Determinants of Depressive Symptoms in Adolescents
The Role of Sexual Harassment and Implications for Preventive Interventions
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Determinants of Depressive Symptoms in Adolescents. The Role of Sexual Harassment and Implications for Preventive Interventions.

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For all girls and boys
For equality
And for my son
Sat Nam
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Abstract

**Background**: Depression is considered the worldwide leading cause of illness and disability in young people and an urgent public health issue. Within the field of public health it is of interest to deepen the understanding of determinants of depressive symptoms (DS) that are possible to address on a political or an organizational level. Also, it is of great importance to find methods to prevent depression in adolescents. To address these issues, the present thesis had two **Aims**: I) To study determinants of DS in adolescents, and II) to, by means of a non-randomized pragmatic trial evaluation, investigate the effectiveness a cognitive-behavioral intervention (DISA) in a real-world setting in relation to determinants of DS in adolescent girls. This was addressed by asking a) Which determinants on individual, psychosocial and structural levels are associated with DS in adolescents? (Paper I); b) What are the directional pathways between sexual harassment (SH) and DS? (Paper II); c) Which features characterize students who were assigned to a cognitive-behavioral intervention regarding levels of DS, psychosocial aspects and socioeconomic status of the respondents as well as of schools? (Paper III); d) Does DISA have an effect on DS in girls aged 14-16? (Paper IV); and e) Are there differences between the DISA participants and non-participants in the effects of psychosocial and structural determinants on DS? (Paper IV).

**Method**: Data was collected in January 2010, 2011, and 2012, by means of a self-administered, electronic questionnaire in school. Students aged 14-16 in all nine public and one independent high school in a municipality in northern Sweden participated in the study (~1,000-1,200 students depending on the wave). All studies had DS as the single outcome variable. Individual level determinants were self-esteem and self-efficacy. Psychosocial determinants were parental/peer/teacher support; school demands; sexual harassment; and bullying. Structural determinants were family material affluence; parental foreign background, parental employment status; disrupted family, and personal relative affluence. Logistic regression was employed for research question a) (Paper I). Structural equation (SEM) cross-lag models were modeled for research question b) (Paper II). The Mann-Whitney U statistic was employed for research question c) (Paper III). SEM was used for research questions d-e) (Paper IV). **Results**: Determinants on individual, psychosocial and structural levels were independently associated with depressive symptoms in both genders. Self-efficacy, low teacher support, bullying victimization,
and low personal relative affluence was associated with elevated levels of DS in both genders (Paper I). In girls, low parental support, high school demands, and sexual harassment victimization (SH) were also associated with elevated levels of DS. Among boys, parental migrant background was also associated with DS. Among girls, both the targeting of girls with elevated DS, and the consequence of SH explained the relationship between DS and SH victimization over time. In boys, only the predating of DS explained the association between DS and SH (Paper II). Only girls were assigned to DISA during 2011 and DISA participants reported higher levels of DS and lower levels of self-esteem than the non-participants at pre-intervention, which indicates that DISA was used as a targeted intervention for girls with elevated symptoms. Also, DISA participants reported higher levels of SH victimization, less peer support, and lower personal relative affluence (Paper III). In contrast to the non-participants, DISA participants did not increase their mean scoring on DS at an eight months follow-up. However, SEM analyses showed that the effect of DISA participation on DS at follow-up was negligible (Paper IV). **Conclusions:** This study showed that SH victimization was an important determinant for DS in girls followed by personal relative affluence. Among boys, personal relative affluence and parental migrant background were the most important factors. SH victimization had mental health consequences in girls only. DISA was implemented as a targeted intervention rather than as selective or universal one, and did not have an effect on DS in this group of girls. Implications for further research and health promotion practice in the school setting are discussed.
Svensk sammanfattning

strukturell nivå var associerade med DS hos båda könen. Upptäckt förmoda att hantera problem i livet, låg lärarstöd, utsatthet för mobbning, och lågt personligt relativt välstånd var associerat med förhöjda nivåer av DS för både pojkar och flickor (Paper I). Bland flickor var dessutom lågt föräldrastöd, höga krav i skolan, och utsatthet för sexuella trakasserier (ST) också associerade med förhöjda nivåer av DS och hos pojkar var även föräldrar invandrarbakgrund associerat med DS. Bland flickor förklarades sambandet mellan DS och ST både av att flickor med förhöjda DS blev utsatta för ST, och av att ST ledde till senare DS. Hos pojkar var det endast att pojkar med DS blev utsatta för ST som förklarade sambandet (Paper II).


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Abbreviations and Terms

DISA: Depression in Swedish Adolescents, or Din Inre Styrka Aktiveras
CES-D: Center for Epidemiological Studies Depression Scale
DS: Depressive Symptoms
CWS: (the) Coping With Stress course
GDP: Gross Domestic Product
Gini Coefficient: A Gini coefficient of zero expresses perfect equality, and a Gini coefficient of one (or 100%) expresses maximal inequality among values.
GSE: Generalized Self-Efficacy
FAS: Family Affluence Scale
FIML: Full Information Maximum Likelihood
RCT: Randomized Controlled Trial
RFMLE: Robust Full Maximum Likelihood Estimation
SEM: Structural Equation Modelling
SH: Sexual Harassment
YHD-project: Youth Health Development project (Ungas Hålsosamma Utveckling)
Preface

In the mid-2000s, when I worked as a Public Health Officer at the Västernorrland County Council, I encountered the cognitive-behavioral program DISA, a study of which the current thesis is partly based on. At the time, my colleagues and I were eager to find concrete methods to implement locally in schools to address the urgent issue of poor mental health in our youth. When it was time for me to start my PhD project at Mid Sweden University in 2010, I had the opportunity to look closer at DISA, as a municipality had already implemented DISA in several schools. I was interested to know if DISA actually worked. In order to study this, quantitative methods seemed the obvious choice even though, right from the start, there was limitations to what study design could be used. Since no randomized controlled trial was possible, I was faced with the decision to do nothing or to do something. I chose the latter. So, despite obvious methodological challenges (the persistent reader will find out which they were), I embarked upon a quite bumpy road to investigate whether DISA could actually make a difference in terms of depressive symptoms in young people taking part in the program.

Waiting for the final DISA data to be collected in 2012, I conducted a baseline study of sorts, which was to become Paper I. That study became a real eye opener to me; sexual harassment was brought to my awareness as a crucial determinant of mental health, at least in girls. This set the course for a great part of the coming papers, even though I tried to pay heed of the other determinants as well.

To many people, quantitative methods may imply a distance to the (anonymous) studied object and seem quite different from e.g. interviewing people about their experiences as one may do in a qualitative study. Nonetheless, after six years with the same study population, the question about distance and closeness has not been that simple. I have felt a distance in the sense that sometimes, I wasn’t sure that I was doing these boys and girls justice – was I describing their reality in a way that would be recognizable and relevant to them? I must confess, that many times during the course of this study I have been fantasizing about being a fly on a school wall, trying to understand what’s really going on. At the same time, these kids have been on my mind nearly every day for six years, rendering these young people, albeit anonymous, unexpectedly close. Now, the treadmill of research grinding ever so slowly, they are all young adults bringing with them their experiences reflected here.

Njurunda, October 2016
Heléne Zetterström Dahlqvist
1 Introduction

In Sweden, as well as in the majority of Western countries, one of the most urgent public health issues in adolescence is poor mental health, such as psychological distress and depression (Patel, 2013; WHO, 2015). The World Health Organization (WHO) states that depression is the worldwide leading cause of illness and disability in young people (WHO, 2015) and the prevalence of poor mental health has increased substantially over the last three decades (Bor, Dean, Najman, & Hayatbakhsh, 2014; Bremberg, 2015; Collishaw, Maughan, Natarajan, & Pickles, 2010; Hagquist, 2010; Sweeting, Young, & West, 2009). Globally, major depression is estimated to affect 7.5-20% of adolescents, with higher prevalence among girls than among boys (Cheung & Dewa, 2006; Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012; Ritakallio, Kaltiala-Heino, Kivivuori, & Rimpelä, 2005).

A crucial risk factor for major depression is episodes of sub-threshold depression symptoms (Bennik, Nederhof, Ormel, & Oldehinkel, 2013; Eaton, Muntaner, Smith, Tien, & Ybarra, 2004; Seeley, Stice, & Rohde, 2009). There are, however, few studies that report the prevalence of actual sub-threshold depression symptoms in adolescents, but among those that do, the occurrence has been reported to be approximately 19-57% with higher prevalence in girls than in boys (Larsson, Ingul, Jozefiak, Leikanger, & Sund, 2016; Lipps et al., 2010; Mezulis, Stoep, Stone, & McCauley, 2011).

In Sweden, there is a lack of studies of the prevalence of adolescent sub-threshold depressive symptoms before the age of 18 in community-dwelling samples. The current study focuses on community-dwelling 14-16 years old adolescents and seeks to establish prevalence, but more importantly, what it is in the young people’s lives that influences the fact that some youth develop depressive symptoms while others do not. Determinants of poor mental health are factors that influence mental health negatively (Whitehead & Dahlgren, 2006) and The Green paper (European Commission, 2006) called for action in prevention of poor mental health by addressing the individual, the surrounding family and the community as well as social determinants of mental health. This study focuses on structural, psychosocial and individual related determinants – that is, determinants that can be either influenced by political decisions, by changes in the psychosocial environment, or by building individual resilience. Regarding the latter, the current study also seeks to understand how mental health determinants on different levels of society influence the
effects of a preventive intervention aimed at strengthening individual resilience in adolescence.

1.1 Major Depressive Disorder and Depressive Symptoms

‘Mental health’ is a broad term often implicitly including poor mental health. It ranges from mild self-reported symptoms to more severe psychiatric disorders. As one form of poor mental health, in the current study, depressive symptoms are measured as symptomatology in the last week (please refer to the Methods section for details). Depressive symptoms are, as discussed above, a significant risk factor for major depressive disorder (Bennik et al., 2013; Eaton et al., 2004; Seeley et al., 2009) and can be measured with different instruments, but in order to meet criteria for major depressive disorder, only measuring depressive symptoms at one time point is not sufficient. According to DSM V (American Psychiatric Association, 2013), to meet criteria for major depressive disorder, the patient must have had depressed mood most of the day, almost every day, indicated by his or her own subjective report or by the report of others with a persistence over two weeks in current symptomatology. Furthermore, symptoms must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. In the current study, only depressive symptomatology is measured and is considered a risk factor (among others) for major depressive disorder.
2 Background

2.1 Determinants and their Relations
Determinants of poor mental health in adolescence can be found on national structural, community, psychosocial, family, and individual levels (Viner et al., 2012). Public health science and epidemiology have traditionally theorized this in terms of ‘up-stream’ and ‘down-stream’, or ‘distal’ and ‘proximal’ determinants (Poteat, Rivers, & Scheer, 2016; Whitehead & Dahlgren, 2006), especially in relation to social determinants of health and causal pathways. Also, Bronfenbrenner’s ecological model (Bronfenbrenner, 1979) with the idea of determinants on micro, meso, exo, and macro systems determining health outcomes in the individual, has been very influential in public health science and epidemiology conceptualizing, see e.g. (Glass & McAtee, 2006; McLaren & Hawe, 2005). According to Krieger (2008), this line of thinking is usually based on the assumptions that “…(1) disease is attributable to many causes, located outside and within the body; (2) the social lies in the realm of the distal; (3) the biological belongs to the proximal; and (4) the distal and proximal are connected by levels, e.g., societal, institutional, household, and individual, which can be conceptualized as near to or far from the causes under consideration.” (Krieger, 2008; 221). Krieger (2008) argues against this idea and suggests an ecosocial approach where the terms proximal and distal should be replaced by explicit language about levels, pathways, and power. In the present study, I will draw upon ecosocial theory rather than traditional public health theory. I will, however, leave this discussion for now and extend on this in the later theoretical section. First, a review of what the empirical literature has to say about determinants on different levels.

2.2 Determinants of Poor Mental Health in Adolescents

2.2.1 Structural Determinants
On the structural level, socioeconomically disadvantaged adolescents have been shown to be two to three times as likely to have poor mental health, and that decreasing socio-economic status is associated with increased mental health problems (E. Goodman, Huang, Wade, & Kahn, 2003; Moor...
et al., 2015; Reiss, 2013). The inequality gap is not, however, only between the richest and the poorest. In high-income countries, neighborhood deprivation as such has been shown to be associated with poor mental health (C. Aneshensel & Sucoff, 1996; C. S. Aneshensel, 2009). In the U.S., the public health impact of low socioeconomic status in adolescents has been shown to have a population attributional risk (PAR) of 26% for household income and 40% for parental education (E Goodman, Slap, & Huang, 2003). Parental education and occupation as well as household income are common measures of adolescents' socioeconomic position (Reiss, 2013). However, in terms of studying health inequalities in adolescence, perceived family wealth and personal social position have been reported to have stronger associations to health inequalities (Koivusilta, Rimpelä, & Kautiainen, 2006; Moor et al., 2015). Goodman, Huang, Wade and Kahn (2003) have also shown that in the U.S., school context such as school size, school type, urbanicity, region of the country, and percentage of nonwhite students is associated with adolescents' depressive symptoms.

2.2.2 Psychosocial Determinants

Social context and psychosocial determinants of depressive symptoms have been proposed, e.g. school stress (Modin, Östberg, Toivanen, & Sundell, 2011; Moksnes, Løhre, Lillevold, Byrne, & Haugan, 2014; Ottová-Jordan et al., 2015) and social support (Brolin Låftman & Östberg, 2006; Landstedt & Coffey, In press; Lien, Hu, & Chen, 2016; Undheim & Sund, 2005). Also, interpersonal violence, such as physical and dating violence, bullying and sexual harassment victimization have been strongly implicated as risk factors for poor mental health (Bucchianeri, Eisenberg, Wall, Piran, & Neumark-Sztainer, 2014; Espelage & Holt, 2007; Gobina, Zaborskis, Pudule, Kalnins, & Villerusa, 2008; Gruber & Fineran, 2008; Landstedt & Gillander Gådin, 2011b).

2.2.2.1 Sexual Harassment Victimization as a Mental Health Determinant in Adolescence

There has been extensive research on the topic of psychological ill health and school bullying and risk factors for perpetration as well as victimization, e.g., (Hansen, Steenberg, Palic, & Elklit, 2012; Hong & Espelage, 2012). Common factors that have been suggested for both perpetration and victimization are factors related to peer support and peer group processes. Employing a feminist perspective, and including
sexualized harassment behaviors, will help illuminate the gendered nature of harassment patterns and its consequences for poor mental health. Sexual harassment victimization has indeed been shown to be an important determinant of poor mental health in adolescence, primarily among girls (Gillander Gådin & Hammarström, 2005; Gruber & Fineran, 2008; Landstedt & Gillander Gådin, 2011a). Nevertheless, in Sweden, there is a lack of studies of prevalence and development over time of sexual harassment victimization since the studies that do exist are generally cross-sectional e.g. (Gillander Gådin & Hammarström, 2005; Landstedt & Gillander Gådin, 2011b; Therése Skoog & Bayram Özdemir, 2016b; T Skoog, Bayram Özdemir, & Stattin, 2016; Witkowska, 2005). To my knowledge, there is no study regarding the prevention of sexual harassment in schools or in other locations.

Considered a form of gender-based violence, sexual harassment is commonly defined as unwanted or unwelcome sexual attention (Heise, Ellsberg, & Gottemoeller, 1999; Stein, 1995, 1999). Sexual harassment may take physical, verbal, non-verbal or visual forms (AAUW, 2001). However, depending on what items have been used to measure sexual harassment, other dimensions such as hostile environment have been proposed in adolescent populations (McMaster, Connolly, Pepler, & Craig, 2002; Stein, 1999; Vega-Gea, Ortega-Ruiz, & Sánchez, 2016; Witkowska & Kjellberg, 2005). The lifetime prevalence of sexual harassment victimization in adolescence varies considerably depending on age and setting, but it has been reported to be between 45–88% in boys, and 52–96% in girls (AAUW, 2001; Felix & McMahon, 2007b; Gruber & Fineran, 2008; Ormerod, Collinsworth, & Perry, 2008; Young, Grey, & Boyd, 2009). Furthermore, a large European study (FRA & European Union Agency For Fundamental Rights, 2014) showed that Swedish women report the highest prevalence of different types of sexual harassment victimization since the age of 15. Globally, sexual harassment in school is so common that students consider it a part of everyday life at school and something they just have to learn to deal with (deLara, 2008; Hlavka, 2014; Robinson, 2005).

2.2.3 Individual Determinants

Individual level determinants of mental health in adolescents, besides genes, age, and sex, are factors that affect individual resilience, such as generalized self-efficacy and global self-esteem (Caprara, Gerbino, Paciello, Di Giunta, & Pastorelli, 2010; Moksnes, Bradley Eilertsen, & Lazarewicz, 2016; Schwarzer & Jerusalem, 1995) and behavioral factors such as
substance use (smoking, alcohol and drugs) (CA McCarty et al., 2012; Waller et al., 2006) and a sedentary life style (Kremer et al., 2014). Ottová-Jordan et al. (2015) have shown in a study based on the Health Behaviors in School-aged Children (HBSC) data, that what they call individual determinants (e.g., bullying victimization and smoking) had a greater impact on subjective health complaints than determinants on the macro-level (Gini, GDP). The authors conclude that being female, being bullied, experiencing school pressure and smoking had the strongest associations to subjective health complaints. Nevertheless, in the present study, and as discussed in the previous paragraph, bullying and school pressure will be considered to be determinants on the psychosocial level.
3 Theoretical Framework

3.1 Ecosocial Theory

Vilhelmsson, Svensson and Meeuwisse (2011) has called for a more clearly elaborated way to think about public health so that the increased attention to poor mental health as a public health concern does not in itself lead to medicalization in terms of just medical treatment and individualization of the problem. Otherwise, Vilhelmsson et al. (2011) state, we risk losing the importance of public health as an overarching social and political instrument. Regarding mental health, there is a special call for a renewed focus in the so-called ‘new-public health’ with focus on social determinants of mental (ill) health.

There is not one answer to the question of determinants, levels and distributions of (mental) health, or one theory to tackle it, and within the field of epidemiology, there are several different approaches to what hypotheses are being put forward. In the current study, I will draw upon the ecosocial theory, as suggested by Krieger in several publications, e.g. (1994, 2011; 2004), and which posts the question “Who and what drives current and changing patterns of social inequalities in health?”. In no way will I be able to cover the totality of the ecosocial theory according to Krieger (1994, 2011; 2004) (Figure 1), and one major reason for this is that even though the current study is partially based on longitudinal data, the temporal scale is too short to truly understand patterns in what drives mental health inequalities in adolescents (Krieger, 1994). A pertinent issue in connection to this is whether or not the levels of determinants are ontologically “real” versus analytic abstractions. In the current study, levels are analytical abstractions rather than “real”, especially because there is only individual level data, i.e., the individual is the single unit of information. Krieger (2011) points out that in order for the discussion to be “ecological”, at least one level must be comprised of “organisms” i.e., individual bodies, and another level their environment. The discussion of the results in connection to ecosocial theory has been based on this assumption and at least parts of the ecosocial theory framework can help to understand some of the results of the current study.
In short, ecosocial theory according to Krieger (2011) has four core constructs; 1) **Embodiment**, which refers to how health and disease are biological as well as psychological embodiments of social relationships and to how we literary incorporate, in our biology and psyche, in a societal and ecological context, the material world in which we live; 2) **Multiple pathways of embodiment**, which refers to diverse, concurrent, and interacting pathways, involving adverse exposure to social and economic deprivation – exogenous hazards, social trauma (e.g., discrimination and other forms of mental, physical, and sexual trauma), targeted marketing of harmful commodities, inadequate or degrading health care, and degeneration of ecosystems; 3) **Cumulative interplay of exposure, susceptibility, and resistance across the life course**, which refer to timing and accumulation of, and responses to, embodied experiences; and 4) **Accountability and agency**, both for social disparities in health and for research to explain these inequities.

Social and biological/psychological processes are linked between and across different levels in the ecosocial system and in different spatiotemporal\(^1\) scales. Causal arrows between individuals, populations and their environments flow in both directions – although not necessarily

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\(^1\) Existing in both space and time
with the same impetus – and can produce both positive and negative feedback loops. Pathways of embodiment, thus, are multidimensional, dynamic, and historical in nature. Ecosocial theory highlights the significance of knowledge, agency and responsibility in the different levels. The idea of the ecosocial theory is that it stimulates the development of new questions and answers in order to influence social change (Krieger, 2011).

Ecosocial theory then, is a critique of mainstream epidemiological thinking of “upstream” and “downstream” determinants of health and of the idea of “distal” and “proximal” determinants (Krieger, 2008). Krieger (2008) is very clear in this regard; “When it comes to causation, it is one thing to think about near and far in relation to space and time; it is another matter entirely to do so for levels.” (Krieger, 2008; 221). The problem arises when logics of scale are confused with analyses of levels and when distance is conflated with power issues. One of Krieger’s most important contributions to epidemiological theorizing is the focus on the distribution of power. According to Krieger (2008), the distal and the proximal are always conjoined within the very phenomena of disease occurrence and distribution. She claims: “Driving health inequities are how power—both power over and power to do (including constraints on and possibilities for exercising each type)—structures people’s engagement with the world and their exposures to material and psychosocial health hazards. Notably, neither type of power readily maps onto a metric of proximal or distal. Nor do they neatly partition across levels.” (Krieger, 2008; 223). One of several power structures especially related to the distribution of power is a society’s gender order. In the following, gender theory and its relevance for understanding mental health inequalities will be outlined.

3.2 Gender Theory

Here, I first elaborate on gender theory in general, and in the section called Understanding Boys’ and Girls’ Lived Experiences - Perspectives on Sexual Harassment as a Determinant of Poor Mental Health, I discuss the understanding of sexual harassment as an expression of gendered power relations in more detail.

Within the health sciences, stringency in theoretical development and conceptualization of gender has been lacking, rendering an often confused usage of different concepts. Hammarström and colleagues (2014) aimed at clarifying this conceptual confusion by specifying six central concepts that needed to be problematized to provide a coherent and dynamic
conceptualization for gender research in health sciences. These concepts were: sex; gender; intersectionality, embodiment; gender equality and gender equity. Here, for the purposes of the present study, I will mainly elaborate on the concept of sex, gender, and embodiment.

It has become a common practice to use the term ‘sex’ when biological differences are important and the term ‘gender’ when social processes are in focus (Hammarstrom et al., 2014). There are, however, scholars in some disciplines that argue that sex is always in interaction with gender, such as feminist biologists, e.g., (Birke, 1999, 2000; Springer, Stellman, & Jordan-Young, 2012). Within the ecosocial framework, Krieger (2011) makes an extensive effort to exemplify these differential roles of gender relations and sex-linked biology relevant for both exposures and health outcomes. In doing so, Krieger (2011) underscores “…why the ecosocial approach to embodiment and the interplay of biological and societal conditions matters for etiologic understanding and the modeling and interpreting of epidemiologic data.” (Krieger, 2011; 216) 2.

One leading school of thought in feminist theory is social constructionism which is based on Foucauldian theory (Foucault, 1972) and focuses on how meanings of gender arise in discourse (Alsop, Fitzsimons, & Lennon, 2002; Burr, 2003). Discourse in the present study is to be understood in a broad way and as a process, including use of language and other symbolic systems, and focuses on how certain representations, e.g. gender, are achieved. Though discourse may be situated, in what Burr (2003) calls a macro social constructionism, the meaning of discourse extends its focus of interest beyond the immediate situated process to “…the way the forms of language available to us set limits upon, or at least strongly channel, not only what we can think and say, but also what we can do or what can be done to us.” (Burr, 2003; 63). Note how this is congruent with Krieger’s (2008) reasoning that levels (here on the macro-social level) is never distant to us as individuals but rather how power over and power to do, including constraints on and possibilities for exercising each type, in this case forms of language available to us, structures people’s engagement with the world and their exposures to material and psychosocial health hazards. This implies that discourse not only includes language and symbolic systems, but also practices.

2 There is no room in this thesis to outline this in detail. For the interested reader, please refer to Krieger (2011; 217-221).
Gender is not an expression of some essence that one can have or not have, but rather is something “performative”, something one actively, but not necessarily completely consciously, does (R. Connell, 2009). Gender is brought into being by the actions we do or don’t do as gendered subjects and through which we are understood as masculine or feminine. Doing boy (or performing boy, as it were), may mean to dress in certain clothes but not in others, or using a certain language and enacting a certain attitude or health behavior (R Connell, 2012; Fleming, Gruskin, Rojo, & Dworkin, 2015). In another time and space, doing boy may be something else entirely, as different discursive practices are available at different times and spaces. This, in turn, implies that one can do masculinity (as well as femininity), in different ways.

Discursively performing masculinities or femininities also means to position oneself in a power relationship. Paechter (2007) argues that as some masculinities and femininities are more powerfully positioned than others and performing a certain kind of masculinity or femininity immediately places a person in a power relationship “…in which many other things are implied, in terms of that person’s potential to operate in the world in particular ways.” (Paechter, 2007; 18). Gendered power relations are hence a part of performative and discursive acts. In a later text, Paechter extend this view and states that “…a range of productions of masculinity and femininity can be present in any particular context […], and that these are connected by complex and mobile relationships of power and resistance.” (Francis & Paechter, 2015; 782).

3.2.1 Gender Patterns of Depressive Symptoms
As discussed in the previous section, it has become a common practice to use the term ‘sex’ when biological differences are important and the term ‘gender’ when social processes are in focus (Hammarstrom et al., 2014). As the current study does not refer to biological differences, the term gender will be used throughout the text when gender patterns are discussed, unless cited literature uses the term ‘sex’.

Previous research show consistency in reporting a pattern of gender differences in depressive symptoms with higher prevalence among girls (Dekker et al., 2007; Essau, Lewinsohn, Seeley, & Sasagawa, 2010; Larsson et al., 2016; Nolen-Hoeksema, 2001; Nolen-Hoeksema & Girgus, 1994; S. Petersen et al., 2010; Sawyer, Pfeiffer, & Spence, 2009; Silverstein et al., 2012). In the next section, two different perspectives commonly employed to understand these gender differences will be discussed.
3.2.1.1 Two Explanatory Models of Gender Differences in Mental Health

3.2.1.1.1 Gender relations
In adults, WHO (n.d.) states that differences in mental health between the genders is a structural issue. In their report on women and mental health (WHO, n.d.), they emphasize intersectionality and conceptualize gender as a structural determinant of (poor) mental health that “…runs like a fault line, interconnecting with and deepening the disparities associated with other important socioeconomic determinants such as income, employment and social position.” (WHO, n.d.; 2). WHO (n.d.) further argues that gender determines the differential power and control men and women have over the socioeconomic determinants as well as over exposure to specific mental health risks and thus health outcomes. Again, Krieger’s (2011) ecosocial framework which sets out to be explicit about power relations not distal to us in our everyday lives, helps to better understand the processes that creates health inequalities between the genders. Nevertheless, the power over important socioeconomic determinants such as income, employment and social position may be very limited, if not non-existent in adolescence – irrespective of gender. The Commission on Social Determinants of Health (CSDH, 2008) states, nevertheless, that “Gender socialization and gender biases in the early years of life have impacts on child development, particularly among girls. Early gender inequity, when reinforced by power relations, biased norms, and day-to-day experiences, go on to have a profound impact on adult gender inequity.” (CSDH, 2008; 50).

Connell (1987; 2012) argues that there is a relationship of different gender regimes operating on different institutions (levels) such as school, family, corporations, and the street. Connell (1987) draws on an Australian study when defining the term gender regime and gives the following example:

*The state of play in gender relations in a given institution is its ‘gender regime’. […] …we found an active though not always articulate politics of gender in every school. Among both students and staff, there are practices that construct various kinds of femininity and masculinity: sport, dancing, choice of*
subject, class-room discipline, administration and others. Especially clearly among the students, some gender patterns are hegemonic – an aggressively heterosexual masculinity most commonly – and others are subordinated. There is a distinct, though not absolute, sexual division of labour among the staff, and sex differences in tastes and leisure activities among the students. There is an ideology, often more than one, about sexual behaviour and sexual character. There are sometimes conflicts going on over sexism in the curriculum or over promotion among the staff, over prestige and leadership among the kids. The pattern formed by all this varies from school to school, though within limits that reflects the balances of sexual politics in Australian society generally. (Connell, 1987; 120)

What goes on in broader society is reflected in school. With gender as a structural determinant for mental health also in adolescence, gender becomes a question of power relations, reflecting present gender order in the broader society.

These power relations can arguably create gender specific conditions and exposures to risk factors (Krieger, 2011). Nevertheless, when the exposure of different risk factors is equivalent between the genders, girls have been reported to be more affected by adverse life experiences and to report more depressive symptoms than boys (Gruber & Fineran, 2008; Oldehinkel & Bouma, 2011; St Clair et al., 2012). One suggested explanation for these gender differences include gender related cognitive-behavioral factors as a major cause of the developing of depression, e.g. (Broderick & Korteland, 2002; Cole et al., 2009) which will be discussed next.

3.2.1.1.2 Cognitive-behavioral gender differences

Girls have been reported to have a greater persistence of negative cognitions over time, while negative cognition in boys is affected more by occasional factors and hence is not consistent over time (Cole et al., 2009). However, Cole et al. (2009) argue that this may be because the circumstances creating such cognitions are more consistent over time in girls.
Some research on the role of rumination\(^3\) as a coping and cognitive-behavioral strategy, also supports gender differences, suggesting that more girls than boys tend to ruminate (Nolen-Hoeksema, 2000) while others have not been able to show gender differences in rumination (Broderick & Kortelander, 2004). Explanations as to why girls tend to ruminate to a higher extent and to have a greater persistence of negative cognition over time are not evident in this literature (Cole et al., 2009; T. D. Hill & Needham, 2013; Nolen-Hoeksema, 2000), although gender-role theory has been proposed as an explanation (Broderick & Kortelander, 2002, 2004). Broderick et al. (2004) report that masculine and feminine-identified adolescents had higher depression scores than androgynous individuals, and feminine identified adolescents had the highest rumination scores overall. The authors (Broderick & Kortelander, 2004) discuss that coping style may be influenced by one’s internalized beliefs about what constitutes appropriate gender behavior. A common critique of the gender-role theory, however, is that the gender-role theory is unable to account for the nuanced diversity of gender performances (Francis & Paechter, 2015). Furthermore, in the crucial developmental period of adolescence, coping strategies will presumably develop and be shaped by stressful contexts and discourses which in turn shape the doing of different masculinities and femininities rather than one socially learned gender role (R. Connell, 2009; Sinclair & Carlsson, 2013). There are indeed scholars who have proposed that the embodiment of stressful contexts could be in the form of cognitive-behavioral tendencies and psychopathology (Krieger, 2011).

### 3.3 Embodiment

The first core construct in ecosocial theory, embodiment, enhances how pathways of embodiment are structured simultaneously by societal arrangements of power and property and contingent patterns of production, consumption, and reproduction. Furthermore, pathways of embodiment is structured by constraints and possibilities of our biology, our ecological context, and individual histories, that is, trajectories of biological and social development (Krieger, 2001).

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\(^3\) Self-focused attention; stable, emotion-focused coping style that involves responding to problems by directing attention internally toward negative feelings and thoughts. Ruminating about problems include both cognitive (self-focused cognitions) and affective (increased emotional reactivity) elements (Ingram, Cruet, Johnsson, & Wisincki, 1988).
The different contexts in which different bodies live, is thus incorporated within our biology and psyche. To understand, e.g., the different embodied pathways between the genders, one must understand the difference in lived experiences, or ‘exposures’ that boys and girls encounter in their daily lives. Connell (2012) argues that to be able to theorize gendered embodiment, “…one have to give full weight both to the social processes that shape bodies, and to the way bodies themselves are active in social processes.” (Connell, 2012; 1,678), which is in line with Krieger’s (2011) idea of agency. Connell (2009) states further: “The practices in which bodies are involved form social structures and personal trajectories, which in turn provide the conditions of new practices in which bodies are addressed and involved.” (Connell, 2009; 67). According to ecosocial theory, we live embodied: “genes do not interact with the environs outside the body; only organisms [bodies] do, and do so intrinsically as members of populations.” (Krieger, 2011; 222). One practice or interaction in which bodies can be involved is sexual harassment – either as victims or as perpetrators, or both. In the next section, a deeper analysis of sexual harassment as a part of adolescents’ lived experiences will be presented.

3.4 Understanding Boys’ and Girls’ Lived Experiences – Perspectives on Sexual Harassment as a Determinant of Poor Mental Health

Chiodo, Wolfe, Crooks, Hughes and Jaffe (2009) showed that sexual harassment victimization in adolescence is relatively stable over time (in both genders), and that victimization at age 14 is strongly associated with other forms of relationship violence two and a half years later. Contrary to this, according to two other previous studies, victimization increases throughout the early life course; at ages 10–14 (Petersen & Hyde, 2009), and at ages 11–13 (McMaster et al., 2002). It seems reasonable to conclude, that sexual harassment is a highly relevant phenomenon in many young people’s lives, and part of a situated discourse which youth may embody in different ways. So what is sexual harassment all about?

One view of sexual harassment is that perpetration is due to individual behavior problems or a lack of social skills, such as immature interactions with the opposite sex, (see e.g. McMaster et al. 2002; Petersen et al., 2009). This view is mostly prevalent within the developmental and educational
psychology fields, e.g. (McMaster et al., 2002; Pepler et al., 2006; Petersen & Hyde, 2009). Nevertheless, in those fields, there are researchers that claim that sexual harassment and bullying should be understood as means of gaining power and status within peer networks, see e.g. (Pellegrini, 2002). A feminist theory framework would contribute to the latter perspective by seeking to understand the phenomenon of adolescent (as well as adult) sexual harassment as a sociocultural construction of gender, sexuality, and power relations (Conroy, 2013; Keddie, 2009; Kimmel, 2008; Robinson, 2005). For example, Robinson (2005) stresses that sexual harassment perpetration rarely is about an individual’s problems or lack of social skills, as suggested by e.g. McMaster et al. (2002). Instead, Robinson (2005) argues that sexual harassment is constituted within a broader social discourse of values and power relationships operating around gender and sexuality present in the broader society, i.e. a society’s ‘gender order’ (Connell, 1987).

The predominant discourse, or gender order as it were, in most societies, are usually the dominance of the prevailing hegemonic (heterosexual) masculinity, and this is what is reflected and reproduced in school gender regimes (Connell, 1987; Hlavka, 2014; Jones, 1985). Robinson (2005) and Chambers, Tincknella and Van Loona (2004), argue that sexual harassment in school is a tool to assert male dominance over females, and also a tool for policing heterosexual masculinity within male peer groups. Robinson (2005) claims, that as youths are in the process of identity development, the identification with, and construction/production of, a hegemonic masculinity becomes a part of many, albeit not all, boys’ performed identity. Robinson (2005) has also shown how boys use a range of sexual harassment practices to put girls “back in their place” when power relations are challenged. Other scholars (Jones & Mahony, 1989; Mahony, 1989) as well, have argued that sexual harassment is not about sexual interest on behalf of the perpetrator but rather about power issues. Sexual harassment perpetration does occur within same gender peer groups, but, being victimized by a girl has been showed to have no impact at all on internalizing or externalizing behaviors in either gender (Felix & McMahon, 2007a), implying that the mental health consequences of sexual harassment victimization is dependent upon power relations. Understanding how sexual harassment is used as a tool to establish asymmetric power relations between boys and girls, as well as within same gender peer groups, and cognizant of how lived experiences are embodied will inform the interpretation of the findings about sexual harassment.
victimization and its associations to depressive symptoms in the current study.

Nevertheless, rather than to target stressful contexts, cultural norms and hegemonic discourses that may shape the everyday lives differently for young people depending on gender, a relatively common measure to try to prevent the onset of depressive symptoms in adolescents has been to target the cognitive-behavioral aspects of adolescent coping strategies in form of psychoeducational interventions in the school setting. In the following, I will outline the theoretical and historical background of psychoeducational interventions in the school setting in general and of a Swedish method in particular.

3.5 Psychoeducational Interventions

Psychoeducational interventions are a way for professionals as well as paraprofessionals to meet the needs of mental health care, health care, and social services, often across system levels and in different settings. Psychoeducation has a holistic approach and aims at enhancing competence with a focus on health, collaboration, coping, and empowerment (EP Lukens & McFarlane, 2004).

Psychoeducation encompasses several complementary theories and models of clinical psychology practice, including ecological systems theory (i.e., Bronfenbrenner, 1979), cognitive-behavioral theory, learning theory, group practice models, stress and coping models, and social support models (E Lukens, Thorning, & Herman, 1999; McFarlane, Dixon, Lukens, & Lucksted, 2003). Psychoeducational interventions may be clinically implemented, but they may also be community based (EP Lukens & McFarlane, 2004) and was first discussed in the 1970’s as a means to prevent mental health in the school setting (Authier, 1977). This led to what has been called the paraprofessional movement which had a significant impact on the psychoeducation movement at this time. The movement encouraged counsellors to develop methods for training paraprofessionals in counselling skills and to design effective short-term training programs for paraprofessionals with wide applicability.

Today, psychoeducational interventions include a broad range of activities that combine education and other activities, such as counseling and other supportive interventions (Oncology Nursing Society, 2016). Psychoeducational interventions may be delivered individually or in groups and are often standardized and/or manual based. This type of
intervention generally includes providing participants with information about symptoms and resources, and problem-solving strategies for coping with their illness. Interventions may include the use of comic strips, booklets, videos, and audiotapes. Highly specific content approaches such as cognitive-behavioral approaches may be a part of such interventions, but not necessarily incorporated into all types of psychoeducation (Oncology Nursing Society, 2016).

3.5.1 Previous Research on Psychoeducational Interventions in the School Setting

Preventive intervention programs may be designated either for a general population (i.e. universal intervention), for groups with elevated risk (i.e. selective intervention), or for those who already have symptoms and/or a diagnosis (i.e. targeted intervention). In the last decades, school-based universal or selective psychoeducational interventions with a cognitive-behavioral approach have been common, but the evidence of the effectiveness of these is inconsistent (Merry, McDowell, Hetrick, Bir, & Muller, 2011; Sawyer et al., 2010; Spence & Shortt, 2007). Some of the randomized controlled trials of universal cognitive-behavioral interventions have reported effects on depressive symptoms outcomes. For example, the intervention LARS&LISA was reported to be effective at a 4-month follow-up (Pössel, Martin, Garber, & Hautzinger, 2013) and the Penn Resiliency Program (PRP) for adolescents contributed to reducing depressive symptoms as well as hopelessness (Gillham et al., 2012; Gillham et al., 2007). In Sweden, a cognitive-behavioral intervention called Depression In Swedish Adolescents (DISA) has been disseminated in the last decade and will be discussed next.

3.5.1.1 Depression In Swedish Adolescents – DISA

DISA is a psychoeducational intervention for adolescents with a distinct cognitive-behavioral approach and was developed to be able to be administered by trained paraprofessionals, such as teachers, school counsellors, school nurses, or youth workers primarily in the school setting (Clarke & Lewinsohn, 1995b/2010 [rev.ed.]).

3.5.1.1.1 Method development and aim of DISA

The DISA program has its base in clinical therapy and has been adapted from cognitive therapy for adults developed by Beck and colleagues (Beck,
Rush, Shaw, & Emery, 1979). More specifically, DISA is based on the American Coping with Stress Course (CWS) (Clarke & Lewinsohn, 1995), which was developed from the Adolescent Coping with Depression Course (CWD) (Clarke, Lewinsohn, & Hops, 1990). The CWS has been shown effective in selective interventions in subjects with elevated risk of depression, i.e., subclinical depressive symptoms, female gender, previous episodes of depression and depressed parents and when delivered by trained mental health professionals (e.g., social workers and psychologists) (Clarke et al., 2001). DISA, which is a shortened version of the CWS, was developed by Clarke and colleagues in collaboration with the Centre for Public Health at the Stockholm County Council (Clarke & Lewinsohn, 1995b/2010 [rev.ed.]; Treutiger & Lindberg, 2013). Modification and adjustment of the original manual and workbook have been made to mirror Swedish conditions and the Swedish school curriculum.

The theoretical underpinnings of cognitive-behavioral preventive interventions are consistent with diathesis-stress models of depression that regard cognitive and behavioral characteristics of the individual as influencing the impact of adverse life events (Abramson et al., 1999; Clark, Beck, & Alford, 1999). Accordingly, DISA is based on the multifactorial model presented by Lewinsohn and colleagues (1985), which states that depression is the result of a combination of multiple factors: negative thought patterns, stressful events and predisposed risk factors (female gender, previous episodes of depression and depressed parents). Suggested protective factors are high self-esteem, good self-efficacy and high prevalence of pleasant events and activities. Even when other risk factors are present, the intervention is based upon the assumption that when individuals learn new coping strategies and when their repertoire of available methods and strategies to cope with difficult situations is fostered, it will help to ‘immunize’ them against developing depression (Clarke & Lewinsohn, 1995b/2010 [rev.ed.]). Accordingly, the main aim of DISA is to control irrational and negative thoughts by means of cognitive-behavioral approaches. It also includes a conflict-resolution component wherein communication and problem solving skills are learned. In addition, the intervention focuses on encouraging students to increase pleasant events in their lives (Clarke & Lewinsohn, 1995b/2010 [rev.ed.]). Notably, the developers stress that the intervention is not developed to be targeted, that is, should not be considered as a treatment for mood disorders (Clarke & Lewinsohn, 1995b/2010 [rev.ed.]).
DISA is manual-based and consists of ten group sessions of 1½ hours, each over ten weeks, which means a total dosage of 15 hours. The sessions can be delivered within school hours or as an extracurricular activity to groups of 5-10 students. The first session gives a general introduction to DISA. The following two sessions consist of an overview of depression and the connection to stressful events. Sessions four to six focus on teaching cognitive skills to identify and cope with irrational or negative self-perceptions and thought patterns. The remaining sessions cover communication and problem solving skills. In addition, homework assignments, such as filling in a “mood diary”, are included as part of the program (Clarke & Lewinsohn, 1995b/2010 [rev.ed.]).

3.5.1.1.2 Implementation of DISA in the Swedish context
The DISA program is widely used in schools throughout Sweden as a universal intervention for both genders, but primarily as a selective intervention for girls only, and it is recommended that schools implement the program to all students in grades seven or eight (Treutiger & Lindberg, 2013). However, school resources may be limited, and hence, schools may be able to implement DISA to only some of the students. In such cases, students may be allocated to a DISA group either based on each school’s assessments of whom they find appropriate for the intervention, or on a first come first served basis, via a general invitation to participate. In some cases, the choice of students reflects timetabling (personal communication, Eva-Mari Thomas, 3 September 2015). As discussed above, group facilitators are paraprofessionals trained in the DISA method during three full days of theoretical training and through supervision of the first group a new facilitator is implementing. To learn more about DISA, I took part in the three days theoretical training in January 2011.

3.5.1.1.3 Previous research about DISA
The effects on depressive symptoms of the DISA program has only been evaluated scientifically in one uncontrolled quasi-experimental study (Garmy, Jakobsson, Steen Carlsson, Berg, & Claussen, 2014). In that study, DISA was implemented as a universal intervention offering participation to both genders. Participants were recruited in a school located in an area with high mean income and all students in grade eight (~15 years old) were offered to participate. Sixty-two eight-graders out of 68 accepted to participate and 55 students of both genders completed the questionnaire at follow-ups. Base-line mean and median scores of depressive symptoms
were subclinical. The authors (Garmy et al., 2014) report a reduction in depressive symptoms in girls at post intervention and at 12-months follow-up while in boys there was a decrease in symptoms at post-test only. However, as the authors point out, the lack of a control group in their study limits the conclusions that can be drawn regarding the effectiveness of the DISA-program. Also, since the analyses were conducted separately for each gender, the relative small sample size (boys \( n = 26 \), girls \( n = 29 \)) has not been dealt with which further calls for caution regarding the results of their study.

The DISA method has also been the subject of quite extensive critique. During 2015, two doctoral theses came to the overall same conclusions regarding the value of DISA in the school setting. Kvist Lindholm (2015) and Gunnarsson (2015) both conclude that the core issue that DISA defines as a problem, i.e., negative thoughts, is not necessarily in concordance with what students themselves consider to be the problem. It does not take into account the lived realities of being part of a collective of peers at schools; rather, DISA individualizes the source of students’ problems and does not address the reality of everyday life at school such as bullying in the form of social inclusion/exclusion processes, as well as harassment (deLara, 2008; Thornberg, 2015). Furthermore, Kvist Lindholm (2015) points out that taking part in DISA means to disclose personal feelings and thoughts in front of peers. In groups where the DISA group was perceived as “safe”, this was not problematic, in fact; it could make peers into closer friends as the students got to know each other better. Furthermore, Wickström (2013) shows how girls expand this exercise and spend a lot of time on it and start talking about things important to them, which does not reflect the issues suggested by the manual, i.e. negative aspects of their mental activity. However, in some groups, Kvist Lindholm et al. (2015) point out, where the atmosphere was not considered to be safe, self-disclosure could instead be a trigger of already ongoing destructive interactions such as bullying and harassment. Also, the potential risk of self-disclosure in the DISA group was dependent on the students’ social status in the class (Kvist Lindholm, 2015). To DISA’s defense, one could argue that the program also addresses social relations through teaching communication skills. However, in the manual, it is quite clear that the main focus is on cognitive reconstruction and that it is primarily this that will help to “immunize” them against future depression (Clarke & Lewinsohn, 1995b/2010 [rev.ed.]).

To sum up, DISA was developed with a main emphasis on how to address individual internalizing problems by means of cognitive-
behavioral reconstruction. However, DISA has been the subject of critique in this regard. The critics claim that there are determinants on other levels than the individual level that are of importance for girls’ well-being, such as social relationships and networks. DISA does have components of enhancing social relationships, but the critics claim that this component is overrun by the focus on negative cognitions.
4 The Present Study

The present study set out to learn more about what determinants on individual, psychosocial, and structural levels were associated with depressive symptoms in Swedish adolescents as well as to investigate if DISA has an effect in a real-life setting. According to the The Society for Prevention Research (SPR), a prevention program must, amongst other things, meet the criteria of effectiveness under real-world conditions in order to be eligible for dissemination (Flay et al., 2005). Combining the understanding of determinants on different levels with a pragmatic evaluation of DISA may help to understand results also of explanatory effect evaluations, i.e., randomized controlled trials. As called for by Sutton (2007) and Spence and Shortt (2007), school environmental and socio-economic factors should be investigated as possible moderators or confounders of the effects of an intervention. Hence, in order to enhance the understanding of the socio-economic, environmental and individual circumstances under which mental health interventions under real-world conditions are optimally effective, it is crucial to explore what characterizes such circumstances. Evaluating a cognitive-behavioral program in a real-world setting, that is, to try to study if DISA has an effect when schools do what they do without interference from researchers, will contribute to an unbiased evidence base regarding the effectiveness of cognitive-behavioral interventions (Des Jarlais, Lyles, Crepaz, & the TRENDS Group, 2004) and to more generalizable results (Patsopoulos, 2011). This is also of interest as DISA was developed as a selective (or universal) intervention and should not be delivered as a targeted intervention to students with elevated depressive symptoms (Clarke & Lewinsohn, 1995b/2010 [rev.ed.], 2010). Additionally, since DISA claims to be able to immunize against depression, it is also of importance to investigate if DISA can moderate effects of different environmental circumstances. In the present study, sexual harassment victimization emerges as a key factor in this regard. There has been no previous study of how sexual harassment victimization, participation in a school-based cognitive behavioral intervention and depressive symptoms are related to each other. In addition, by employing ecosocial and gender theoretical perspectives on the above mentioned issues, the current study contributes to problematizing the individualization of poor mental health and enhances a public health perspective on these issues.
5 Aim

The aim of the study was twofold: to study the determinants of depressive symptoms in adolescents, and, additionally, to, by means of a pragmatic trial evaluation, investigate the effectiveness of a cognitive-behavioral intervention in a real-world setting in relation to determinants of depressive symptoms in adolescent girls.

5.1 Research Questions

1. Which determinants on individual, psychosocial and structural levels are associated with depressive symptoms in adolescent boys and girls? (Paper I)
2. What are the directional pathways between sexual harassment and depressive symptoms in adolescents? (Paper II)
3. What features characterize girls who were assigned to a cognitive-behavioral intervention (DISA) regarding levels of depressive symptoms, school psychosocial aspects as well as socioeconomic status of the respondents and of schools? (Paper III)
4. Does DISA have an effect on depressive symptoms in girls aged 14-16? (Paper IV)
5. Are there differences between the DISA participants and non-participants in the effects of psychosocial and structural determinants on depressive symptoms? (Paper IV).
6 Methods

6.1 Context
The present study utilized data from the Youth Health Development project (the YHD study), a longitudinal study of an adolescent population in a municipality in the northern part of Sweden. The municipality is of medium size, with 60,000 inhabitants, and is characterized by a diverse socioeconomic base. There is a strong emphasis on tourism and small and medium-sized enterprises in the municipality.

6.2 Participants
All public and independent high schools with students in grades 6-9 (13-16 years old) were invited to participate. Nine public high schools, which represent all public high schools in the municipality, and one out of the four independent schools agreed to participate. The non-respondents differed between the schools by 10-40 %, mainly due to a lack of engagement by the school administration in providing adequate time and space to answer the questionnaire in different classes. The present thesis only includes students in grades 7-9 (14-16 years old) as students in grade six did not receive questions about depressive symptomatology. The response rates in grades 7-9 were 77.3 % (n = 1,230) in 2010; 80.49% (n = 1,209) in 2011 and 79.51% (n = 1,026) in 2012. A quality review of the data rendered that some respondents were omitted each year, e.g. 16 in the 2011 wave.

6.2.1 Participants in each Paper
**Paper I**: Students aged 14-16, n = 1,193 (girls 52.6%; boys 47.4%) representing all students in the 2011 wave.

**Paper II**: All students in the 2010, 2011, and 2012 waves aged 14-16, n = 2,330 (girls 48.8%; boys 51.2%) using an accelerated cohort design.

**Paper III**: Girls aged 14-16, n = 288. Girls participating in DISA in 2011 (n = 53) and a comparison group (n = 222).

**Paper IV**: Girls aged 14-16, n = 275. Girls participating in DISA in spring term of 2011 (n = 53), of which 7.5% (n = 4) took part only a few times reflecting low compliance, and a comparison group (n = 222).
Please refer to the Statistical Analyses section for details in each paper respectively.

6.3 Procedure
Data were collected in three waves; January 2010, 2011, and 2012. Data collection was conducted using a self-administered, electronic questionnaire that was a part of the larger study (the YHD study) aimed at increasing knowledge about mental health in adolescents. The students were provided with a link to the questionnaire via their school e-mail addresses. In the e-mail, the students had the opportunity to decline participation and to avoid receiving a reminder. The respondents completed the questionnaire on computers during school hours in the presence of a research assistant who was trained to answer the students’ questions and ensured that they were able to complete the questionnaire individually and without disturbances.

6.4 Measures
In the present study, there is only individual level data, that is, the individual is the only unit of information. Hence, based on individual level data (in a statistical sense), I distinguish between individual level determinants that are more trait-like such as self-esteem or self-efficacy, and e.g. sexual harassment, bullying and school demands as psychosocial determinants. Structural determinants are those presumably connected to the socioeconomic status of the respondents, e.g. parental employment status and personal relative affluence. An overview of all measures used in the study are shown in Table 1.
<table>
<thead>
<tr>
<th>Analytic variable</th>
<th>Instrument or wording of item(s) used</th>
<th>Paper(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy</td>
<td>Generalized self-efficacy scale (Scholz, Gutiérres-Doña, Sud, &amp; Schwarzer, 2002). Likert-scale: Strongly agree, Agree, Disagree or Strongly disagree.</td>
<td>I</td>
</tr>
<tr>
<td>Parental support</td>
<td>“Do you usually talk about most things with your…mother; father?”. 6-point scale: Always, Often, Sometimes, Rarely, Never, Don’t have (either of the above)/Never see (either of them).</td>
<td>I</td>
</tr>
<tr>
<td>Peer support</td>
<td>“Do you have as many friends you’d like?”; “Do you usually talk about most things with your friends?” 5-point scale: Always, Often, Sometimes, Rarely, Never.</td>
<td>I</td>
</tr>
<tr>
<td>Peer support</td>
<td>“Does it happen that you are alone when you don’t want to?”; “Do you have as many friends you’d like?”; “Do you sometimes feel left out from your peer group?”. 5-point scale: Always, Often, Sometimes, Rarely, Never.</td>
<td>III, IV</td>
</tr>
<tr>
<td>Teacher support</td>
<td>“Do your teachers give you support and help when you need it?”, “Do you think your teachers would notice if you didn’t get on with school?”, “Do you think that your teachers treat you fairly?”, “Do your teachers praise or encourage you?”. 5-point scale: Always, Often, Sometimes, Rarely, Never.</td>
<td>I, III</td>
</tr>
<tr>
<td>School demands</td>
<td>&quot;School work moves forward to quickly”; “What we are supposed to learn is too difficult”; “The teachers give us too much homework”. 5-point scale: Always, Often, Sometimes, Rarely, Never. (Gillander Gådin &amp; Hammarström, 2000)</td>
<td>I, III</td>
</tr>
<tr>
<td>Sexual harassment</td>
<td>Respondents were asked to indicate how often they had experienced each behavior (Never, Once, A few times, Many times) against their will during the past 6 months: touched, grabbed or pinched you in a sexual manner; pushed you into a corner in a sexual manner; spread sexual rumors about you; commented on you, made a joke out of you</td>
<td>I, II, III, IV</td>
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</tbody>
</table>
or gesticulated in your direction in a sexual manner; looked at you in a manner that felt intrusive and sexual; shown or left you sexual images, photos or drawings; written sexual messages about you on bathroom walls or in locker rooms; called you a lesbian, fag or such words; pulled/pulled off your clothes in a sexual manner (e.g. pulled your bra straps, pulled your underwear or pulled up your skirt); tried to kiss or hug you; called you a whore, cunt, dick, or such words; commented on your looks, your body or your personal life in a sexual manner; spread comments about you or pictures of you on the mobile phone; publicly commented on how attractive or unattractive you are (Gruber & Fineran, 2007).

<table>
<thead>
<tr>
<th>Physical sexual harassment</th>
<th>4 items: touched, grabbed or pinched you in a sexual manner; looked at you in a manner that felt intrusive and sexual; shown or left you sexual images, photos or drawings; tried to kiss or hug you</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal name-calling</td>
<td>2 items: called you a lesbian, fag or such words; called you a whore, cunt, dick, or such words</td>
<td>II</td>
</tr>
<tr>
<td>Public display</td>
<td>2 items: written sexual messages about you on bathroom walls or in locker rooms; spread comments about you or pictures of you on the mobile phone</td>
<td>II</td>
</tr>
<tr>
<td>Bullying</td>
<td>“It happens that one or several students tease, pick fights or shut somebody out. Have any of that ever happened to you?” 5-point scale: Yes, almost all the time; Yes, several times; Yes, a few times; Yes, once; No, never.</td>
<td>I, III, IV</td>
</tr>
<tr>
<td>Family material affluence</td>
<td>Family affluence scale FAS (Richter et al., 2009).</td>
<td>I, II, IV</td>
</tr>
<tr>
<td>Personal relative affluence</td>
<td>“If you consider your situation in the past six months, have you had enough money to be able to do the same things as your friends?” 5-point scale: Always, Often, Sometimes, Rarely, Never</td>
<td>I, II, III, IV</td>
</tr>
<tr>
<td>Parental unemployment</td>
<td>“Does your father/mother have a job?” Yes; No; I don’t know/Don’t have mother/father.</td>
<td>II, III</td>
</tr>
</tbody>
</table>
Table 1. continued

| Disrupted family | “Who do you live with?” Mother and father; sometimes with mother, sometimes with father; mother with new partner; father with new partner; mother only; father only; somebody else. | II |
| Parental migrant background | In what country was your mother/father born? | I, II, III |
| DISA participation | “In schools in municipality X there is a method called DISA where students meet with a group facilitator. Have you ever participated in a DISA group?” No, never; Yes, and I have participated on some of the group sessions; Yes, and I have participated in all or most group sessions.” Respondents were also asked to indicate what year and term they participated. | III, IV |
| Somatic symptoms | Items: 1. I was bothered by things that usually don’t bother me; 2. I did not feel like eating, my appetite was poor; 5. I had trouble keeping my mind on what I was doing; 7. I felt that everything I did was an effort; 11. My sleep was restless; 20. I could not get “going” | II |
| Negative affect | Items: 3. I felt that I could not shake off the blues even with help from my family or friends; 6. I felt depressed; 14. I felt lonely; 18. I felt sad | II |
| Anhedonia | Items: 4. I felt I was just as good as other people (reversed); 8. I felt hopeful about the future (reversed); 12. I was happy (reversed); 16. I enjoyed life (reversed) | II |
6.4.1 Depressive Symptoms

Depressive symptoms were measured using the CES-D 20 items scale. The CES-D was created prior to the third revision of the American Psychiatric Association’s Diagnostic and statistical Manual of Mental Disorders (Eaton et al., 2004). It was developed to measure depressive symptomatology in the general population and has a range of 0–60 with higher scores indicating higher levels of depressive symptoms (Radloff Sawyer, 1977), and it has been validated for use in adolescents (Radloff Sawyer, 1991). A common cutoff point is ≥16 for symptomatology with relevance for major depressive disorder (Radloff Sawyer, 1991). The CES-D does not capture anxiety, which is commonly coexisting with depression in adolescents (Garber & Weersing, 2010).

6.4.2 Paper I

To facilitate model interpretation, all independent variables were dichotomized or trichotomized. Multiple-item indices were computed by averaging constituent items and were then categorized based on the distribution of responses (i.e., tertiles or empirical mean), and categories were collapsed into levels, such as high, moderate, and low levels of exposure.

6.4.2.1 Independent Variable

A cutoff score of ≥16 has been established as a cutoff related to clinical depression in adolescents (Eaton et al., 2004; Radloff Sawyer, 1991). The internal consistency was α .80. The scale was dichotomized; <16 = no depressive symptoms; ≥16 = elevated depressive symptoms.

6.4.2.2 Individual Determinants

(Generalized) Self-efficacy. Dichotomized using the empirical mean; <29 = lower self-efficacy; ≥29 = higher self-efficacy.


6.4.2.3 Psychosocial Determinants

Parental support. Trichotomized: ≤4 = high parental support; 5-6 = moderate peer support; ≥7 = low peer support.
Peer support. Trichotomized using tertiles; <3 = high peer support; 4 = moderate peer support; ≥5 = low peer support.

Teacher support. Trichotomized using tertiles; ≥16 = high teacher support; ≥13 = moderate teacher support; ≤12 = low teacher support.

School demands. Trichotomized using tertiles; ≥11 = high school demands; ≤10 = moderate school demands; ≤8 low school demands.

Sexual harassment. Trichotomized; Never exposed; One behavior once = moderately exposed; ≥2 behaviors a few or several times = high exposure.

Bullying. Dichotomized; Never exposed; Exposed almost all the time, several times, a few times or once.

6.4.2.4 Structural Determinants

Family Affluence Scale (FAS). Trichotomized using tertiles; 7 = high FAS; 6 = moderate FAS; ≤5 = low FAS.

Personal relative affluence. Dichotomized; Students who in the last six months had had as much money as their friends (always, often) were contrasted with those who had not (sometimes, rarely, never).

Parental foreign background. Dichotomized; Those with one or both parents from a non-Swedish background were classified as having a migrant family background.

Missing data was imputed by identifying a case as completely missing if more than 20% of the items were not answered. In the case of fewer items missing, the scale was totaled and then that total was proportionally scaled to compensate for the number of missing items. For example, if one out of 20 items (as in the case with CES-D) was missing, the remaining 19 items would be totaled, then the total would be multiplied by 105% with the extra 5% representing the proportion accounted for by the missing item.

6.4.3 Paper II

6.4.3.1 Depressive Symptoms

A three factor solution for the CES-D as suggested by Carleton et al. (2013) was used, and the data fit with the same three dimensions as in their study; somatic symptoms, negative affect and anhedonia. Somatic symptoms (5 items: I was bothered by things that usually don’t bother me; I did not feel
like eating, my appetite was poor; I had trouble keeping my mind on what I was doing; I felt that everything I did was an effort; My sleep was restless; I could not get “going”); **Negative affect** (4 items: I felt that I could not shake off the blues even with help from my family or friends; I felt depressed; I felt lonely; I felt sad); **Anhedonia** (4 items: I felt I was just as good as other people (reversed); I felt hopeful about the future (reversed); I was happy (reversed); I enjoyed life (reversed)). All dimensions had acceptable internal consistency (Cronbach’s alphas): Somatic symptoms: Grade 7, .79; Grade 8, .81; and Grade 9, .80. Cronbach’s alphas for negative affect were: Grade 7, .84; Grade 8, .84; and Grade 9, .85. Cronbach’s alphas for anhedonia were: Grade 7, .71; Grade 8, .74; and Grade 9, .77.

6.4.3.2 Sexual Harassment

An Exploratory Factor Analysis (EFA) within Mplus using quatermin and varimax rotation was conducted. Results suggested a three factor solution which was stable across grades using 8 of the 14 original items. The three dimensions were: **Physical** (4 items: touched, grabbed or pinched you in a sexual manner; looked at you in a manner that felt intrusive and sexual; shown or left you sexual images, photos or drawings; tried to kiss or hug you); **Verbal name-calling** (2 items: called you a lesbian, fag or such words; called you a whore, cunt, dick, or such words); and **Public display** (2 items: written sexual messages about you on bathroom walls or in locker rooms; spread comments about you or pictures of you on the mobile phone). Internal consistency (Cronbach’s alphas) of these three dimensions were satisfactory; physical harassment: Grade 7, .83; Grade 8, .84, and Grade 9, .82. Cronbach’s alphas of verbal name-calling were: Grade 7, .83; Grade 8, .81, and Grade 9, .80. Public display: Grade 7, .87; Grade 8, .82; Grade 9, .77.

---

4 **Anhedonia** the inability to experience pleasure from activities usually found enjoyable, e.g., exercise, hobbies, music, or social interactions. While earlier definitions of anhedonia emphasized pleasurable experience, more recent models have highlighted the need to consider different aspects of enjoyable behavior, such as motivation or desire to engage in activities (motivational anhedonia), as compared to the level of enjoyment of the activity itself. [https://en.wikipedia.org/wiki/Anhedonia#Significance_in_depression](https://en.wikipedia.org/wiki/Anhedonia#Significance_in_depression)
6.4.3.3 Covariates

**Parental employment status.** Those from families where both parents were employed were contrasted with those in which one or both parents were unemployed.

**Disrupted family.** Those who lived with both parents at baseline were contrasted with those who did not.

**Parental migrant background.** Those with one or both parents from a non-Swedish background were classified as having a migrant family background.

**Personal relative affluence.** This variable was treated as continuous.

Missing items was addressed by means of Full Maximum-Likelihood Estimation (RFMLE).

6.4.4 Paper III

**Depressive symptoms:** In this sample, the CES-D had a Cronbach’s $\alpha = .89$ and was analyzed on the ordinal data level. Information about the psychosocial school environment was indicated by several variables:

**DISA:** DISA participants were contrasted with non-participants.

**Teacher support:** Internal consistency $\alpha = .83$.

**Peer support:** Internal consistency $\alpha = .70$.

**School demands:** Internal consistency $\alpha = .73$.

**Sexual harassment:** Internal consistency $\alpha = .86$.

**Bullying:** Higher scores indicating higher levels of victimization.

Two dichotomous proxies for socio-economic position of the respondents were used:

**Parental employment status:** Two employed parents were contrasted with one or two unemployed parents.

**Personal relative affluence:** Students who in the last six months had had as much money as their friends (always, often) were contrasted with those who did not (sometimes, rarely, never).

**Parental migrant background:** Students with one or both parents from a non-Swedish background were contrasted with students with both parents from Sweden.

The socio-economic status of each school was described using data from The Swedish National Agency for Education (SALSA, 2014), which
provides data on proportion of parents with low education (no more than high school), proportion of parents with migrant background and proportion of students who graduated with a high school diploma in 2011.

Patterns of missing items were calculated using Little’s Missing Completely At Random test (MCAR test) (Schlomer, Bauman, & Card, 2010). Missing items on sexual harassment and bullying were judged to be not missing at random (NMAR), \( \chi^2 = 289.280, \text{Df}(97), p < .001 \), with a weak negative (-0.154) correlation \( (p .003) \). Schlomer et al. (2010) suggests that when data is not missing at random (NMAR) multiple imputation is the best way to replace missing data. Hence multiple imputation has been conducted to address these issues. No information on missing data regarding the socio-economic status of each school was available (SALSA, 2014).

### 6.4.5 Paper IV

#### 6.4.5.1 Dependent Variable

**Depressive symptoms.** In this sample, the CES-D scale had a good internal consistency, with a Cronbach alpha of .89 at BL and .77 at FU.

#### 6.4.5.2 Independent Variables

**Sexual harassment.** Internal consistency \( \alpha = .86 \).

**Bullying.** Scale range 1-5, higher scores indicating higher levels of victimization.

**Peer support.** Higher scores indicating better peer support. Internal consistency \( \alpha = .70 \).

**Personal relative affluence.** Students who in the last six months had had as much money as their friends (always, often) were contrasted with those who did not (sometimes, rarely, never).

#### 6.4.5.3 Covariate

**Family Affluence Scale (FAS).** Higher scores indicating higher material affluence in the family.

In this study, missing items in the data has been imputed by Full Information Maximum Likelihood (FIML).
6.5 Statistical Analyses

An overview of the statistical analyses used are reported in Table 2.

Table 2. Overview of design and methods used in each paper.

<table>
<thead>
<tr>
<th>Paper</th>
<th>Design</th>
<th>Participants</th>
<th>Main method of analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Cross-sectional</td>
<td>High school students aged 14-16, n= 1,193 (girls 52.6%; boys 47.4%). All students in the 2011 questionnaire</td>
<td>Logistic regression</td>
</tr>
<tr>
<td>II</td>
<td>Longitudinal</td>
<td>High school students aged 14-16, n = 2,330 (girls 48.8%; boys 51.2%). All students in the 2010, 2011, and 2012 questionnaire using accelerated cohort design. Please refer to Table 3 for details.</td>
<td>Structural Equation Modelling (SEM), Cross lag models</td>
</tr>
<tr>
<td>III</td>
<td>Cross-sectional</td>
<td>Girls in high school aged 14-16, n = 288. Girls participating in DISA in 2011 (n = 53) and a comparison group (n = 222).</td>
<td>Mann-Whitney U-test</td>
</tr>
<tr>
<td>IV</td>
<td>Longitudinal</td>
<td>Girls in high school aged 14-16, n = 275. Girls participating in DISA in the spring term of 2011 and a comparison group.</td>
<td>Structural Equation Modelling (SEM) Causal models</td>
</tr>
</tbody>
</table>

6.5.1 Paper I

In this cross-sectional study, to analyze gender differences in the distribution of the different determinants, chi squared statistics were used. Logistic regression were employed to analyze odds ratios of each determinant’s association to depressive symptoms. Elevated levels (≥16) of depressive symptoms were coded as 1 and low levels as 0. SPSS PASW Statistics 18 software was used for all statistical analyses. For all independent variables, the categories hypothesized to predict the lowest
levels of risk for depressive symptoms were set as the reference category and was coded as 0.

6.5.2 Paper II

This longitudinal cross-lag study set out to investigate (a) who is being victimized by what dimension of sexual harassment, (b) how dimensions of depressive symptoms are associated with different dimensions of sexual harassment over time, and (c) how gender influences such associations. Dimensions of sexual harassment victimization and depressive symptoms were derived by means of exploratory factor analyses and were; Dimensions of sexual harassment victimization: Public display; Name-calling; and Physical harassment; Dimension of depressive symptoms: Somatic symptoms; Negative affect; and Anhedonia.

Four competing theoretical hypotheses were tested, (1) Sexual harassment victimization was hypothesized to be stable over time. Also, based on previous research, the stability of depressive symptoms over time was expected to be higher in girls than boys (Cole et al. 2009); (2) High levels of the dimensions of sexual harassment victimization was hypothesized to precede increases in the levels of each dimension of depressive symptoms if sexual harassment were associated with establishing asymmetric power relations; (3) Indicators of vulnerability in potential victims such as high levels in each dimension of depressive symptoms were hypothesized to precede increases in levels of each dimension of sexual harassment victimization. This is the pattern that would be expected if sexual harassment was associated with reinforcing hegemonic (heterosexual) masculinity and reinforcing asymmetric power relations between the genders, but also within male peer networks; (4) The relationship between dimensions of sexual harassment victimization and dimensions of depressive symptoms were hypothesized to be bidirectional if both establishing and reinforcing asymmetric power relations are phenomena in this age group. The primary analysis method was a robust full maximum-likelihood estimation (RFMLE) within a cross-lagged structural equation modeling framework using accelerated cohort analysis in Mplus 7.3. Traditional cross-lagged analysis allows only data from students who participated in all three waves to contribute to the longitudinal analysis. As illustrated in Table 3, in the current analyses, data was converted from wave (year of collection) to grade (age at data collection). This maximizes the amount of data available and focuses on age differences in longitudinal pathways. The accelerated panel method.

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capitalizes on the overlapping waves of data to provide unbiased estimates of directional pathways using all available data (Little, Preacher, Selig, & Card, 2007). Preliminary analyses suggested no substantive cohort effects, which otherwise can bias estimates from accelerated panel designs.

Table 3. Illustration of accelerated cohort design.

<table>
<thead>
<tr>
<th>Grade in 2010</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>G5</td>
<td>-</td>
<td>G6*</td>
<td>G7</td>
</tr>
<tr>
<td>G6</td>
<td>G6*</td>
<td>G7</td>
<td>G8</td>
</tr>
<tr>
<td>G7</td>
<td>G7</td>
<td>G8</td>
<td>G9</td>
</tr>
<tr>
<td>G8</td>
<td>G8</td>
<td>G9</td>
<td>-</td>
</tr>
<tr>
<td>G9</td>
<td>G9</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Depressive symptoms not measured at G6.

Shaded cells contributed data to the analysis. Recoding to grade allows use of 9 of 11 cells of data. The three outlined cells show the data used in traditional longitudinal analyses.

Gender differences in levels of dimensions of sexual harassment and depressive symptoms as well as covariates were tested by employing t-tests (using RFMLE to adjust for missing data) and Chi square tests as appropriate. Pearson correlations (also using RFMLE) were used to assess the strength of associations between variables. Cross-lagged path analysis models the directional relationships between two or more variables over time and was used to compare the fit of four cross-lagged models of the relationship between dimensions of sexual harassment and depressive symptoms from grades seven, eight and nine.

The first baseline model, henceforth called the ‘stability model’, hypothesized that earlier depressive symptoms predict later depressive symptoms and earlier sexual harassment predicts later harassment, but that there is no relationship between depressive symptoms and sexual harassment (see Figure 2). The second lagged sexual harassment to depressive symptoms model, henceforth the ‘SH → DS model’ expands on the stability model by hypothesizing a directional relationship from earlier sexual harassment to later depressive symptoms, but not vice versa. The third model lagged depressive symptoms to sexual harassment hypothesized relationships from earlier depressive symptoms to later sexual harassment, but not vice versa (henceforth the “DS → SH model”).
The fourth cross-lagged bidirectional model, which was labelled the "bidirectional model", combined the two, hypothesizing relationships from earlier depressive symptoms to later victimization and vice versa (a reciprocal relationship).

A cross-lagged path analysis with separate cross-lagged models for each gender and with latent variables was conducted. All models were adjusted for covariates. Contemporaneous disturbances between depressive symptoms and sexual harassment latent variables were correlated to account for the effect of un-modelled causal variables (not shown in figure). Covariates were allowed to co-vary with each other and errors from identical manifest scale items were allowed to correlate across grades. To address missing data and non-normal distributions of the data, models were estimated using RFMLE. Standard measures of fit were used to compare the stability model with all other models. Fit measures included: a global fit measure, the comparative fit index (CFI), range 0–1 with a CFI of above 0.90 considered acceptable (Bentler, 1990) and a CFI above 0.95 considered optimal (Hu & Bentler, 1999); a residual fit statistic, the root mean square error of approximation (RMSEA), range 0–1 with a RMSEA below 0.05 considered good (Browne & Cudeck, 1993). The Satorra–Bentler scaled Chi-square difference test was used to formally test statistical differences between the models.

Standardized path coefficients were used to assess the magnitude and relative importance of each pathway. Multi-groups analysis was used to formally compare models for boys and girls respectively by constraining stability and cross-lagged pathways to be equal between genders.
Figure 2. Hypothesized models of the relationship between dimensions of sexual harassment victimization and dimensions of depressive symptoms between Grade 7 and 9. (Symbols of error terms of the manifest variables have been omitted to avoid clutter).

Models:

“stability” over time = a paths a only; Lagged sexual harassment victimization to depressive symptoms (SH → DS) = a + c; Lagged depressive symptoms to sexual harassment victimization (DS → SH) = a + b; Lagged bidirectional = a + b + c.
6.5.3 Paper III

Students participating in the DISA program were classified as intervention participants and all other students were assigned to a comparison group. Because of the non-normal distribution of the CES-D, as well of all other variables, between-group differences in median scoring were analyzed using the Mann-Whitney U-test (Divine, Norton, Hunt, & Dienemann, 2013). Differences between categorical variables were analyzed using Chi-squared statistics. To calculate effect sizes of the $U$ statistics, the Theta ($\Theta$) statistics were used by dividing the $U$ by the product of the two sample sizes $mn$ (Newcombe, 2006a). Given the positively skewed distributions in both groups, confidence intervals of the effect sizes were calculated using a generalized model (Newcombe, 2006b), which represents a modification of the model used by Hanley and McNeil (1982). Calculations of effect sizes and confidence intervals were conducted using an Excel calculation sheet provided by Newcombe (2015). The significance levels were set to $p < 0.05$. The SPSS PASW Statistics 22 software was used for the remaining statistical analyses.

6.5.4 Paper IV

Independent samples t-tests were employed to calculate between-group differences in mean scoring on depressive symptoms at baseline and follow-up as well as baseline characteristics. Between-group differences in grade level at baseline were analyzed using Chi-squared statistics. To handle missing data, Multiple Imputation (Schlomer et al., 2010) was used in the independent sample t-tests calculations and the Chi-squared statistics. All the above described inter-group analyses were conducted using SPSS PASW Statistics 22 software.

Besides the fact that 7.5% ($n = 4$) of the girls took part in DISA only a few times, there was no information available on noncompliance regarding e.g. homework assignments. Hence, all analyses are reported according to the intention-to-treat principle (Gupta, 2011). In this pragmatic trial effectiveness evaluation, differences between the DISA group and the comparison groups regarding depressive symptoms at follow up were analyzed by employing Structural Equation Modelling (SEM), using Mplus version 6.1. The SEM models were estimated in two steps; the first step was to examine the effects of DISA on depressive symptoms at follow-up (Figure 3). In addition, the model included direct effects from all baseline characteristics variables (i.e., depressive symptoms, sexual harassment victimization, bullying, poor peer support, and low personal relative
affluence) on depressive symptoms at follow-up, as well as correlations between all baseline variables.

Figure 3. Step 1 of the analysis: The effect of the DISA program on depressive symptoms at follow up and direct effects of baseline covariates on depressive symptoms at follow up. (Error terms have been omitted to avoid clutter). Controlled for family affluence.

In real world implementation settings, groups typically differ in model parameters like baseline means and variances. To address this issue, a two-group model has been employed, thereby accounting for group differences (Coman et al., 2014). The second step of the analysis (Figure 4) was hence to study whether the effects of the baseline characteristics variables on depressive symptoms at follow-up differed between DISA participants and non-participants by adding a multiple-group comparison to the SEM model. The model encompassed correlations between all variables at baseline.
Missing data were handled using Full Information Maximum Likelihood (FIML) estimation (Enders, 2001). Furthermore, since individuals attending the same school class may be expected to be more similar to each other compared to individuals attending different classes (H. Brown & Liao, 1999), the models were estimated with cluster robust standard errors.

The estimated models were assessed using a combination of several fit indices: the Root Mean Square Error of Approximation (RMSEA), which preferably should be at or below 0.05, although cut-offs up to 0.10 are also acceptable (Hu & Bentler, 1999); the Comparative Fit Index and the Tucker-Lewis Index (TLI), which both should optimally be at or above 0.95 (Hu & Bentler, 1999; Schreiber, Nora, Stage, Barlow, & King, 2006), although cut-offs at or above 0.90 are considered acceptable (Bentler, 1990); and the Standardized Root Mean Square Residual (SRMR) which should be at or below 0.08 (Schreiber et al., 2006). All Alpha levels were set to 95%.

6.6 Ethics
All procedures performed in the current study involved human participants and were in accordance with the ethical standards of the 1964 Helsinki declaration and was approved by the Umeå Regional Ethical
Review Board (Dnr 09-179M). An information letter was sent to the students and their parents to ensure informed consent. Students were informed about the aims of the questionnaire and that they could withdraw from participation at any time without negative consequences. The identities of the respondents were held confidential and the identities of the students were kept in a sealed register for the longitudinal follow-ups.

As the YHD study questionnaire contained several questions of potentially sensitive nature, at the end of the survey, students were asked about if their well-being had worsened because of the questionnaire. If a student indicated that it had, another question followed regarding if the student wanted somebody from the Students’ Health (Elevhälsan) to contact them. If so, the principal investigator informed the Students’ Health who in turn contacted the student in question. In total, 41 students indicated that they wanted contact with either the school nurse or the school counsellor. After the UHU project finished, the principal investigator had a follow-up discussion with each Students’ Health member of staff, who confirmed that most students had forgotten that they had implicated that they wanted contact when the school nurse or school counsellor contacted them. In the end, only one of the 41 students were assessed as in need for support. However, as it turned out, that had nothing to do with the questionnaire.
7 Results

7.1 Individual, Psychosocial, and Structural Determinants Associated with Depressive Symptoms (Paper I)

7.1.1 Descriptive Statistics
The prevalence of depressive symptoms was 44.3% among girls and about half as high in boys (23.0%, \( p < .001 \)) (Table 4). Among the determinants of depressive symptoms suggested here, significant differences between the genders were found in self-efficacy, self-esteem, parental as well as peer support, bullying victimization and family affluence (Table 4).

7.1.2 Associations between Different Levels of Determinants and Depressive Symptoms
The full models were statistically significant; boys, \( \chi^2 = 74.50, df = 14, p < .001 \); girls, \( \chi^2 = 144.18, df = 14, p < .001 \). An overview of odds ratios in both genders is presented in Figure 4. Please refer to Table 3 for boys and Table 4 for girls in Paper I for the results from the logistic regressions (Models 1-3).

7.1.3 Individual Determinant
Self-esteem had a medium strong correlation with depressive symptoms, \( r = .486, p = < .001 \), but showed unreasonably high odds ratios, OR ~ 73.5. This individual level determinant was hence omitted in the logistic regression analyses. As shown in Figure 5, in the full model (Model 3), in which all other variables in the model were controlled for, reporting low self-efficacy remained independently associated with high levels of depressive symptoms in both genders - the probability of reporting depressive symptoms increased two and a half times in boys and nearly two times in girls.
Table 4. Prevalence of each determinant by gender.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Boys (n=566)</th>
<th>Girls (n=627)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% (n)</td>
<td>% (n)</td>
<td></td>
</tr>
<tr>
<td>Depr. symp. (≥16)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>77.0 (412)</td>
<td>55.7 (343)</td>
<td>***</td>
</tr>
<tr>
<td>Yes</td>
<td>23.0 (123)</td>
<td>44.3 (273)</td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>59.2 (298)</td>
<td>51.4 (302)</td>
<td>*</td>
</tr>
<tr>
<td>Low</td>
<td>40.8 (205)</td>
<td>48.6 (285)</td>
<td></td>
</tr>
<tr>
<td>Self-esteem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>38.8 (205)</td>
<td>18.6 (113)</td>
<td>***</td>
</tr>
<tr>
<td>Middle</td>
<td>53.1 (281)</td>
<td>61.5 (374)</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>8.1 (43)</td>
<td>19.9 (121)</td>
<td></td>
</tr>
<tr>
<td>Parent. supp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>41.3 (187)</td>
<td>34.5 (193)</td>
<td>*</td>
</tr>
<tr>
<td>Middle</td>
<td>25.4 (115)</td>
<td>33.5 (187)</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>33.3 (151)</td>
<td>32.0 (179)</td>
<td></td>
</tr>
<tr>
<td>Peer sup.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>34.8 (158)</td>
<td>46.3 (290)</td>
<td>***</td>
</tr>
<tr>
<td>Middle</td>
<td>21.1 (96)</td>
<td>17.4 (109)</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>44.1 (200)</td>
<td>31.4 (183)</td>
<td></td>
</tr>
<tr>
<td>Teacher supp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>38.6 (177)</td>
<td>32.2 (183)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Middle</td>
<td>26.9 (123)</td>
<td>32.5 (185)</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>34.5 (158)</td>
<td>35.3 (201)</td>
<td></td>
</tr>
<tr>
<td>School demands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>38.9 (201)</td>
<td>37.8 (229)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Middle</td>
<td>25.9 (134)</td>
<td>31.0 (188)</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>35.2 (182)</td>
<td>31.2 (189)</td>
<td></td>
</tr>
<tr>
<td>Sexual harass.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>54.9 (271)</td>
<td>48.4 (278)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Moderate</td>
<td>26.1 (129)</td>
<td>30.6 (175)</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>19.0 (94)</td>
<td>21.0 (121)</td>
<td></td>
</tr>
<tr>
<td>Bullying</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>73.7 (365)</td>
<td>65.5 (389)</td>
<td>**</td>
</tr>
<tr>
<td>Yes</td>
<td>26.3 (130)</td>
<td>34.5 (205)</td>
<td></td>
</tr>
<tr>
<td>FAS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>29.8 (165)</td>
<td>29.5 (183)</td>
<td>*</td>
</tr>
<tr>
<td>Middle</td>
<td>28.2 (156)</td>
<td>34.4 (213)</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>42.0 (232)</td>
<td>36.1 (224)</td>
<td></td>
</tr>
<tr>
<td>Pers. rel. affl.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>82.4 (463)</td>
<td>80.0 (497)</td>
<td>n.s.</td>
</tr>
<tr>
<td>No</td>
<td>17.6 (99)</td>
<td>20.0 (124)</td>
<td></td>
</tr>
<tr>
<td>Par. foreign backg.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>87.1 (484)</td>
<td>83.8 (521)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Yes</td>
<td>12.9 (72)</td>
<td>16.2 (101)</td>
<td></td>
</tr>
</tbody>
</table>

* Differences in the total n (1193) are due to missing cases.
* p < 0.05; ** p < 0.01; *** p < 0.001; n.s. = non significant.

7.1.4 Psychosocial Determinants

Among boys, the psychosocial determinants independently associated with depressive symptoms in the full model (Model 3) were low teacher support and bullying. In girls, a greater number of psychosocial determinants had significant odds ratios in the full model (Model 3); low
parental support, low teacher support, high school demands and moderate and high experience of sexual harassment as well as bullying. The strongest association in girls was found for experiences of high levels of sexual harassment, which increased the odds ratios five and a half times. Experiences of low parental and teacher support, high school demands and moderate experience of sexual harassment and bullying increased the odds ratios about two times (Figure 5).

![Figure 5. Full model odds ratios of determinants for depressive symptoms by gender.](image)

*More than one type on more than one occasion.

### 7.1.5 Structural Determinants

In boys, low personal relative affluence increased the likelihood of reporting depressive symptoms by about three and a half times and parental migrant background increased the odds ratios two and a half times (Figure 5). Also illustrated in Figure 5, in girls, only low personal relative affluence was independently associated with depressive symptoms,
increasing the likelihood of reporting depressive symptoms about two times.

From the analyses of Paper I, I have taken particular note on the relative importance of sexual harassment victimization in girls, and low personal relative affluence in both genders (but particularly in boys), which is reflected in the following three Papers.

7.2 Directional Pathways between Sexual Harassment and Depressive Symptoms (Paper II)

Due to considerations of space, please refer to Table 1 in Paper II for baseline gender differences in covariates.

There were no gender differences in covariates at baseline (wave 2010). Girls reported higher levels of depressive symptoms than boys in six out of nine comparisons across all three dimensions (negative affect, psychosomatic symptoms, and anhedonia). There were no differences between girls and boys in anhedonia. Girls reported higher levels of sexual harassment victimization than boys in six out of nine comparisons across all three dimensions of sexual harassment (physical, verbal name-calling, and public display). The non-significant findings involved physical harassment in Grade 8 and 9 and public display in Grade 7.

The estimated correlations between dimensions of depressive symptoms, sexual harassment and covariates are also reported in Table 1 in Paper II (girls lower diagonal, boys upper diagonal). Low personal relative affluence was moderately correlated to depressive symptoms and to a much lesser degree to sexual harassment. Living with both parents was for the most part weakly and inversely correlated to depressive symptoms and sexual harassment dimensions, while having unemployed parents or a migrant family background were positively related with both outcomes, although these effects were also small in magnitude. Overall, the patterns of correlation within each gender were similar.

7.2.1 Subscale Directional Pathways

An initial model with depressive symptoms and sexual harassment had satisfactory fit (CFI, 0.90), but despite of significant cross-loadings, the models were not different from each other overall. Therefore, a series of different models decomposing all three dimensions of depressive symptoms and sexual harassment were compared. For each dimension
combination, the Stability, SH→DS, DS→SH, and bidirectional pathways were compared in boys and girls separately, rendering 72 smaller models (9 dimensions x 4 pathways x 2 genders) (Figure 2). All of the compared models had excellent fit to the data (CFI ≥ 0.95). The findings are summarized in Table 5 and indicate for each dimension combination which of the four pathways model had the most support.

Table 5. Comparison of dimensions of sexual harassment victimization and depressive symptoms; simple cross-lagged models by gender.

<table>
<thead>
<tr>
<th>Sexual harassment victimization</th>
<th>Depressive symptoms</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Somatic</td>
<td>Negative</td>
<td>Anhedonia</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td>B</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Name-calling</td>
<td>SH</td>
<td>SH</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Public display</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Name-calling</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Public display</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

O = Stability model; B = Bidirectional; SH = SH > DS; D = DS > SH.

Public display sexual harassment had no relation to depressive symptoms in either gender. Among boys, somatic symptoms, negative affect and anhedonia all preceded future sexual harassment in the form of name-calling.

The corresponding pattern among girls is miscellaneous but suggests that physical sexual harassment are associated with later somatic symptoms in a reciprocal manner, and that name-calling precedes somatic symptoms as well as negative affect. Also, in girls, anhedonia predated future name-calling.

The pathways between physical sexual harassment and name-calling and the three depression subscales (somatic symptoms, negative affect and anhedonia) were tested for mediation using the “INDIRECT” option in Mplus. The results reflect those shown in Table 5 where the cross-lagged models suggest that the pathways between physical sexual harassment and somatic symptoms in girls are bidirectional. However, the tests for
mediating pathways were non-significant, suggesting that there are at least two distinct subgroups of girls with different vulnerabilities; one in which physical sexual harassment leads to future depressive symptoms and a second showing a reverse pattern. There were several significant mediation pathways between name-calling and subsequent somatic symptoms, and negative affect in girls. This matches the cross-lagged findings, suggesting a single group regarding name-calling and later depressive symptoms.

There were no significant mediation pathways between anhedonia and physical sexual harassment among boys. Nevertheless, in all other comparisons, at least one significant mediation pathway was found between depressive symptoms, subsequent name-calling and physical sexual harassment. This is broadly compatible with the cross-lagged models and suggests that boys with elevated depressive symptoms (all three dimensions) subsequently experience sexual harassment in the form of name-calling.

7.2.2 Combined Directional Pathways

Given these subscale results, the overall model was re-specified by omitting the public display sexual harassment subscale. Table 6 reports the fit indices for each of the four possible overall models without the public display sexual harassment subscale.

As shown in Table 6, all models show an acceptable, although not an excellent fit. In girls, all other models were superior to the stability model with the bidirectional model providing the best fit in terms of the lowest Chi square. In boys, all models also showed an acceptable fit. However, none of the models were statistically different from the stability model. Among girls, both the targeting of students with elevated depressive symptoms and the consequence of sexual harassment explain a significant part of the relationship between depressive symptoms and sexual harassment victimization. Among boys, only the predating of dimensions of depressive symptoms explain the association between dimensions of depressive symptoms and name-calling.
Table 6. Fit indices of hypothesized cross-lagged models of sexual harassment and depressive symptoms over 1 year by gender.

<table>
<thead>
<tr>
<th>Models</th>
<th>χ²</th>
<th>Df</th>
<th>CFI</th>
<th>RMSEA</th>
<th>Δ χ²</th>
<th>p-level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adjusted¹ cross-lagged pathways in girls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability (Baseline)</td>
<td>2493.9</td>
<td>1827</td>
<td>0.94</td>
<td>0.018</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sexual harassment &gt; Depressive symptoms</td>
<td>2460.6</td>
<td>1815</td>
<td>0.94</td>
<td>0.017</td>
<td>33.3</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Depressive symptoms &gt; Sexual harassment</td>
<td>2468.0</td>
<td>1815</td>
<td>0.94</td>
<td>0.017</td>
<td>25.9</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Full Cross-lagged</td>
<td>2440.3</td>
<td>1803</td>
<td>0.94</td>
<td>0.017</td>
<td>53.6</td>
<td>&lt;.001</td>
</tr>
<tr>
<td><strong>Adjusted¹ cross-lagged pathways in boys</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability (Baseline)</td>
<td>2554.8</td>
<td>1827</td>
<td>0.93</td>
<td>0.019</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sexual harassment &gt; Depressive symptoms</td>
<td>2539.8</td>
<td>1815</td>
<td>0.93</td>
<td>0.019</td>
<td>15.0</td>
<td>.855</td>
</tr>
<tr>
<td>Depressive symptoms &gt; Sexual harassment</td>
<td>2542.3</td>
<td>1815</td>
<td>0.93</td>
<td>0.019</td>
<td>12.5</td>
<td>.943</td>
</tr>
<tr>
<td>Full Cross-lagged</td>
<td>2531.7</td>
<td>1803</td>
<td>0.93</td>
<td>0.019</td>
<td>23.5</td>
<td>.989</td>
</tr>
</tbody>
</table>

¹ Adjusted for: Personal relative affluence, parent(s) unemployed, parental migrant background, disrupted family. ² Satorra-Bentler scaled Chi-square difference test.

The stability pathways for sexual harassment victimization and depressive symptoms were reasonably stable in both genders (Table 7). However, the continuity of physical sexual harassment was very low among boys, but verbal name-calling harassment was enduring. Consistent with the bidirectional model, in girls, several cross-lagged pathways between dimensions of sexual harassment victimization and depressive symptoms were significant and in both directions. Especially the pathway between name-calling and somatic symptoms appears strong and consistent across grades. None of the cross-lagged pathways were significant in boys. Formal multi-group comparisons confirmed that the models differed between the genders regarding the combined stability, covariation and cross-lagged estimates, Δχ² = 711.6, p < .001, which supports the decision to perform gender separate analyses.
Table 7. Cross-lagged standardized path coefficients, latent sexual harassment and depressive symptoms over 1 year by gender.

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G7&gt;G8</td>
<td>G8&gt;G9</td>
<td>G7&gt;G8</td>
<td>G8&gt;G9</td>
</tr>
<tr>
<td><strong>Stability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH Physical</td>
<td>.62***</td>
<td>.64***</td>
<td>.10</td>
<td>.24 **</td>
</tr>
<tr>
<td>SH Name-calling</td>
<td>.58***</td>
<td>.50***</td>
<td>.40***</td>
<td>.36 ***</td>
</tr>
<tr>
<td>DS Negative affect</td>
<td>.48***</td>
<td>.38***</td>
<td>.39***</td>
<td>.45 ***</td>
</tr>
<tr>
<td>DS Anhedonia</td>
<td>.52***</td>
<td>.61***</td>
<td>.50***</td>
<td>.47 ***</td>
</tr>
<tr>
<td><strong>Cross-lagged (significant)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH Name-calling &gt; DS Somatic</td>
<td>.24*</td>
<td>.25*</td>
<td>.09</td>
<td>-.11</td>
</tr>
<tr>
<td>SH Name-calling &gt; DS Negative effect</td>
<td>.03</td>
<td>.38*</td>
<td>.09</td>
<td>-.02</td>
</tr>
<tr>
<td>DS Somatic &gt; SH Name-calling</td>
<td>.14</td>
<td>.39*</td>
<td>.10</td>
<td>-.11</td>
</tr>
<tr>
<td>DS Anhedonia &gt; SH Name-calling</td>
<td>-.05</td>
<td>.19**</td>
<td>.19</td>
<td>-.08</td>
</tr>
</tbody>
</table>

1 Full cross-lagged model, adjusted for: Personal relative affluence, parent(s) unemployed, migrant background, disrupted family. Only significant pathways shown; 2SH = Sexual harassment; 3DS = Depressive symptoms; * p<.05; ** p<.01; *** p<.001.

7.3 Features Characterizing Girls Assigned to DISA (Paper III)

During 2011, 66 girls and zero boys reported DISA participation at the schools included in this study. Accordingly, in order to be able to do comparable analyses, only girls (n = 222) were assigned to a comparison group. Girls who participated in DISA clustered mainly at five of the ten schools (i.e. >10 % of the participants at each school, not reported in table). The comparison group clustered mainly at four schools. Nine percent (n = 6) of the DISA participants reported low fidelity (only participating on a few occasions). Fifty-three students participated in the spring term and 13 in the fall. Thirty-three (48.5%) girls were in grade 7 (~14 years old), while 32 (51.5%) were in grade 8 (~15 years old) when participating in DISA (not reported in table).

DISA participants had significantly higher median scoring of depressive symptoms and lower scoring of self-esteem than the comparison group (Table 8). Also shown in Table 8, intervention participants reported higher levels of sexual harassment victimization, less peer support, and lower personal relative affluence than the comparison group. There was a
borderline difference between the groups in bullying victimization, but no
differences between the groups in self-efficacy (Table 8), family migrant
background, parental unemployment, or parental support (Table 9).

Data from the Swedish National Agency for Education shows that the
educational level of parents were marginally lower at the schools where
DISA participants clustered (please refer to Table 3, Paper III). Also, the
proportion of students graduating with a high school diploma was lower.
However, family migrant background was equal in both DISA schools and
comparison group schools.

Table 8. Between-group differences in median scorings of female DISA
participants and female non-participants using the Mann Whitney U
statistics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>DISA part.</th>
<th>Non-part.</th>
<th>(n)</th>
<th>(Mdn)</th>
<th>(n)</th>
<th>(Mdn)</th>
<th>(U)</th>
<th>(z)</th>
<th>(ES) [95% CI]</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressive symptoms</td>
<td>66</td>
<td>16</td>
<td>222</td>
<td>12</td>
<td>5302</td>
<td>-3.065</td>
<td>0.36</td>
<td>.003</td>
<td>[.29, .44]</td>
<td>.003</td>
</tr>
<tr>
<td>Peer support</td>
<td>62</td>
<td>9</td>
<td>211</td>
<td>10</td>
<td>5454</td>
<td>-2.013</td>
<td>0.42</td>
<td>.044</td>
<td>[.34, .50]</td>
<td>.493</td>
</tr>
<tr>
<td>Teacher support</td>
<td>65</td>
<td>9</td>
<td>203</td>
<td>10</td>
<td>5835</td>
<td>- .686</td>
<td>0.47</td>
<td>.93</td>
<td>[.39, .55]</td>
<td>.842</td>
</tr>
<tr>
<td>School demands</td>
<td>65</td>
<td>8</td>
<td>216</td>
<td>9</td>
<td>6906</td>
<td>- .200</td>
<td>0.49</td>
<td>.911</td>
<td>[.41, .57]</td>
<td>.011</td>
</tr>
<tr>
<td>Sexual harassment</td>
<td>65</td>
<td>2</td>
<td>206</td>
<td>0</td>
<td>5383</td>
<td>-2.259</td>
<td>0.40</td>
<td>.33</td>
<td>[.33, .48]</td>
<td>.050</td>
</tr>
<tr>
<td>Bullying</td>
<td>65</td>
<td>1</td>
<td>212</td>
<td>1</td>
<td>5933</td>
<td>-1.964</td>
<td>0.43</td>
<td>.55</td>
<td>[.35, .55]</td>
<td>.012</td>
</tr>
<tr>
<td>Self esteem</td>
<td>65</td>
<td>17</td>
<td>218</td>
<td>20</td>
<td>5629</td>
<td>-2.517</td>
<td>0.40</td>
<td>.48</td>
<td>[.32, .48]</td>
<td>.083</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>64</td>
<td>27</td>
<td>209</td>
<td>29</td>
<td>5732</td>
<td>-1.735</td>
<td>0.43</td>
<td>.51</td>
<td>[.35, .51]</td>
<td>.083</td>
</tr>
</tbody>
</table>
Table 9. Between-group differences in socio-economic variables using the Chi-squared statistics.

<table>
<thead>
<tr>
<th>Variables</th>
<th>DISA participants</th>
<th>Non-participants</th>
<th>p</th>
<th>$\chi^2$</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental foreign background</td>
<td>7 10.8</td>
<td>43 19.9</td>
<td>.091</td>
<td>2.852</td>
<td>1</td>
</tr>
<tr>
<td>Parental unemployment</td>
<td>10 16.7</td>
<td>18 8.7</td>
<td>.074</td>
<td>3.196</td>
<td>1</td>
</tr>
<tr>
<td>Low personal relative affluence</td>
<td>22 33.3</td>
<td>37 16.8</td>
<td>.004</td>
<td>8.457</td>
<td>1</td>
</tr>
<tr>
<td>Low parental support</td>
<td>18 28.6</td>
<td>72 35.1</td>
<td>.336</td>
<td>.927</td>
<td>1</td>
</tr>
</tbody>
</table>

7.4 Effectiveness of DISA on Depressive Symptoms in Girls (Paper IV)

Table 10 reports baseline covariate mean differences between the DISA group and the control condition as analyzed by independent samples T-tests and Chi-squared statistics as appropriate. At baseline, girls participating in DISA had significantly higher scores on depressive symptoms, and significantly less money than their friends compared to their peers in the comparison group. Also, girls participating in DISA reported more bullying victimization than the comparison group. There were no differences in sexual harassment victimization, peer support, family affluence (FAS), or grade level at baseline. At the 1-year follow-up, mean scoring on depressive symptoms in the comparison group had increased significantly to approximately the same level as the intervention group, who had not changed their mean scoring; comparison group, BL $Mn = 14.45, SD = 9.19$, FU $Mn = 17.14, SD = 6.65, t = 4.593, df = 221, p < .001$ (not shown in table). There was no difference between the groups in proportion of girls in grade seven, $p = .359$. (Not shown in table. Please refer to Table 1 in Paper IV for details.)

The model fit indices for step 1 of the analysis were: RMSEA: .052; CFI: 0.930; TLI: 0.848, SRMR: .034, whereas the following model fit statistics were produced for step 2: RMSEA: .066; CFI: .090; TLI: .799; SRMR: .058. Thus, while both models show acceptable values for RMSEA, CFI, and
SRMR, the TLI value is lower than optimal. For both step 1 and step 2 of the analysis, the estimated models fitted data better than the empty models/baseline models.

The path coefficients from the first step of the SEM analysis are presented in Table 11. First of all, the results show no effect of the DISA program on depressive symptoms at follow-up while there was a statistically significant auto-regressive path from depressive symptoms at baseline to depressive symptoms at follow-up (.255, \( p = .002 \)). There was moreover a moderate and statistically significant effect of sexual harassment victimization at baseline on depressive symptoms at follow-up (.307; \( p = .001 \)). Bullying, peer support, and low personal relative affluence, on the other hand, did not predict any significant changes in depressive symptoms over time.

Table 12 presents the standardized path coefficients from the second step of the analysis where, in contrast to the previous set of results, the analysis is grouped by intervention condition. In other words, the results show whether there was a difference in effects of depressive symptoms, sexual harassment and bullying victimization, peer support, and low personal relative affluence at baseline on depressive symptoms at follow-up, between DISA participants and non-participants.

Among the DISA participants, the effects of depressive symptoms and sexual harassment victimization at baseline were statistically significant and of medium strength (.383, \( p = .036 \). and .565, \( p = .001 \), respectively), suggesting that depressive symptoms were stable over time and that those who have been exposed to sexual harassment were more likely to experience an increase in depressive symptoms over time.

Among the non-participants, there was a similar pattern with a statistically significant path from depressive symptoms at baseline to follow-up (.234, \( p = .018 \)), and among the non-participants, the measure of sexual harassment victimization at baseline was also significantly associated with depressive symptoms at follow-up, albeit weaker than in the DISA participants (.266, \( p = .001 \)). This suggests that also in the non-participant group, those who report sexual harassment victimization are more likely to have increased depressive symptoms over time. Neither peer support nor bullying and low personal relative affluence were significantly associated with depressive symptoms at follow-up in either group.
Table 10. Inter-group mean differences at pre-intervention and at 1-year follow up by intervention condition.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
<th>p</th>
<th>t</th>
<th>Mean diff.</th>
<th>SE of mean diff.</th>
<th>95% CI of mean diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISA part.</td>
<td>19.14 (9.83)</td>
<td>.001</td>
<td>-3.295</td>
<td>4.690</td>
<td>1.423</td>
<td>-7.49 to -1.90</td>
</tr>
<tr>
<td>Non part.</td>
<td>18.65 (9.13)</td>
<td>.160</td>
<td>1.407</td>
<td>-1.506</td>
<td>1.071</td>
<td>-3.60 to -.59</td>
</tr>
<tr>
<td>Depressive sympt.</td>
<td>4.24 (4.60)</td>
<td>.074</td>
<td>1.790</td>
<td>-1.364</td>
<td>.762</td>
<td>-2.86 to -.13</td>
</tr>
<tr>
<td>Sexual harass.</td>
<td>4.24 (2.87)</td>
<td>.042</td>
<td>-2.032</td>
<td>-.315</td>
<td>.155</td>
<td>-6.2 to -.01</td>
</tr>
<tr>
<td>Bullying BL</td>
<td>5.74 (2.90)</td>
<td>.294</td>
<td>1.050</td>
<td>.487</td>
<td>.463</td>
<td>-.42 to 1.40</td>
</tr>
<tr>
<td>Peer support BL</td>
<td>3.87 (1.11)</td>
<td>.003</td>
<td>3.137</td>
<td>.509</td>
<td>.162</td>
<td>.19 to -.83</td>
</tr>
<tr>
<td>Pers. rel. affl.</td>
<td>5.58 (1.10)</td>
<td>.559</td>
<td>.584</td>
<td>.104</td>
<td>.178</td>
<td>-.25 to -.45</td>
</tr>
</tbody>
</table>

Table 11. The effectiveness of the DISA program on depressive symptoms at follow-up. Standardized path coefficients from structural equation modelling. (n=275)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate 1</th>
<th>95% p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISA</td>
<td>.005</td>
<td>.931</td>
</tr>
<tr>
<td><strong>Baseline variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>.255</td>
<td>.002</td>
</tr>
<tr>
<td>Sexual harassments</td>
<td>.307</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Bullying</td>
<td>-.095</td>
<td>.157</td>
</tr>
<tr>
<td>Peer support</td>
<td>-.095</td>
<td>.253</td>
</tr>
<tr>
<td>Low personal relative affluence</td>
<td>-.029</td>
<td>.584</td>
</tr>
</tbody>
</table>

1 Controlled for family affluence.
Table 12. Differences between DISA participants and non-participants in terms of the effect of study variables at baseline on depressive symptoms at follow-up. Standardized path coefficients from structural equation modelling. ($n = 275$)

<table>
<thead>
<tr>
<th>Baseline variables</th>
<th>DISA participants ($n = 53$)</th>
<th>Non-participants ($n = 250$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressive symptoms</td>
<td>.383</td>
<td>.234</td>
</tr>
<tr>
<td>Sexual harassment victimization</td>
<td>.565</td>
<td>.266</td>
</tr>
<tr>
<td>Bullying</td>
<td>.136</td>
<td>-.118</td>
</tr>
<tr>
<td>Peer support</td>
<td>.002</td>
<td>-.138</td>
</tr>
<tr>
<td>Low personal relative affluence</td>
<td>.078</td>
<td>-.048</td>
</tr>
</tbody>
</table>

1 Controlled for family affluence.

<table>
<thead>
<tr>
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<tr>
<td>Bullying</td>
<td>.136</td>
<td>-.118</td>
</tr>
<tr>
<td>Peer support</td>
<td>.002</td>
<td>-.138</td>
</tr>
<tr>
<td>Low personal relative affluence</td>
<td>.078</td>
<td>-.048</td>
</tr>
</tbody>
</table>

1 Controlled for family affluence.
8 Discussion

This study set out to explore the patterning of determinants of depressive symptoms in Swedish adolescents. Additionally, the study set out to evaluate a cognitive-behavioral intervention in a real-world setting in relation to determinants of depressive symptoms in adolescent girls. In order to gain information about this, data from a three wave survey study conducted in the northern part of Sweden was utilized. An ecosocial theory framework as well as a gender theoretical framework have guided the interpretation of the results. Here, I will highlight the main themes that have surfaced in each paper. Please refer to each individual paper for more detailed discussions.

Firstly, I will discuss determinants on different levels and their associations with depressive symptoms. An ecosocial theoretical approach will influence the interpretation of these results. As Krieger (2011) points out, none of the core constructs of ecosocial theory stands alone – or should be used in isolation. Nevertheless, focus will be on the first and second core constructs of embodiment and multiple pathways for embodiment (including discrimination and other forms of mental, physical, and sexual trauma) when discussing the results of the current study. Regarding the third construct, interplay of exposure, susceptibility, and resistance the data of the present study does not provide sufficient information to address that construct. In regards to the fourth core construct, accountability and agency, it will be elaborated upon in the Implications for Prevention and Health Promotion section.

Secondly, I will deepen the discussion regarding directionality between sexual harassment victimization and depressive symptoms from a gender theoretical point of view.

Lastly, I will discuss the implications of determinants on different levels on the effectiveness of the cognitive-behavioral program DISA on depressive symptoms in adolescent girls and by so doing, returning to some of the constructs of ecosocial and gender theory.

8.1 Determinants Associated with Depressive Symptoms in Swedish Adolescents

This cross-sectional study on determinants on individual, psychosocial and structural levels showed that determinants on all these levels were
independently associated with depressive symptoms in both genders. Viner et al. (2012) concluded in their review that the strongest determinants of adolescent health worldwide are structural factors such as national wealth, income inequality, and access to education. In addition, supportive families, safe and supportive schools, together with positive and supportive peer relations are crucial to helping young people attain the best possible health. The authors suggest that improving adolescent health worldwide requires improving young people’s daily life with families and peers and in schools, addressing risk and protective factors in the social environment at a population level rather than on the individual level. In the current study, this is reflected by the determinants parental/peer/teacher support, school demands, sexual harassment, bullying and personal relative affluence. With that said, besides determinants on the psychosocial and structural levels, the current study did find support for an individual level determinant associated with depressive symptoms, something which will be discussed next.

8.1.1 Individual Determinants

There were only two determinants on the individual level included in the present study. In line with previous studies (Caprara et al., 2010; Lightsey, Burke, Ervin, Henderson, & Yee, 2006; Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005), generalized self-efficacy (GSE) was associated with depressive symptoms in both genders. However, while girls reported lower levels of self-efficacy, the associations to depressive symptoms were stronger in boys (gender differences were not tested for significance). This finding is partly in contrast to previous research on GSE and psychological well-being – it has been shown that boys do tend to report higher levels of GSE but respondents with high GSE report higher levels of psychological well-being, regardless of gender (De Caroli & Sagone, 2014).

Self-esteem was not included in the logistic regression analyses because of the high correlation with depressive symptoms. Nevertheless, twice as many girls as boys reported low self-esteem, which is in line with previous research (Kling, Shibley Hyde, Showers, Buswell, & Eisenberg, 1999; Moksnes et al., 2016).

8.1.2 Structural Determinants

With regard to socioeconomic determinants, family affluence did not relate to depressive symptoms in any significant way in this age group, regardless
of gender. The FAS scale has been the subject of critique as it is not discriminatory within very rich countries, where a very high proportion of children are categorized as high FAS (Currie, Molcho, et al., 2008). Parental foreign background was associated with depressive symptoms in boys but not in girls. This result is in contrast with previous findings regarding parental foreign background and subjective health complaints in a Swedish sample in which parental foreign background was associated with subjective health complaints in girls only (Carlerby, Viitasara, Knutsson, & Gillander Gadin, 2011).

In the present study, the measure of personal relative affluence seems to be the strongest structural determinant for depressive symptoms for both genders. This is in line with Koivusilta, Rimpelä and Kautiainen (2006) who reported that adolescents’ personal social position was the strongest socioeconomic determinant for adolescent health inequalities. Elgar, McKinnon, Torsheim et al. (2016) showed in their study that subjective and objective socioeconomic positions relate differently to adolescent life satisfaction and are not equivalent indicators of the same construct. Marmot (2004) and Galobardes, Lynch and Smith (2007) have also discussed pocket money as the socioeconomic determinant influencing adolescents’ ability to gain social advantages by giving individuals the ability to actively create everyday life opportunities and enhance social participation. The inability to do the same things as one’s friends because of a lack of monetary resources can lead to social exclusion and diminished possibilities to create a sense of belonging in terms of various social markers, which, as Marmot (2004) argues, has a profound effect on their general health. Krieger (2008) claims that what is driving health inequities is how power—both power over and power to do (including constraints on and possibilities for exercising each type)—structures people’s engagement with the world and that neither type of power readily maps onto a metric of proximal or distal (Krieger, 2008). This line of reasoning would imply that this determinant is also at the relational as well as at the socioeconomic level (as suggested in Paper I). The lack of monetary resources in the intermediate structural (family) level becomes a very concrete lived reality on a lower level when understood this way. As in ecosocial theory, social (and biological) processes are indeed linked between and across different levels (Krieger, 2011). Again, the inappropriateness of ‘distal’ and ‘proximal’ determinants becomes evident. Another possible interpretation of these results can be that even when parents with good monetary resources restrict the money spend on or available to their children, it has
mental health consequences in this age group. Adolescents’ personal relative affluence has not been highlighted in the broader literature on the social determinants of health, which generally focuses on household income, poverty distribution and other determinants not directly connected with the young people themselves (CSDH, 2008; M. Marmot, 2004; M. Marmot, 2015). As discussed in the introduction to the discussion on determinants, Viner et al. (2012) have suggested that improving young people’s daily life with families and peers and in schools, addressing risk and protective factors in the social environment at a population level rather than on the individual level would be one of the most beneficial approaches in order to improve adolescent health. However, acknowledging the importance of personal relative affluence as a crucial relational determinant in youths’ everyday lives may add to the understanding of the unequal distribution of poor mental health in this age group.

8.1.3 Psychosocial Determinants

The psychosocial determinants associated with depressive symptoms differed somewhat between the genders. In boys, low teacher support and bullying increased the likelihood of reporting depressive symptoms two and a half times. In girls, a greater number of psychosocial determinants were associated with depressive symptoms; low parental support, low teacher support, high school demands, moderate and high experience of sexual harassment, and bullying.

Both moderate and high levels of sexual harassment increased the likelihood of reporting depressive symptoms in girls, which is in line with previous studies concluding sexual harassment victimization to be a possible explanation for psychological distress (Gillander Gådin & Hammarström, 2005; Lichty & Campbell, 2012). The current study showed that being the target of just one type of sexual harassment on one single occasion during the past six months was associated with depressive symptoms in girls. This result deviates from the definition of sexual harassment victimization used by Gruber and Fineran (2008), who define being a victim of sexual harassment as exposure to at least three different types of harassment at least a “few times”. The findings in the current study suggest that even low levels of sexual harassment victimization are associated with depressive symptoms in girls. In the light of research showing that even witnessing sexual harassment is associated with negative mental health outcomes (Lichty & Campbell, 2012), this result seems plausible. This is also in line with ecosocial theory which poses that
witnessing and, even more so, directly experience socially inflicted trauma (mental, physical, and sexual) may be one of multiple pathways of embodiments driving health inequalities. In addition, previous research on adult working populations has shown that even at relatively low frequencies, sexual harassment had a negative impact on women’s psychological well-being (Schneider, Swan, & Fitzgerald, 1997).

8.1.3.1 Directional Pathways between Sexual Harassment Victimization and Depressive Symptoms

A closer look at sexual harassment victimization revealed a more detailed gendered pattern in the association with depressive symptoms. Girls subjected to sexual harassment in grade seven continued to experience sexual harassment the following two years, while, except for name-calling, there was weaker evidence of repeated experience of sexual harassment among boys. Among girls, both the targeting of girls with elevated depressive symptoms and the consequence of sexual harassment explain a significant part of the relationship between depressive symptoms and sexual harassment victimization. Among boys, only the predating of all dimensions of depressive symptoms explain the association between dimensions of depressive symptoms and sexual harassment in the form of name-calling. However, in boys, none of the cross lag models were statistically different from the stability model, which renders caution in drawing conclusions for boys.

These findings support the hypothesis that sexual harassment victimization is stable over time, primarily in girls. In the light of previous research about consistence over time of negative cognitions in girls and that this may be due to persistence of circumstances that create such cognitions (Cole et al., 2009), these findings regarding stability of sexual harassment over time in girls could perhaps be such a circumstance. Also, girls reported significantly higher levels of sexual harassment victimization than boys in six out of nine comparisons across all the three dimensions of sexual harassment.

Furthermore, there was support for stability over time in depressive symptoms in both genders, which is contrary to previous research (Abela & Hankin, 2011; Bennik et al., 2013) who found that depressive symptoms in boys are not consistent over time. Girls reported significantly higher levels of depressive symptoms than boys in six out of the nine subscale comparisons. Previous research on adults claims that the gender difference in depression is due to differences in somatic symptoms (Silverstein et al.,
2012). In the current study, there were indeed differences between the genders in somatic symptoms in grade seven and nine, but not in grade eight. However, there were also gender differences in negative affect in all grades and in anhedonia in grade seven with more girls reporting higher levels of all of these.

Using these dimensions showed that having sexual messages or pictures written on bathroom walls or pictures or messages sent forward on mobile phones (public display sexual harassment) was unrelated to all dimensions of depressive symptoms, irrespective of gender. One interpretation of this may be that this type of harassment is indirect (Shute, Owens, & Slee, 2008), and may possibly be less influential as an embodied experience. With that said, these types of harassments can still hurt the personal integrity of the victim. All other dimensions of sexual harassment victimization and depressive symptoms were related to each other in different ways as discussed below.

8.1.3.1.1 Sexual harassment preceding depressive symptoms
The hypothesis that dimensions of sexual harassment would precede dimensions of depressive symptoms if sexual harassment is a means of establishing asymmetric power relations, was partly supported in girls—sexual name-calling was associated with later somatic symptoms and negative affect. No dimension of sexual harassment had an association with later depressive symptoms in boys. According to previous research, most perpetrators are male (Clear et al., 2014; Hand & Sanchez, 2000; C. Hill & Kearl, 2011; Lichty & Campbell, 2012; McMaster et al., 2002), hence name-calling may be the means by which (male) perpetrators try to make (female) peers vulnerable, and hence establish asymmetric power relations. Thus, these gendered power relations, mirroring the gender order in broader society (R Connell, 2012), seem to be one possible embodied pathway driving gender inequality in mental health in adolescence.

8.1.3.1.2 Depressive symptoms preceding sexual harassment
There was limited support of this directional pathway in girls as only anhedonia depressive symptoms preceded later name-calling. In contrast, in boys, anhedonia as well as somatic symptoms and negative affect preceded sexual name-calling, which suggests that boys with a vulnerability of sorts were targets of name-calling victimization. This supports the hypothesis that the targeting of vulnerable boys, presumably mainly by other boys, can be interpreted as a way of displaying dominance.
by policing hegemonic masculine stereotypes of strength and toughness (Conroy, 2013; Hand & Sanchez, 2000; C. Hill & Kearl, 2011; Kimmel, 2008; Lichty & Campbell, 2012; Petersen & Hyde, 2009). However, this model was not statistically different from the stability model, suggesting that further investigation is needed. With that said, the pathways between depression and bullying in 15-year-old boys have been showed to have the same direction as in the current study, i.e., the higher level of depressive symptoms, the higher the risk of bullying victimization (Sweeting, Young, West, & Der, 2006). In general, bullying is not usually considered a type of gendered based violence. However, the targeting of vulnerable boys has been interpreted as a way of displaying hegemonic male dominance within male peer groups (Conroy, 2013; Kimmel, 2008; Sweeting et al., 2006) and in boys, a similar process may operate in both bullying and sexual harassment victimization. The effects of sexual harassment in boys in the current study were however weak compared to that of bullying in the Sweeting et al. (2006) study.

Boys displaying signs of vulnerability in the form of depressive symptoms are not doing, or performing as it were, a hegemonic masculinity and these results show that these boys are subjected to gender based violence in the form of sexual name-calling. Discursively performing a certain masculinity also means to position oneself in a power relationship. Paechter (2007) argues that as some masculinities are more powerfully positioned than others and performing a vulnerable masculinity immediately places a person in an adverse power relationship and implies how that person’s potential to operate in the world in particular ways could be formed.

This also highlights a problem of dichotomous thinking regarding gender as two unproblematic categories (R Connell, 2012) as mental health inequalities are present within the categories here called “boys”. Only using the two categories “boys” and “girls” risk obscuring health inequalities within these categories. Applying an intersectional perspective may variegate this picture but will not solve the problem of categorical thinking, only make analyzes more sophisticated (R Connell, 2012; Francis & Paechter, 2015). Instead, Connell and Messerschmidt (2005) and Bottorf, Oliffe, Robinson, and Carey (2011) suggest that a gender relational perspective can be a fruitful approach to understand and reduce inequalities in health. According to Krieger (2011), embodiment processes and health outcomes should be understood in the context of interactions within and between boys (men) and girls (women) across personal,
interpersonal, and institutional levels to understand what drives health inequalities.

8.1.3.1.3 Bidirectional pathways

The relationship between dimensions of sexual harassment victimization and depressive symptoms was hypothesized to be bidirectional if sexual harassment perpetration is used as a means to both establish and reinforce asymmetric power relations. The analyses showed limited support for this hypothesis, as only physical sexual harassment had a bidirectional relationship with somatic symptoms in girls only. However, the tests for mediating pathways suggested that there are at least two distinct subgroups of girls with different vulnerabilities; one in which physical sexual harassment leads to future somatic symptoms and a second showing a reverse pattern. While somatic symptoms may be interpreted as a form of embodiment of physical harassment experiences, the reversed direction, i.e., why girls with somatic symptoms are at risk for physical sexual harassment in particular is more difficult to interpret and calls for further investigation.

8.1.4 A Gender Theoretical Approach to Understanding Sexual Harassment

Employing the perspective that sexual harassment perpetration in adolescence is about sexual or romantic interest as in Petersen et al. (2009) and McMaster et al. (2002) is of little help when interpreting the findings of the current study; it does, for example, not explain why vulnerable individuals are targeted. McMaster et al. (2002) also discuss that sexual harassment perpetration may be a time limited misbehavior or deviance and an individual’s response to the stress of coping with the changes that occur in adolescence. This still does not explain why vulnerable peers are targeted, or explain the fact that sexual harassment is highly prevalent also in adulthood (FRA & European Union Agency For Fundamental Rights, 2014; McDonald, 2012).

In addition to the view that sexual harassment perpetration is about sexual or romantic interest, Petersen et al. (2009) has reported that girls and boys with high perceived power were more likely to be sexually harassed by peers with less perceived power. The authors explain such behavior as a means to gain attention from more powerful cross-gender peers. For example, girls in grade nine who were perpetrators were more likely to harass powerful male peers than those less powerful (Petersen et al., 2009).
Given the association between depressive symptoms and sexual harassment in the current study, this would imply that youth, and especially boys, who have elevated depressive symptoms also perceive themselves as powerful. This seems implausible since adolescent depressive symptoms are highly associated with both low global (Sowislo & Orth, 2013) and low contingent (including social acceptance and approval) self-esteem (Bos, Huijding, Muris, Vogel, & Biesheuvel, 2010). In fact, subjective adolescent peer social status, which includes perceived power as a subcomponent, is associated with better mental health (Sweeting & Hunt, 2014). In the present study, there was no information available on perceived power, but further investigations might illuminate whether this could explain why there are few mental health consequences for boys who are victimized. Furthermore, being victimized by a girl does not have any impact on internalizing or externalizing behaviors regardless of the victim’s gender (Felix & McMahon, 2007a). When girls are perpetrators, it has been shown to be the result of victimization, i.e., acts of retaliation, while for boys the opposite is true, i.e., boys who perpetrate sexual harassment subsequently become victims (Fineran & Bolen, 2006).

Skoog et al. (2016a, 2016b) have reported that physical appearance and sexual activity mediate the link between early puberty and sexual harassment victimization regardless of gender in grade seven – the earlier the adolescents experienced puberty, the more likely they were to be exposed to sexual harassment by their peers. However, the mental health was not assessed, which may be a confounding factor, given the results in the present study. Also, the results of Skoog et al. (2016a, 2016b) do not explain the results of the current study which showed that sexual harassment is consistent over time particularly in girls and something that adolescents are exposed to also in grades eight and nine. Also, studies focusing on physical appearance in connection to sexual harassment victimization risk toning down power aspects of harassment behavior by suggesting that sexual harassment is a form of compliment, although misplaced.

Consequently, I argue that a gender theoretical approach is a fruitful approach to understand the direction of the associations between sexual harassment victimization and depressive symptoms, because focus is directed towards understanding sexual harassment as enactment of power and gender relations. A gendered power relation in which sexual harassment is used as a tool to assert male dominance over females, and also a tool for policing heterosexual masculinity within peer groups.
(Chambers et al., 2004; Fleming et al., 2015; Robinson, 2005) may help to explain the gendered pathways of embodiment in the present study. Robinson (2005) argues that sexual harassment is constituted within a broader social discourse of values and power relationships operating around gender and sexuality present in the broader society, i.e., that society’s gender order to use Connell’s terminology (1987). This is what Burr (2003) refers to as macro social constructionism, where the meaning of “discourse” extends its focus of interest beyond the immediate situated process; what goes on in the broader society is hence reflected in schools’ gender regime. In ecosocial terms, this concerns issues regarding whether phenomena at a given level are adequately explained by processes occurring on that level versus require explanation in relation to phenomena at another level (Krieger, 2011) – in this case the broader society. The predominant discourse in most societies are usually the dominance of the prevailing hegemonic (heterosexual) masculinity, reflected and reproduced in school (Connell, 1987; Hlavka, 2014; Jones, 1985), and thus a social practice that seems to become embodied in girls in the form of depressive symptoms. As sexual harassment was associated with later depressive symptoms in girls only, this is most likely one determinant that drives gender inequality in mental health in this age group.

To sum up, sexual harassment victimization is a determinant of depressive symptoms in girls but not in boys. In boys, the embodied pathways of depressive symptoms is different and hence, sexual harassment victimization is partly responsible for driving gender inequalities in mental health in adolescence.

8.2 An Individual Level Intervention - DISA

8.2.1 Characteristics of Girls Participating

This study partly set out to investigate what characterized girls who participated in DISA – a school based intervention in 2011 aimed at preventing depression in adolescents. The DISA intervention participants reported higher levels of depressive symptoms and lower levels of self-esteem than the non-participants, which indicates that DISA was implemented as a targeted intervention for girls with elevated symptoms rather than for girls in general as a selected intervention (or for both genders as a universal intervention) as recommended by the developers (Clarke & Lewinsohn, 1995b/2010 [rev.ed.]). One possible interpretation is that school staff identified girls with poor mental health and offered
participation in DISA as a way to help these girls. Previous research (Kvist Lindholm, 2015) has shown that DISA could contribute to stigmatization – participating girls pointed out that the program presumes a specific problem profile of the participant: a participant who identifies with having low self-esteem, feeling depressed, and having compulsive negative thoughts and, in addition, being harmed by them. This is supported by the interpretation of the results in the current study – schools had chosen girls who seemed to show a similar problem profile.

In the psychoeducational aspect of the DISA program, girls learn that being a girl means having negative thoughts and low self-esteem, which may lead to future depression. This strengthens a discursive practice that sets limits upon what girls have the power over and power to do (including constraints on and possibilities for exercising power over their own lives) as discussed by Krieger (2008). This discursive practice may structure adolescent girls’ engagement with the world and thereby further drive health inequalities between the genders. Drawing on Connell (2009), DISA could be viewed as a discursive practice in which bodies involved (girls and facilitators) form social structures and personal trajectories, which in turn provide the conditions of new practices in which bodies are addressed and involved. The discourse of “being a girl equals having negative cognitions which is bad for you”, may very well create a particular personal trajectory different from a discourse implying e.g. that “being a girl equals being strong equals having power over one’s life situation”.

In the current study, girls participating in DISA also reported more sexual harassment victimization, less peer support and lower personal relative affluence compared to girls not participating in DISA (Paper III). As shown in Paper I and II; all of these determinants were associated to depressive symptoms in girls.

Gillham and colleagues (2007) showed inconsistent results in a study of intervention effects on depressive symptoms depending on schools. For example, in two schools the Penn Resiliency Program was superior to another intervention (Penn Enhancement Program) as well as a control condition. In a third school, however, the Penn Resiliency Program was not significantly better than the control condition and was outnumbered by the Penn Enhancement Program. The authors were not able to determine the cause of this; however, based on the results of the present study, it would be pertinent to investigate whether school-specific psychosocial environmental determinants such as sexual harassment and bullying and
socio-economic determinants such as personal relative affluence underlie these inconsistencies.

8.2.2 The Effectiveness of DISA on Depressive Symptoms

According to the The Society for Prevention Research (SPR), a prevention program must, amongst other things, meet the criteria of effectiveness under real-world conditions in order to be eligible for dissemination (Flay et al., 2005). Accordingly, the current study set out to investigate the effectiveness of DISA on depressive symptoms in a pragmatic trial under real-world conditions. As shown in both Paper III and IV, the DISA participants scored higher on depressive symptoms compared to the non-participants at baseline. At follow-up, no difference in mean scoring between the DISA participants and non-participants was found and the SEM analyses showed that DISA did not have an effect on depressive symptoms at follow-up. This is in contrast to previous research on similar interventions (Gillham et al., 2012; CA. McCarty, Violette, Duong, Cruz, & McCauley, 2013; Pössel et al., 2013). This could be explained by the fact that in the current sample, intervention participants’ mean level of depressive symptoms was >16 at baseline and that the girls in the comparison condition had caught up one year later. In both the DISA group and the comparison group, depressive symptoms at baseline had an effect on depressive symptoms at follow-up, although the effect were somewhat stronger in the DISA group. It has been shown that girls’ depression scores decrease from the age of eight to the age of eleven only to increase again to the age of 16-17 where the scores level out (Angold, Erkanli, Silberg, Eaves, & Costello, 2002). Cognizant of this suggested curvilinear trajectory, one interpretation of the results in the current study is that the non-participants increases their depressive symptoms mean scores over time and girls in the intervention group, being a year ‘ahead’ of their peers start to level out one year later, at the age of 15-16.

Another potential problem with DISA is that no study regarding adaptation from an American population to this new cultural group has been published, as suggested by, for example, Ferrer-Wreder, Sundell, and Mansoory (2012). These authors suggest that if an intervention does not seem culturally appropriate, the risk for method and/or manual non-adherence increases. Alternatively, sociodemographic or cultural differences may moderate effects of an intervention. According to Ferrer-Wreder et al. (2012), these issues should be evaluated thoroughly before implementing an imported method.
Besides possible cultural inappropriateness, paraprofessional DISA group leaders are trained during only three days of theoretical training and supervision of their first group, which may not be enough. Group leaders may be teachers, but also school counsellors and school nurses are common DISA group leaders. In a previous study (Wahl, Adelson, Patak, Pössel, & Hautzinger, 2014), a comparative study of the effects of a universal cognitive-behavioral program as implemented by teachers versus psychologists under real-life conditions in grade eight were conducted. The investigators found positive intervention effects on the change in girls’ depressive symptoms up to 12 months after program delivery when the program was implemented by psychologists, but not when delivered by teachers. Harnett and Dadds (2004) found similar results when comparing program impact of a program in grade nine when delivered by university staff compared to school personnel. One possible explanation for this may be, as Wickström (2013) has shown, that girls participating in DISA, as well as the DISA leaders, collectively moved the focus to relational problems which were more important to them. In some occasions, the group sessions turned into more of a social gathering where the girls introduced bringing homemade pastries and soda to the class (Wickström, 2013). This suggests that there might be a possible weakness in having paraprofessionals leading the DISA groups and the results of the current study may have been different if psychologists or a research team had led the groups.

In the overall sample \( (n = 275) \), sexual harassment victimization at baseline was associated with depressive symptoms at follow-up and was of medium strength. When the analyses were separated according to intervention condition, the standardized path coefficient of sexual harassment victimization for the DISA participants increased considerably. As there were no significant differences between mean levels of sexual harassment victimization between the groups at baseline, this difference in strength of association of sexual harassment victimization and depressive symptoms between the DISA participants and the non-participants cannot be explained by differences in exposure. Hence, participating in DISA seems to inflate the effects of sexual harassment victimization on depressive symptoms which is an important and unexpected finding. Kvist Lindholm (2015) have shown in a study of girls’ experiences of participating in DISA, in groups that do not have a “safe” atmosphere, DISA could actually be a trigger of already ongoing destructive interactions, such as bullying and harassment. The author claims that this is explained by the self-disclosure component in DISA, where participants
are expected to disclose personal feelings and thoughts as part of the learning process. In the present study, there is no information about if students participating in DISA considered their group to be safe or not, but the results regarding sexual harassment in the current study does give some support to Kvist Lindholm’s (2015) conclusion about the risks of self-disclosure in unsafe groups in the DISA program.

Sexual harassment has been showed to be part of everyday life at school (deLara, 2008; Hlavka, 2014) and acknowledging the associations with depressive symptoms in this study, this issue must be considered regarding girls mental health development. In the face of sexual harassment victimization in the past six months, DISA does not seem to be able to prevent depressive symptoms. One interpretation would be that learning to reverse one’s negative thoughts in the face of elevated depressive symptoms and sexual harassment victimization is not the most beneficial way to promote a healthy development in these girls.

Coppock (2011), who has made a critical analysis and debate contemporary policy and practice initiatives involving the introduction of formal psychotherapeutic education programs in schools states:

In the context of mental health and emotional wellbeing in schools, evidence suggests that adults continue to exclude the views of children and young people and treat them as passive objects rather than active social agents. On the rare occasions that children are asked what they consider important in relation to their mental health and emotional wellbeing and who they trust with their emotional lives, their views are often at variance with adult-centred thinking. Significantly, children and young people frequently report the school as a source of emotional distress rather than a context for emotional ‘growth’ and support, undermining the uncritical assumption that schools should be at the forefront of developments in policy and practice. (Coppock, 2011; 394)
Hence, as also Gunnarsson (2015) argues, DISA becomes a part of a solution to a problem defined by adults, not by the girls themselves. The results of Wickström’s (2013) study of DISA demonstrate another weakness of using manual-based educational courses, and indicate that cognitive methods for dealing with negative thoughts may in real-world circumstances be replaced by exercises designed to deal with interaction. In that study (Wickström, 2013), girls themselves showed strong agency as they together with their group leaders, through collective transformation, actively moved the focus from individual potential problems to relational issues. One can always speculate in whether this would happen with psychologists as leaders, but more importantly, it points to a crucial critique against DISA as a cognitive-behavioral program; again, the problems that DISA addresses are not necessarily the problems girls themselves find most urgent to work on. Coppock (2011) delivers a core critique in her critical analysis of psychotherapeutic education programs in schools; such programs fail to recognize that children and young people...

\[...are\ \textit{socially-situated ‘beings’ where the relationship between the child and the social, political and cultural contexts of their lives is transactional}. Positive mental health is rooted in the \textit{relational}, contradicting the notion that it can be mechanistically ‘taught’ or ‘built’ through the use of ‘toolkits’; however, such a model of mental health may be less popular since it is subjective, therefore ‘messy’. (Coppock, 2011; 391)\]

Coppock (2011) points to the fact that in line with a neo-liberal governmentality, children and young people are seen as human “becomings” rather than human “beings”, that is, they are merely investments for a future adult productive labor force rather than agents in their own right. Coppock’s idea of transactionality may be “messy”, nevertheless, it is in line with the ecosocial theory (Krieger, 2011) that states that health (including mental health) is embodiments of social relationships and refers to how we literary incorporate, in our biology (and mind), in societal and ecological context, the material world in which we live. Even though Coppock (2011) is situated in a British context, her critique of universal psychotherapeutic programs is applicable to the Swedish context...
as well. The main goal of the Swedish idea of Health Promoting School Development is academic achievement (The Swedish National Agency for Education (Skolverket), 2016). The Swedish Education Act (SFS, 2010:800 kap 2, 25 §) further establish that the Students’ Health (Elevhälsan) should primarily be working with prevention and health promotion, so that the students’ development and the National educational goals may be promoted. With this approach, interventions such as DISA becomes inexorably logical. Addressing individual “deficiencies” such as negative cognitions, poor problem solving skills etc. becomes part of the neo-liberal governmental project (Ayo, 2012; Coppock, 2011). However, as the current study has shown, it does not seem that it is working very well in practice. Also, as Coppock (2011) states, adolescents often consider school to be a cause of poor mental health. This is supported in the present study, as sexual harassment, bullying, teacher support, peer support and high school demands were determinants involved in driving patterns of poor mental health in girls. DISA did not make a difference in mental health for the girls in the present study. Therefore, the current study adds to the different critiques of DISA by showing that it does not make a difference when put into practice in girls with elevated symptoms, something which most likely is not unique for the schools included in the present study.

8.3 Methodological Considerations

The current study had a relatively high response rate in all three waves. All public schools and one independent school participated in the study, which makes the sample a good reflection of the municipality as a whole. However, it has been shown in previous school-based surveys that mental health problems might be higher in non-attendees (Edgardh & Ormstad, 2000). Accordingly, the findings reported here regarding prevalence of depressive symptoms may be underestimations and represent “minimum prevalence”. Hence, associations and pathways may also be underestimated. Furthermore, as DISA participants had higher scores on depressive symptoms, there may be an underestimation in how many students that took part in DISA in 2011 as they may have been non-attendees. This may also affect the results regarding differences between participants and non-participants. If this is the case, the differences between the groups would most likely have been of a greater magnitude.

There were items missing in the data. This has been dealt with in different ways in the four Papers. In Paper I, missing data was imputed by
identifying a case as completely missing if more than 20% of the items were not answered. For fewer missing items, the scale was totaled and then proportionally scaled that total to compensate for the number of missing items. This procedure assumes that data is missing completely at random. However, no such tests were performed in Paper I and it may result in biased estimates of group membership when this assumption is false (Schlomer et al., 2010). In the two SEM studies (Paper II and IV) missing data was dealt with by means of RFMLE and FIML respectively. In the third Paper and partly in the fourth, missing data was imputed by Multiple Imputation which is suggested by Schlomer et al. (2010) when data is not missing at random (NMAR).

Another methodological issue is that all data was self-reported, and the accuracy of the results depends solely on respondents’ subjective assessments. Parents and teachers could have been added as respondents; that was however not possible in the current data collection. Also, memory bias may have been present when the students were asked if they had participated in DISA, since the information about participation did not come from school records. While remembering participating may not have been a problem, recalling the year of participation may have been more difficult as the DISA program had been running for some years in at least some of the schools.

Several of the instruments and variables used in the present study are either well validated (Gruber & Fineran, 2007; Radloff Sawyer, 1991; Rosenberg, 1989) or show good internal consistency. The variable Peer support in Paper I was not constructed in a reliable way and showed low internal consistency, and the results showed discrepancies compared to previous research (Brolin Låftman & Östberg, 2006; Currie, Nic Gabhainn, et al., 2008; Koskinen-Hagman, Schweizer, & Jerusalem, 1999) and was therefore reconstructed in Paper III and IV. To ensure reliable analyses, FAS was not coded according to the HBSC standard as that would have placed very few respondents in the low-FAS group, which is supported by a study regarding the low discriminatory ability of the FAS in high income countries (Currie, Molcho, et al., 2008). Fourteen items were used to measure sexual harassment victimization. It is possible that these items do not capture all types of sexual harassment victimization and that common forms, such as cyber bullying, may be hidden in these items, something which has not been possible to distinguish in the current study. Also, the question about sexual harassment was not framed in a way that made it possible to distinguish where the harassments had taken place. However,
previous studies have shown that most harassment happens in school (Therése Skoog & Bayram Özdemir, 2016a, 2016b; T Skoog et al., 2016; Young et al., 2009).

The choice of the CES-D as the instrument to measure depressive symptoms in the present study was due to the fact that this is the instrument used in the DISA manual (Clarke & Lewinsohn, 1995b/2010 [rev.ed.]), and that it is well validated and widely used for epidemiological purposes (Carleton et al., 2013; Eaton et al., 2004; Garrison, Addy, Jackson, McKeown, & Waller, 1991; Olsson & von Knorring, 1997; Radloff Sawyer, 1977, 1991). Despite the CES-D’s connections to DISA, the choice is not unproblematic. The CES-D was created prior to the third revision of the American Psychiatric Association’s Diagnostic and statistical Manual of Mental Disorders and hence does not reflect the content of DSM-III (1980), the DSM-III-R (1987), the DSM-IV (2004), nor the current DSM-5 (2013). For example, symptoms in the areas of psychomotor retardation/agitation, and suicidal ideation are not included in the CES-D. Furthermore, symptoms such as sleeping problems, feelings of worthlessness, and concentration difficulties are each measured by a single item. This warranted a revision of the CES-D and a revised version (CESD-R) was published in 2004 (Eaton et al., 2004) to mirror the then in force DSM-IV. Nevertheless, to my knowledge, there has been no study on psychometric properties of the CESD-R in an adolescent general population and the original CES-D is still widely used in both adult and adolescent populations, see e.g., (R. Brown et al., 2015; Carleton et al., 2013; Vilagut, Forero, Barbaglia, & Alonso, 2016), which facilitates comparisons to previous studies.

In Paper II, a confirmatory factor analysis of the CES-D based on Carleton et al. (2013) was conducted. In the dimension called “somatic symptoms”, there were items not directly connected to what one intuitively may consider as ‘somatic’, including irritability and cognitive difficulties. Examples are e.g. “I felt bothered by things that usually don’t bother me”; and “I had trouble keeping my mind on what I was doing”. Another suggested label for the same factor solution has been “Somatic and retardation” (Radloff Sawyer, 1991). In hindsight, I might have preferred “Psychosomatic and retardation”.

Because of the cross-sectional design in Paper I, causality or even directionality is not possible to infer. Nevertheless, longitudinal studies of self-efficacy (Caprara et al., 2010), low teacher support (Undheim & Sund, 2005), low parental support (Lien et al., 2016), and bullying (Bond, Carlin, Thomas, Rubin, & Patton, 2001) have showed an increased risk for
depressive symptoms. In the current study, gender differences in depressive symptoms was found, with more girls reporting depressive symptoms (Paper I). As discussed previously in the Methodological Considerations section, the analyzes are based on self-reported data, and given the limitations of this data collection method, it has been questioned whether the fact that girls report poor mental health to a higher extent than boys may be due to gender differences in the reporting and/or views and expectations of mental health, or due to the instruments used. However, several studies has shown this not to be the case e.g. (Kuehner, 2003; Piccinelli & Wilkinson, 2000; Rutter, Caspi, & Moffitt, 2003). Also, a recent Swedish study by Östberg, Almqvist, Folkesson et al. (2015) has shown that in their study on stress, girls had greater cortisol outputs in the saliva in the morning, suggesting that girls’ higher self-reported stress levels were not due to differences in reporting.

Logistic regression was used to analyze odds ratios in Paper I. However, in cross-sectional studies, it has been shown that logistic regression produces point estimates that are higher than those obtained using the Cox, Poisson and Mantel-Haenzel regression models with robust variance, especially in outcomes with high initial prevalence (Coutinho, Scuzufca, & Menezes, 2008). As depressive symptoms had a high prevalence (especially in girls) in the present study, and as the odds ratios were interpreted as prevalence ratios, they may be somewhat inflated. Furthermore, in Paper I, explained variance was reported in the form of Nagelkerke R². This is problematic as R² in logistic regression does not have the same definition as in linear regression – i.e., the proportion of the variance that can be explained by the predictors in the model (Peng, Lee, & Ingersoll, 2002). According to Hosmer, Lemeshow, and Sturdivant (2013), the R² in logistic regression (Cox and Snell as well as Nagelkerke) should merely be used in the model building stage as a statistic to evaluate competing models. Also, reporting explained variance derived from logistic regression may be problematic when it comes to comparing different models with different independent variables, because the unobserved heterogeneity is likely to vary across models (Mood, 2010). When estimating an underlying latent variable model, the residual part of the variance is forced to be fixed, which means that any increases in the explained variance forces the total variance of the dependent variable, and hence its scale, to increase. A solution to this may be to also report e.g. average partial effect that can be used to compare different models with different independent variables (Mood, 2010). Nevertheless, the reporting of the logistic regression odds ratios is in
accordance with several standard textbooks in the matter, e.g., (Tabachnick & Fidell, 2013; Warner, 2012).

When studying determinants on different levels, a multilevel approach may seem reasonable. However, due to administrative difficulties in the data collection, information on classroom membership was missing in a number of respondents. This could be remedied manually for the purposes of Paper IV in order to apply cluster robust standard errors, but was not feasible to do in the entire sample.

The study was predominantly based on adolescents with a Swedish extraction in a medium sized municipality in the northern part of Sweden, which limits the possibility to generalize the results to adolescents in general. Nevertheless, it would be reasonable to argue that the results can be generalized to adolescents and high schools outside the major metropolitan areas in Sweden.

I have drawn conclusions about the importance of sexual harassment victimization in relation to depressive symptoms partly based on a cross-lagged study (Paper II). However, an inherent limitation in a cross-lagged design is that the tested models evaluate consistency of associations over time rather than individual levels of the measured constructs. This limits the insights that can be gleaned about the actual importance of each variable/dimension. This distinction is crucial to understand the experience of boys in whom a directional path from any of the dimensions of sexual harassment victimization to any of the dimensions of depressive symptoms could not be shown. Future studies should use a growth trajectory model approach to investigate this issue, as this methodology can be used to longitudinally study individual levels of measured constructs as well as systematic change, and inter-individual variability in this change (Little et al., 2007). Another issue in Paper II is that while different dimensions of sexual harassment behaviors were investigated, these types of behaviors may co-occur, which would be an argument against dividing the behaviors into different types, or dimensions.

Regarding the determinants on different levels, the current study did not test possible mediating effects of one determinant on another. This would most likely have deepened the understanding of how determinants relate to each other.

In Paper IV, a pragmatic effectiveness trial design was employed in order to be able to draw conclusions regarding DISA’s effectiveness. This design is conditioned by several methodological challenges, the most important one being the differences in baseline means and variances
between groups. By employing SEM, including a multiple-group comparison, the possibility for statistical inference has been ensured as far as possible (Coman et al., 2014). In preliminary analyses, a propensity score matching procedure was employed in order to make the two groups as similar as possible. This however, rendered very low power, and hence the analyses proceeded without matched groups. Propensity score methodology to estimate causal effects in observational studies can be an alternative method of analysis (Rosenbaum & Rubin, 1983).
9 Implications for Disease Prevention and Health Promotion

The results of this study have implications for the rationalizing of school mental health promotion as well as for preventive methods evaluation research. The Swedish National Agency for Education uses the term Health Promoting School Development, which is a development from the WHO Health Promoting Schools grounded in the Global school health initiative (Barnekow et al., 2006; WHO, 1995). In Sweden, to direct focus of the health promotion work towards academic achievement, the term development has been added (The Swedish National Agency for Education (Skolverket), 2016). Included in Health Promoting School Development is, beside academic achievement as the main goal, a good school climate, motivation, and trusting relations between students as well as between students and teachers (The Swedish National Agency for Education (Skolverket), 2016). This is in line with the social dimension of the Sundsvall statement on supportive environments for health which includes the ways in which norms, customs and social processes affect health (Haglund, Pettersson, Finer, & Tillgren, 1992). In a broader health context, however, the term supportive environments also refers to the physical aspects of our surroundings and includes where people live, their local community, their home, where they work and play. It also embraces the framework which determines access to resources for living, and opportunities for empowerment. Thus action to create supportive environments must be conducted on many levels; physical, social, socioeconomic, economic and political (WHO, 2016). WHO (2016) states that each of these levels or dimensions is inextricably linked to the others in a dynamic interaction and is in line with an ecosocial theory framework (Krieger, 2011). However, this approach is not always evident in school mental health promotion practice as mental health problems are often individualized and “medicalized” as suggested by Vilhelmssson et al. (2011). In practice, and as in the case of DISA and other cognitive-behavioral interventions, schools risk losing focus on a good school climate as a way to promote good mental health in students.

In their final report, Kommission för ett social hållbart Malmö (2013) called for better instruments to measure social inequalities in health among children and young people. While personal relative affluence could be one way to better understand social inequalities in health among youth, more research is needed to address the issue of preventing the effects of low
personal affluence on depressive symptoms. Nevertheless, considering the importance of the structural determinant personal relative affluence in both genders, this issue should be brought to awareness in parents as well as in schools as a determinant relevant on the relational level.

To address the issue of sexual harassment in schools as a determinant for poor mental health, some of those who take a developmental approach have recommended social and emotional interventions to promote empathy and interpersonal competence, such as Social and Emotional Learning (SEL) (T Skoog et al., 2016). Promoting empathy and interpersonal competence may very well be beneficial in this age group, however, in order to promote a good school climate, trusting relations, and hence a supportive environment for mental health, I also recommend targeting sexual harassment perpetration as an assertion of male dominance and as a tool for policing (male hetero) sexuality as suggested by Robinson (2005) and Conroy (2013). Moma (2015) suggests that in order to prevent gender based violence in schools, deconstructing the structures and normative constructs of gender and sexuality offers an opportunity to address hegemonic structures and polarization of power. This should possibly start earlier than in high school as also primary schools are arenas where children use the means available to them to construct gender in the playgrounds, which will frequently involve the reproduction of hegemonic cultural identities and gendered power relations (Epstein, Kehily, Mac an Ghaill, & Redman, 2001; Paechter, 2007; Thorne, 1993). This approach would help undermine socially constructed and privileged notions of heterosexual masculinity and would most likely be beneficial to girls and boys alike as it most likely would decrease gender based violence and create a more supportive environment for mental health.

Furthermore, when evaluating cognitive-behavioral interventions that in themselves are only aimed at strengthening individual resilience, it seems to be of importance to investigate the impact of (or the potential lack of) supportive environmental factors. This approach could help deepen the understanding of discrepant results in effect trials such as in Gillham et al. (2007). Based on the results of the current study, and in line with other scholars (Coppock, 2011) that claim that young people often consider school to be a source of poor mental health, targeting determinants on the school psychosocial environment level such as sexual harassment, bullying, teacher and peer support, and school demands may be the most efficient approach. Regarding sexual harassment prevention, there is some evidence that a classroom curriculum intervention with a distinct content about
construction of gender may be beneficial in preventing sexual harassment, especially in combination with a school level intervention including helping students identify unsafe areas of schools (Taylor, Stein, Woods, & Mumford, 2011). This approach can also possibly be a way to make students more involved in creating a supportive environment, and by so doing, enhancing adolescent agency as suggested by Coppock (2011) as well as empowerment as suggested by the Sundsvall statement on supportive environments (Haglund et al., 1992). This is also connected to the fourth core construct of ecosocial theory – accountability and agency (Krieger, 2011). Becoming aware of what Taylor et al. (2011) call the construction of gender roles may make youth more accountable for e.g., performing a certain type of masculinity.

From the results of this study, and in line with the aims and instructions of the program (Clarke & Lewinsohn, 1995b/2010 [rev.ed.]), it is not recommendable to implement DISA to girls with elevated depressive symptoms and with other vulnerabilities related to depressive symptoms. Schools that intend to implement DISA are warranted to make efforts to screen the student population before assigning students to the intervention. Medical or psychological treatment is not regulated to be a part of the Student’s Health obligations (SFS, 2010:800 kap 2, 25 §) which is a further argument against using DISA in girls with elevated symptomatology. With that said, there is still a lack of evidence of the effectiveness of DISA as a method for depression prevention in a sub-threshold (<16 on the CES-D) sample of students.
10 Future Research

Particularly the results of study II, III and IV are unique and replication is warranted. Also, regarding directional pathways of sexual harassment victimization and depressive symptoms, future studies should apply a growth trajectory model approach to understand the actual importance of each dimension of sexual harassment victimization for depressive symptoms. Further studies should also investigate whether sexual harassment victimization prolongs episodes of depressive symptoms, since this could be an important issue as different dimensions of depressive symptoms precede sexual harassment victimization in both genders. Previous research has concluded that interventions which shorten the duration of depressive episodes in adolescence could prevent morbidity later in the life course (Patton et al., 2014).

If schools are to keep using DISA in their preventive work, this should only be done if future large scale randomized controlled trials (RCT) show effectiveness of DISA in subthreshold samples. In addition, as suggested by Ferrer-Wreder et al. (2012), a study on cultural adaptation of the program should be conducted, preferably before any RCTs. Furthermore, the theoretical underpinnings of DISA (cognitive style, self-esteem, problem solving skills, quality of social relationships, and general health promoting behaviors) should be analyzed to gain knowledge about which of these theoretical constructs is mediating the effect of DISA, if such effects are found. Also, future research should measure facilitators’ experience, skills and compliance to the manual in order to be able to adjust for these factors. Nevertheless, it is not unproblematic to suggest further research on DISA as the body of literature in support of DISA (Garmy et al., 2014) is outnumbered by the literature critical of it (Gunnarsson, 2015; Kvist Lindholm, 2015; Wickström, 2013) (plus the current study). Hence, in absence of more evidence regarding efficacy and effectiveness, it is highly questionable if DISA should be further disseminated in Swedish schools. Instead, I suggest that future research focus on developing methods that are in line with Coppock (2011), considering students as social subjects with agency that can both influence and participate in social change in order to influence determinants on other levels, as suggested by Krieger (2011).
11 Conclusions

The gendered prevalence pattern of depressive symptoms in community dwelling adolescents in this study showed that girls reported almost twice as high prevalence than boys in this age group. This study also showed that adolescent depressive symptoms had determinants on several levels. Sexual harassment victimization as one dimension of school psychosocial environment stood out as a very important determinant for girls followed by personal relative affluence. In boys, personal relative affluence was the most distinct determinant followed by parental migrant background. Self-efficacy as an individual level determinant was important in both genders.

While sexual harassment victimization did not have mental health consequences in boys; for girls, it had long-term effects. When analyzing different dimensions of sexual harassment and depressive symptoms in girls, physical harassment as well as name-calling had adverse mental health effects. Physical harassment was associated with later somatic symptoms and name-calling was associated with both later somatic symptoms and negative affect dimensions of depressive symptoms. Having a vulnerable predisposition such as poor mental health also meant that students, irrespective of gender, were more exposed to sexual harassment victimization.

DISA has been the object of extensive critique (Gunnarsson, 2015; Kvist Lindholm, 2015; Wickström, 2013) and the current study adds to that critique. When trying to prevent depressive symptoms in girls by means of a cognitive-behavioral intervention, schools in the current study failed to do this for two major reasons. First, they allocated girls with several vulnerabilities (i.e. a high risk group) to an intervention aimed at girls in general without elevated risks. Vulnerabilities were low global self-esteem, low peer support and low personal relative affluence as well as going to schools with lower academic achievement and somewhat lower parental educational background. Also, there was some evidence that one of these vulnerabilities were sexual harassment victimization in the past six months as far as median level (Paper III) is concerned but not mean level (Paper IV). At any rate, the association of sexual harassment victimization on later depressive symptoms were greater in the DISA participants group compared to non-participants. The conclusion of this pragmatic trial, therefore, is that in this age group in real-life circumstances, the cognitive-behavioral intervention DISA was not effective in girls who already had poor mental health and, in addition, found themselves in a detrimental
psychosocial environment. Addressing individual cognitive style, without addressing the environment and relational reality of everyday life in adolescence as suggested by Spence and Shortt (2007) will most likely not lead to change regarding gender inequalities in mental health. Interventions should instead have a more ecosocial approach, focusing on determinants also on other levels in order to facilitate social change and to change the gender pattern of depressive symptoms. As suggested by Coppock (2011), such interventions should also have a focus on participation that is based on the recognition of youths’ agency, as well as of the transactional and relational nature of the social, political and cultural contexts of youths’ lives.
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