobacco and alcohol consumption among boys and to a lesser extent physical inactivity and weight concern among girls could be predicted by family factors, especially divorced parents.

The American Academy of Pediatrics (2000) suggests that there are interactional relationships between gender, race/ethnicity and socio-economic conditions but that the mechanisms not yet are understood, particularly not among children. They suggest more research to be able to develop effective strategies for health promotion.

An earlier Swedish longitudinal study shows that a social risk environment at the age of 16 (not living with both parents, living in overcrowded conditions and low socio-
economic status) could contribute to future alcohol consumption among the boys but not among the girls (Hammarström, 1986). The reasons why social background factors are shown to be more related to alcohol consumption among boys are not fully understood. A gender analysis could include an explanation related to the construction of masculinities. Men’s more negative health behaviour regarding e.g. alcohol has been suggested to be explained by the construction of masculinities, which also is interacting with social background factors (Courtenay, 2000).

It is also possible that social background factors affect health among young people through health behaviour, but that this not is measurable until later ages.

Could school-related factors predict future health behaviour among young adolescents? (Paper IV)
The best predictor for health behaviour among boys and girls in grade nine were factors related to earlier health/health behaviour. However, some of these predictors could also be important from a school perspective. As the use of analgesics is a strong predictor for future tobacco consumption among boys and weight concern among girls, the school nurse could pay more attention to pupils who ask for analgesics. The school nurses in the intermediate stages could also improve preventive work among pupils who have tried to smoke, as well as those with psychological symptoms and those who do not wear bicycle helmets. The teachers could play an important role and be observant of pupils who are negative to physical education and have a low activity level during leisure time.

Our results also indicate that school-related factors could predict future health behaviour, especially in relation to low physical activity among girls. Two school variables were more often than others found to be risk factors. One of them was difficulty in sitting still at school, a variable which could be interpreted in different ways. One reason for difficulties in sitting still could be the psychosocial climate in the classroom (e.g. stress, dissatisfaction etc.), while another reason could be restlessness, related to individual psychological ill health. However, from a preventive perspective the teachers have opportunities to identify this as risk behaviour.

The other important school variable was negative attitudes towards physical education, which was a predictor not only of later physical inactivity but also of later high alcohol consumption among girls and weight concern among boys. These results are in accordance with a cross-sectional study, which showed that satisfaction with physical education at school is related to physical activity during leisure time (Vilhjalmsson and Thorlindsson, 1998). Beside these two school variables, three others (classmate problems, rowdiness and teasing classmates) were predictors among girls for future low physical activity and to a lesser extent for high alcohol consumption.

Our results indicate that the school could have a crucial role as an arena in health promotion and are in accordance with some of the few studies within the field. Kunesh et. al. (1992) found that negative peer interactions lead to avoidance of future physical
activity involvement, and also that boys are the major source of negative peer treatment of girls. Adolescents who have problems with social relations with peers are less involved in physical activities that include participation in teams (Page and Tucker, 1994).

Early psychological symptoms were a predictor for tobacco consumption and high alcohol consumption among boys. A longitudinal study on smoking in adolescence did not provide support for earlier mental health problems being a risk factor for smoking at age 15 (McGee, Williams and Stanton, 1998). It is nevertheless important to identify boys at school with psychological symptoms, and to create an environment that prevents psychological ill health among pupils at school more generally.

Although our study started among 12-year-olds, our main findings were that unfavourable health/health behaviour were the most important predictors for future unfavourable health behaviour. The relative risks as well as the specificity scores were high and the sensitivity scores were quite high. Similar findings were reported in an eight-year follow-up of school students (grade 4-6 to grade 10-12), where past smoking was the best predictor for future smoking (Pederson and Lefcoe, 1987). One of the few longitudinal studies focusing on predictors for physical activity among young people shows that the best predictor for low physical activity level in junior high school was a low activity level at elementary school (Garcia et al., 1998).

So far, little research has paid attention to the possible health effects of different femininities. Emphasised femininity, the form which has attracted most attention, is however mentioned in relation to weight concern among girls who try to adjust to a stereotyped female body (Bordo, 1993). It is possible that a gender analysis of girls’ higher degree of weight concern could partly explain why girls have a higher degree of eating disorders than boys. A deeper understanding of the construction of different femininities could possibly explain both advantages and disadvantages for the health of girls.

An important notion, however, is that identifying risk factors does not enable individual predictors to be made with great accuracy. It is a probability statement, not a prediction of future fact, but of a future risk (Climent, de Aragon and Plutchik, 1990).

What is the meaning and importance of pupils gendered strategies in their negotiation of power in the classroom? (Paper V)
In our qualitative study we have described a number of gendered strategies in the negotiation of power among boys and girls at school and their potential for reconstruction of gendered power relations. As there is a lack of studies on gendered strategies among pupils related to power and health issues, we will first discuss the strategies identified in our study in relation to pedagogic gender research.
The strategies identified among the girls in our study have been described in pedagogic gender research. Francis (1997) defines six different types of strategies used by girls against the sexism they meet at school: (1) telling a teacher; (2) rebuking the sexist person; (3) ignoring the sexist person; (4) arguing for equality; (5) collective resistance; and (6) demonstration of equality. The fourth and sixth strategies are not found in our study, which could be explained by the different focus of the studies.

Building alliances by supporting each other in girls’ groups was a prerequisite for daring to protest against the boys. Equal opportunity projects have been shown to increase the likelihood of girls supporting each other (Kenway and Willis, 1998). Girls need mutual support to deal with harassment from boys (Paechter, 1998) and the most effective way of challenging sexism is through collective resistance (Francis, 1997).

Resistance has also been described in other studies. Girls in classes with equal opportunity projects can be empowered to defend themselves against gender-based harassment (Kenway and Willis, 1998; Kruse, 1992). Even in schools without equal opportunity projects girls can protest against sexual harassment, e.g. by telling the boys off (Francis, 1997).

Girls in our study seemed to take more responsibility at school than the boys (Paper I). Responsibility-taking, which in our culture is an important aspect of a predominant form of femininity, may reinforce the hegemonic masculinity among the boys in the class (Kenway and Fitzclarence, 1997).

Similar strategies to those used by the girls in our study can be found in the literature about coping and stress. Whereas our study revealed a gendered pattern of strategies, formed in a context of asymmetric power relations, studies on coping place their emphasis on personal characteristics and make the power aspect invisible by e.g. claiming that coping strategies are invariant with respect to gender (Sandler, Tein and West, 1994).

Research on equal opportunity projects suggests that boys may react with increased dominance strategies, when girls acquire more space (Kenway, 1996). An Australian study concludes that equality work is challenging to certain masculinities, and that boys adopt strategies in order to reassert their dominant position and control. Kenway (1996) found that boys in schools where teaching methods support equal opportunities felt discriminated against, and claimed that giving girls more space was against the natural order. This resulted in mastering strategies among boys, aiming at punishing the girls and taking back the superior position of the male. Action research has shown that it is more difficult to change boys’ dominant behaviour than to support a more assertive style of behaviour among girls (Ve, 1992; Berge and Ve, 2000).

However, studies from schools without gender equal opportunity projects show similar dominant behaviour among the boys. The construction of hegemonic masculinity among boys at school includes sexual harassment of girls (Mahony, 1985; Francis, 1997), taking space and place in the classroom (Gordon, 1996; Paechter, 1998) as well
as abuse of girls (Kenway and Fitzclarence, 1997). Physical violence is a way for boys and men to gain power over women (Bacchi, 1998), and the negative effects on health of sexualised violence are well-documented (Schwartz, 1991; Heise, 1993).

Our model of the gendered struggle for power was inspired by Stina Jeffner, who has studied adolescents' understanding of rape. She analyses how unequal gendered space is created through the conceptions of rape in young heterosexual relations (Jeffner, 1998).

Overall, the main categories for negotiation of power were the same in the older and the younger class. This finding is supported by other studies (Francis, 1997). However, the context in which the strategies were developed differed to some extent between the two classes (e.g. a supportive and united group of girls in the older class). Furthermore, the older class had longer experience of the equal opportunity project.

It might be useful to differentiate between different models of power in public health (Hammarström and Ripper, 1999): (1) Power as an individual attribute could mean the ability to control others through e.g. physical strength. (2) A pluralist structuralist model of power recognises power as an oppressive force related to e.g. the gender regime (Connell, 1996a), which negatively affects the social distribution of health.

Most research on power and health has been performed on individual power, measured as lack of control, which has been shown to be an important ill health mediating factor among adults at work (Aronsson, 1989) as well as among pupils at school (Hammarström, Janlert and Theorell, 1988).

Harassment is a normal practice for some boys, and it is not only a strategy for control over girls, but also over other boys as well as over teachers (Kenway and Willis, 1998). The way in which the boys strive for increased power and dominance over the girls in our study through different mastering techniques could illustrate a structuralist model of power, based on hierarchies and dominance which is not expandable. Power over others may lead to increased individual control and better health for the boys at the top of the hierarchies, but could also have emotional and physical costs, associated with the stress and violence needed to maintain the hierarchies (Connell, 1996b). Besides, the mastering techniques might have debilitating consequences for the pupils that are exposed to them. A more democratic style of behaviour, where the boys negotiate their will and develop a method to increase their control through participation, could be beneficial for their health as well as for the health of other people.

There is also a risk that girls' active struggle for increased power at school is made invisible, and if school does not pay attention to the girls' own efforts there are reduced possibilities for changed power relations between boys and girls (Kenway and Willis, 1998).
What are the implications of our findings for school health promotion?

An overall perspective in my view of health promotion at school is that the pupils are seen as active participants with possibilities to influence their school environment from an individual as well as collective perspective. Participation and power are important concepts in the new public health as they are seen as processes that have indirect and direct effects on health. Participation can lead to improved health indirectly by making decisions and changes relevant to the pupils at school, and it can also have positive effects on self-esteem and feelings of control and thus have a direct effect on health (Baum, 1998).

There are some examples of successful interventions at the community level. A Swedish study shows that health and health behaviour are more positive among pupils in grade seven and nine in a municipality that has long-term strategies for health promotion compared with two other municipalities without such programmes (Berg Kelly et. al., 1997). A common explanatory factor such as different socio-economic background in the communities was not valid as an explanation for the more successful community as all three communities had about the same social structure.

The Health Promoting School concept has emerged throughout the world during the last few decades. It is working parallel with the general health promotion strategies in society. In summary, a health-promoting school is formed by a combination of curriculum development, action to improve the school environment and improve the links between the family and the wider community (Nutbeam, Farley and Smith, 1990).

Schools are regarded as cost-effective sites for health promotion interventions, but they can not solve health and social problems in isolation from other forms of public health actions in society (St Leger and Nutbeam, 2000).

So far, the school health promotion programmes have lacked an awareness of gender. Pupils are mentioned as a homogeneous group of people, with a focus on their low degree of influence and power in relation to adults. However, as my thesis has showed there are gendered asymmetric power relations between the pupils. It is likely that gendered power dynamics between pupils at school have both direct and indirect effects on health through academic performance, participation, sense of entitlement in the classroom, risk taking, as well as in relation to violence, bullying and sexual harassment (Connell, 1996b).

From our results the following suggestions could be made for school health promotion:

Pupils with intrinsic symptoms such as psychological symptoms are more difficult to recognise than more extrinsic and probably more disturbing behaviour at school. Girls have a more negative health development between grade six and grade nine and it is important to increase the understanding of possible factors in the school environment that can prevent a worsening of health and promote a healthier environment. Intervention strategies should be developed and evaluated.
There must be an increased awareness of how important it is for the pupils to have a school environment where they experience an individual optimal situation with regard to control and demands. At the same time, there is a need to consider the asymmetric gendered division of power as well as the gendered strategies in the negotiation of power among pupils at school. The teachers should encourage democratic strategies for increased power among pupils in subordinate positions. They should also find ways for encouraging health promoting femininities and masculinities at school.

Classmate relations were found to be the most important factor associated with ill health and self-worth at school. Thus there is a need to develop methods to improve relations between pupils, not only to prevent bullying and other classmate problems, but also to promote supportive relations between the pupils. The social dimension in school health promotion is important as good health not is possible without the ability to establish constructive social relationships and be socially integrated (Hurrelmann, Leppin, and Nordlohne, 1995). The promotion of a more supportive environment in class could also decrease the risk of rowdy lessons.

Bullying is unacceptable, and most schools have action plans against bullying. However, our study implicates that more actions need to be taken in schools against bullying. Our results indicate the importance of sexual harassment for girls’ negative health development. Gender-based harassment such as sexual harassment is to a lesser degree acknowledged as a problem at schools, and few schools have programmes against it. Sexual harassment should be regarded as a gendered power-related health problem, and actively targeted in school health promotion.

Our results point out the important role for schools in preventing future negative health behaviour. Instead of focusing on single health behaviours a more comprehensive view is recommended. St Leger and Nutbeam (2000) suggest that school health promotion and education interventions are effective at increasing knowledge, developing skills and supporting health-enhancing behaviours when (1) the focus is on cognitive and social outcomes as a joint priority with behavioural change; (2) programmes are comprehensive and holistic, linking the school with agencies and sectors dealing with health; (3) the intervention is substantial, over several school years, and relevant to changes in young people’s social and cognitive development; (4) adequate attention is given to capacity building through teacher training and provision of resources.

A gender perspective in education is not something that should be regarded as added to an already saturated curriculum at school, but in fact an omitted but nevertheless important part of the Swedish curriculum.
Connell (1987, 1996) and Kenway (1998) have outlined suggestions for restructuring of gender relations at school. The following suggestions for health promoting schools have been inspired by their work:

To be effective, the whole school must be involved and there must be changes at the institutional level. School principals, teachers and other staff need increased knowledge about gender issues. Teacher training institutions and further education should include more knowledge of social construction and gender in general. They need to increase their awareness of gendered power and power relations to be able to work efficiently against gender-based harassment as well as harassment among pupils in general.

At the organisational level there is a need to review the teaching material, education, gender division of labour, power relations among the staff, symbols related gender, definition of knowledge etc.

A common method to use in equality gender projects is to segregate boys and girls during certain hours (gender-specific education). The girls are more often in focus and in most cases the lessons with the girls are more successful, but there is a need to include boys in these projects and to develop methods to decrease boys' dominance at school (Gilbert and Gilbert, 1999). According to Connell (1996) there are benefits for most of the boys as well. He proposes three main goals in the educational strategies in work with boys: (1) self-knowledge, where they learn about themselves as gendered beings; (2) developing the boys capacity for relationships; and (3) learning antisexist behaviour. Connell also calls attention to the need of gender-relevant programmes, i.e. programmes involving both boys and girls. Such programmes address gender, however avoiding gender distinctions.

A challenge for future public health research is to find the mechanisms and methods for improved health and health behaviour among both girls and boys.

CONCLUSIONS

The main findings in this thesis indicate the importance of the psychosocial school environment for pupils' health. The conclusions from the specific research questions are summarised below:

1. An increased degree of control at school, in combination with decreased demands, was associated with improved health among both boys and girls in compulsory school.

2. The most important ill health mediating factor for both the boys and the girls was poor classmate relations.
3. Sexual harassment at school was associated with an increased risk of girls reporting a high degree of psychological symptoms in grade nine, even after control for confounders.

4. Social background factors seemed to be less important for the pupils' health and self-worth than psychosocial factors at school.

5. Schools have an important role to play in the identification of future unfavourable health behaviour among pupils at school, both directly by recognising school-related risk factors and also indirectly by paying special attention to pupils with unfavourable health and health behaviour.

6. The qualitative analysis revealed a picture of an asymmetric distribution of power between boys and girls in compulsory school. Some of the girls strategies had a potential for restructuring the gendered power relations and thus for improving their health.

7. School health promotion need to be more gender sensitive, through increasing the awareness of the gender regimes at school and addressing the asymmetric and gendered distribution of power between pupils. Democratic strategies for increased power among pupils in subordinate positions should be encouraged and methods need to be developed in order to encourage health promoting femininities and masculinities at school.
ACKNOWLEDGEMENTS

Others have described the research process as e.g. a journey, a pregnancy or entering a ship. My metaphor has been a long, drawn-out walk up a hill. I have been striving upwards with a heavy rucksack, it has been raining and stormy, stones have been rolling down, trying to impede my progress. It seems as if I am close to the goal. There are many reasons: all of you who have supported me along the way. Everyone who has pushed me, encouraged me, held an umbrella and given me energy. I can not mention everyone by name, but I express my sincere gratitude to all of you.

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West, P. (1997) Health inequalities in the early years: is there equalisation in youth? Social Science and Medicine, 44, 833–858.


Öfverberg, C, and Bremberg, S. (2000) Går det att förklara varför ungdomars psykiska hälsa är bättre i vissa skolor? En studie av skyddsfaktorer i olika skolmiljöer. [Is it possible to explain why young people's mental health is better in some schools? A study of protective factors in different school environments. In


Validation of some of the concepts in the questionnaire in the focus groups

As few questionnaire studies about school environment and health have been performed with 8-year-old children (the youngest children in the pilot study), some of the concepts in the questionnaire were validated in the focus group interviews described above. The concept of stress was a major theme in grade two and grade five in the first focus groups. Self-worth was one of the main themes in the next focus groups, while themes and questions regarding influence at school were focused on in the following focus groups. The main objective was to elicit the pupils’ perspectives and understandings of the concepts.

Stress

The pupils in grades two and five had no difficulties in explaining what they meant by stress. One aspect of stress was related to the use of time and the schedule at school.

"You hurry up...you don’t want to be late.”

Stress was also related to the consequences of not being in time:

“...stressful to come late so that you get detention.”

Another aspect of stress was related to quantitative demands at school, such as not having enough time to do the homework. “...and you don’t have time to go to school or do your homework, then I feel stress.”

Self-esteem

Four dimensions of self-esteem were found among the boys and girls in this study. Self-esteem could relate to different things in different situations. “It depends on the situation.”

One dimension was connected to self-worth, i.e. an inner feeling of worth as a person. A girl in grade four said: “You should be as you are, you shouldn’t out it on.” Another one said “You shouldn’t be influenced by others.” A girl in grade four continued: “You mostly think about it to yourself, that it went well, but you don’t go around saying it.” The girls did not associate self-esteem with something that you had to show to other people. A boy in grade three said: “Self-esteem is believing in oneself, this is something I have to manage.”

The second dimension was connected to competence, having the feeling that you are a competent person, even if you are not successful in the subjects at school:

“At school, when you do well, then you can feel confidence.”

The third dimension in the self-esteem concept was connected to assertiveness, i.e. being visible and being assertive enough to speak up. The girls told us of self-esteem connected with singing solo compared to singing in the choir. Self-esteem could be related to speaking up in class, even though being quiet did not necessarily mean having low self-esteem.
The fourth dimension was connected to body-image. This dimension was mentioned among the older girls. “I think that affects you a lot.” They identified things that affected their body image and self-esteem. “Let’s say that you’re having fun, then you don’t think so much about the way you look, and whether you have, like... But if someone has said something bad about you...like good-looking [ironically], then you might go round thinking about it...”

**Influence at school**

Influence in the school situation was a recurrent theme in our interviews. Our understanding during the years was that the pupils had a lot to say about influence at school and what it meant to them. The concept of control is often used in work environment research, but in the discussion with the pupils the words influence or participation in decisions at school were used. Generally the pupils thought that it was important to have influence at school, and they discussed this concept from many different aspects and on many different levels. The older pupils were more aware of the structural level of influence, and expressed problems regarding what they actually had the possibility to influence. They discussed the impossibility of affecting factors such as the national curriculum as well as the scarce resources allocated to the schools in the community.

The possibility of having influence at school through the pupils’ council was restricted. It could give some selected persons a possibility to participate in decisions in the council, but the things they were able to decide about in those councils were not found to be of great importance: “it’s about things like the colour of the curtains in the café.”

Influence connected to the organisation of school work was not mentioned as being important. Some pupils mentioned the meaninglessness of influencing certain tasks in their timetable, for example, when tests should be done, or when to have certain subjects. “The teachers know that as well as we do, what does it matter if we work with electricity in week eleven or week twelve?”

It seemed to be more important for the pupils to be able to influence what they actually had to learn at school. “Depending on the person you are, you need to learn different things... It feels stupid to learn something for someone else, then it’s completely meaningless”.

Some teachers seemed to understand more than others what the pupils needed in order for the school work to feel meaningful: “Well, she probably has more understanding for the children, that they want to work as they feel for it, and then she take a chapter that we, you now, that we can be interested in, more like music and that, so that we can work with our own things, you know, she usually gives us just something small that you have to do that we don’t just sit there.”
It was also accepted among some pupils that the teachers made decisions for them and decided what to do, "otherwise it is possible that we only decide to do things that are fun." They could accept doing boring things as long as it felt useful.

Having influence at school was difficult for quiet pupils, while those who could speak up in class were found to have more influence on decisions: "What I think is a pity is that it's often the ones who are quiet that have the hardest time in school. And the ones that talk, that answer for everybody, it's easier for them."

A conclusion to be drawn from the above results is that the most important things for the pupils' influence on or control at school was to have meaningful tasks, that the teacher knows well enough what they want to be able to work at their own level, to be able to speak up in class, and in older ages also to have an influence on the curriculum and the allocation of resources to school in the community. A solution presented by a group of girls was to put democracy on the timetable, having one hour every week when the teacher could assist and lead discussions about pupils' democracy. "Because the things we can control are completely uninteresting."
APPENDIX 2

A page from the questionnaire in grade three.

17. Hur ofta äter du frukost innan du går till skolan?
- varje dag
- nästan varje dag
- flera dagar i veckan
- någon dag i veckan
- aldrig

18. Använder du cykelhjälm när du cyklar?
- alltid
- ofta
- ibland
- sällan
- aldrig

19. Äter du ibland mindre för att bli smalare?
- alltid
- ofta
- ibland
- sällan
- aldrig

Nu kommer några frågor om dig och hur du mår?

20. Tycker du att du duger precis som du är?
- alltid
- ofta
- ibland
- sällan
- aldrig

21. Hur mår du oftast?

[Smiley icons with associated radio buttons]
APPENDIX 3.

One week test-retest reliability of indices used in this thesis in the third and the sixth grades (intraclass correlation).

<table>
<thead>
<tr>
<th>Index</th>
<th>(3^{rd}) grade</th>
<th>(6^{th}) grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-worth(^a)</td>
<td>0.47</td>
<td>0.76</td>
</tr>
<tr>
<td>Tiredness</td>
<td>0.73</td>
<td>0.93</td>
</tr>
<tr>
<td>Somatic problems</td>
<td>0.65</td>
<td>0.94</td>
</tr>
<tr>
<td>Stress(^b)</td>
<td>0.64</td>
<td>0.83</td>
</tr>
<tr>
<td>Psychological symptoms</td>
<td>0.75</td>
<td>0.79</td>
</tr>
<tr>
<td>Analgesics the last two weeks(^c)</td>
<td>-</td>
<td>0.63</td>
</tr>
<tr>
<td>Use of bike helmet</td>
<td></td>
<td>0.93</td>
</tr>
<tr>
<td>Physically active at leisure time</td>
<td></td>
<td>0.86</td>
</tr>
<tr>
<td>Eat less to lose weight</td>
<td></td>
<td>0.74</td>
</tr>
<tr>
<td>Ever tried smoking (smoked on a sly)(^c)</td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>Negative to physical education</td>
<td></td>
<td>0.87</td>
</tr>
<tr>
<td>Difficulties sitting still</td>
<td></td>
<td>0.73</td>
</tr>
<tr>
<td>Teasing classmates</td>
<td></td>
<td>0.66</td>
</tr>
<tr>
<td>Classmate problems</td>
<td>0.86</td>
<td>0.87</td>
</tr>
<tr>
<td>Achievement orientation</td>
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<td>0.76</td>
</tr>
<tr>
<td>Relational orientation</td>
<td>0.75</td>
<td>0.91</td>
</tr>
<tr>
<td>Rowdiness(^b)</td>
<td>0.63</td>
<td>0.88</td>
</tr>
<tr>
<td>Teacher support(^c)</td>
<td>-</td>
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<tr>
<td>Demand</td>
<td>0.62</td>
<td>0.71</td>
</tr>
<tr>
<td>Control</td>
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<tr>
<td>Support</td>
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<td>0.89</td>
</tr>
<tr>
<td>Live with both parents</td>
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<td>0.97</td>
</tr>
<tr>
<td>Foreign background(^c)</td>
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<td>Mother unemployed</td>
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<td>1.0</td>
</tr>
<tr>
<td>Father unemployed</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

\(^a\) One question only in the third grade

\(^b\) One question only

\(^c\) The question is asked in the sixth grade only
APPENDIX 4

Percentages of pupils answering “always” or “often” on variables used in the quantitative studies. Data are from 1994 in grade three and from 1997 in grade six and nine. The sign '-' means that the question was not asked in that questionnaire. Gender differences are analysed with chi square test, * p<0.05, **p<0.01, ***p<0.001.

<table>
<thead>
<tr>
<th>Health variables</th>
<th>3rd grade</th>
<th>6th grade</th>
<th>9th grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls</td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>headache?</td>
<td>14.6</td>
<td>18.7</td>
<td>23.7</td>
</tr>
<tr>
<td>stomach-ache?</td>
<td>11.5</td>
<td>15.2</td>
<td>13.4</td>
</tr>
<tr>
<td>backache?</td>
<td>-</td>
<td>-</td>
<td>9.3</td>
</tr>
<tr>
<td>Nausea?</td>
<td>-</td>
<td>-</td>
<td>5.0</td>
</tr>
<tr>
<td>feelings of guilt?</td>
<td>-</td>
<td>-</td>
<td>10.2</td>
</tr>
<tr>
<td>difficulties to fall asleep?</td>
<td>35.8</td>
<td>32.4</td>
<td>17.9</td>
</tr>
<tr>
<td>tired before school?</td>
<td>43.9</td>
<td>43.0</td>
<td>52.5</td>
</tr>
<tr>
<td>tired?</td>
<td>36.6</td>
<td>31.1</td>
<td>28.2</td>
</tr>
<tr>
<td>anxious?</td>
<td>-</td>
<td>-</td>
<td>8.6</td>
</tr>
<tr>
<td>worried?</td>
<td>16.0</td>
<td>8.6</td>
<td>6.7</td>
</tr>
<tr>
<td>depressed, sad?</td>
<td>5.8</td>
<td>6.2</td>
<td>6.7</td>
</tr>
<tr>
<td>nervous?</td>
<td>-</td>
<td>-</td>
<td>12.8</td>
</tr>
<tr>
<td>sad at school?</td>
<td>4.2</td>
<td>4.5</td>
<td>-</td>
</tr>
<tr>
<td>stressed?</td>
<td>16.2</td>
<td>14.6</td>
<td>20.7</td>
</tr>
</tbody>
</table>

Do you think you are good enough as you are? 71.5 82.4* 77.5 86.5 61.7 80.4***

Do you feel worth less than your classmates? - - 5.9 8.2 11.3 7.2

Are you satisfied with your....

<table>
<thead>
<tr>
<th>Looks?</th>
<th>75.0 86.5* 58.3 78.2** 41.7 63.8***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height?</td>
<td>77.5 87.5* 56.7 82.7*** 58.9 67.4</td>
</tr>
<tr>
<td>Weight?</td>
<td>68.1 83.3** 48.3 63.2* 33.3 61.6***</td>
</tr>
<tr>
<td>Body?</td>
<td>- - - - 29.8 60.9***</td>
</tr>
</tbody>
</table>

Health behaviour variables

Do you use a bike helmet when you go bicycling? 94.2 80.5** 64.2 51.1* - -

Have you used analgesics during the last two weeks? 1) - - 13.6 14.7 37.5 15.5***
<table>
<thead>
<tr>
<th></th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; grade</th>
<th>6&lt;sup&gt;th&lt;/sup&gt; grade</th>
<th>9&lt;sup&gt;th&lt;/sup&gt; grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls</td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>Have you ever tried smoking? (smoked on a sly)&lt;sup&gt;1)&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>19.3</td>
</tr>
<tr>
<td>Do you use snuff?&lt;sup&gt;2)&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Do you smoke?&lt;sup&gt;2)&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Have you drunk alcohol in the last 12 months?&lt;sup&gt;3)&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Do you feel intoxicated while drinking?&lt;sup&gt;4)&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>How often are you physically active at leisure time?&lt;sup&gt;5)&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>40.3</td>
</tr>
<tr>
<td>Do you eat less to lose weight?</td>
<td>5.0</td>
<td>10.6</td>
<td>9.2</td>
</tr>
<tr>
<td>Do you wish that you weighed less?</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Are you concerned with what you eat in order to not become fat?</td>
<td>-</td>
<td>-</td>
<td>25.8</td>
</tr>
<tr>
<td>School variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you like physical education at school?&lt;sup&gt;6)&lt;/sup&gt;</td>
<td>81.7</td>
<td>90.2</td>
<td>83.3</td>
</tr>
<tr>
<td>Do you sometimes feel left out of the group?</td>
<td>11.4</td>
<td>9.7</td>
<td>11.7</td>
</tr>
<tr>
<td>Do you talk about almost everything with a friend?</td>
<td>40.7</td>
<td>38.2</td>
<td>75.5</td>
</tr>
<tr>
<td>Are you sometimes alone without wanting to be so?</td>
<td>-</td>
<td>-</td>
<td>4.2</td>
</tr>
<tr>
<td>Are you afraid of other pupils at school?&lt;sup&gt;1)&lt;/sup&gt;</td>
<td>26.8</td>
<td>23.0</td>
<td>16.0</td>
</tr>
<tr>
<td>Do you have as many friends as wanted?</td>
<td>64.2</td>
<td>77.0*</td>
<td>71.7</td>
</tr>
<tr>
<td>Are you called rude words at school?</td>
<td>6.5</td>
<td>7.4</td>
<td>8.3</td>
</tr>
<tr>
<td>Occasionally a group of pupils together tease and quarrel with someone. Have you ever experienced that other pupils have done that to you?&lt;sup&gt;1)&lt;/sup&gt;</td>
<td>31.7</td>
<td>38.5</td>
<td>24.2</td>
</tr>
</tbody>
</table>
Have you received unwanted comments, e.g. about your body? ¹)

<table>
<thead>
<tr>
<th></th>
<th>3rd grade</th>
<th>6th grade</th>
<th>9th grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you been touched or pawed against your will? ¹)</td>
<td>-</td>
<td>-</td>
<td>37.1</td>
</tr>
<tr>
<td>Do you tease your classmates?</td>
<td>4.2</td>
<td>3.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Is it disorderly and rowdy in your classroom?</td>
<td>14.6</td>
<td>21.3</td>
<td>40.8</td>
</tr>
<tr>
<td>Do you have difficulties in sitting still?</td>
<td>12.7</td>
<td>19.5</td>
<td>10.8</td>
</tr>
<tr>
<td>Do you usually compete with your classmates about who's the best?</td>
<td>3.3</td>
<td>2.2</td>
<td>3.3</td>
</tr>
<tr>
<td>Is it important for you to win over your classmates?</td>
<td>1.6</td>
<td>5.9</td>
<td>13.3</td>
</tr>
<tr>
<td>Do you usually help classmates?</td>
<td>39.3</td>
<td>40.0</td>
<td>72.5</td>
</tr>
<tr>
<td>Do you usually comfort friends if they are sad?</td>
<td>74.0</td>
<td>46.3***</td>
<td>85.8</td>
</tr>
<tr>
<td>Do you usually try to make other people happy?</td>
<td>69.1</td>
<td>62.5</td>
<td>86.7</td>
</tr>
<tr>
<td>Do you usually notice if classmates are sad?</td>
<td>61.8</td>
<td>51.1</td>
<td>71.7</td>
</tr>
<tr>
<td>Do you usually praise your friends?</td>
<td>-</td>
<td>-</td>
<td>81.7</td>
</tr>
<tr>
<td>Do your teachers’ help and support you when needed?</td>
<td>-</td>
<td>-</td>
<td>76.7</td>
</tr>
<tr>
<td>Would your teachers notice if you were not happy in school?</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Do your teachers treat you fairly?</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Is there any adult to talk to at school if you get problems?</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Do you get praised by your teachers?</td>
<td>-</td>
<td>-</td>
<td>53.3</td>
</tr>
<tr>
<td>Do you usually ask your teacher if you don't understand?</td>
<td>74.8</td>
<td>61.9*</td>
<td>77.5</td>
</tr>
<tr>
<td>Question</td>
<td>3rd grade</td>
<td>6th grade</td>
<td>9th grade</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>Does your teacher care about your opinion?</td>
<td>60.2</td>
<td>59.3</td>
<td>73.9</td>
</tr>
<tr>
<td>Do you learn anything at school which may be useful for you as a grown-up?</td>
<td>-</td>
<td>-</td>
<td>85.6</td>
</tr>
<tr>
<td>Are the things you have to learn at school too difficult?</td>
<td>6.5</td>
<td>14.7*</td>
<td>4.2</td>
</tr>
<tr>
<td>Does your teacher give you too much homework?</td>
<td>-</td>
<td>-</td>
<td>13.3</td>
</tr>
<tr>
<td>Is the pace of schoolwork too fast?</td>
<td>-</td>
<td>-</td>
<td>10.0</td>
</tr>
<tr>
<td>Do your teachers demand too much?</td>
<td>-</td>
<td>-</td>
<td>2.5</td>
</tr>
<tr>
<td>Is it stuffy air in the classroom?</td>
<td>-</td>
<td>-</td>
<td>26.7</td>
</tr>
<tr>
<td>Is it adequate temperature in the classroom?</td>
<td>-</td>
<td>-</td>
<td>49.2</td>
</tr>
<tr>
<td>Are there dust and dirt in your classroom?</td>
<td>-</td>
<td>-</td>
<td>21.7</td>
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</tbody>
</table>

**Family related variables**

<table>
<thead>
<tr>
<th>Question</th>
<th>3rd grade</th>
<th>6th grade</th>
<th>9th grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you usually talk about almost everything with your mother?</td>
<td>57.7</td>
<td>49.6</td>
<td>81.7</td>
</tr>
<tr>
<td>Do you usually talk about almost everything with your father?</td>
<td>32.8</td>
<td>45.2*</td>
<td>38.0</td>
</tr>
<tr>
<td>Do you live together with both your parents?</td>
<td>73.8</td>
<td>77.8</td>
<td>73.9</td>
</tr>
<tr>
<td>Is your mother.... working?</td>
<td>76.3</td>
<td>77.4</td>
<td>84.7</td>
</tr>
<tr>
<td>unemployed?</td>
<td>4.2</td>
<td>6.0</td>
<td>5.9</td>
</tr>
<tr>
<td>studying or doing something else?</td>
<td>19.5</td>
<td>16.5</td>
<td>9.3</td>
</tr>
<tr>
<td>Is your father.... working?</td>
<td>88.8</td>
<td>90.7</td>
<td>91.4</td>
</tr>
<tr>
<td>unemployed?</td>
<td>4.3</td>
<td>3.1</td>
<td>6.9</td>
</tr>
<tr>
<td>studying or doing something else?</td>
<td>6.9</td>
<td>6.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Question</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Is your mother born abroad?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) &quot;yes, every day&quot;, &quot;yes, almost every day&quot; or &quot;yes, at special occasions&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) once a month or more often</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) every or almost every time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) once a week or more seldom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) positive answers on one to four out of nine answer alternatives</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) yes
2) "yes, every day", "yes, almost every day" or "yes, at special occasions".
3) once a month or more often
4) every or almost every time
5) once a week or more seldom
6) positive answers on one to four out of nine answer alternatives