Peer victimization and related mental health problems among early adolescents

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Abstract

Background: Peer victimization is a widespread phenomenon and a serious problem in schools. It has been documented that peer victimization is associated with various kinds of adjustment problems; influencing mental health, school performance and social life. The aim of this study is to describe the prevalence of peer victimization based on self- reports. Further examine the association between peer victimization and mental health problems. Parental support and peer support are assumed as protective factors against the difficulties caused by peer victimization.

Methods: This study is based on data from a cross-sectional health survey among children and adolescents undertaken in Akershus County in 2002. The present study includes adolescents 9707 (87.2%) in 5-7th grade and their parents 8603 (78%). Information on peer victimization, peer relations, family relations and mental health were obtained from the adolescents. The parents provided with information on demographic information. The Strengths and Difficulties Questionnaire (SDQ) was used to measure mental health problems.

Results: Totally 18.4% of the boys and 15.8% of the girls reported that they were peer victimized. Compared to adolescents not being peer victimized, peer victims had higher symptoms of emotional problems, conduct problems, and hyperactivity/inattention problems. The association between peer victimization and the total symptoms scale of problems were nearly four times higher for peer victimized adolescents, compared to pupils their own age who were not peer victimized. Adolescents who reported being peer victimized had more than four times higher risk of developing social impairment, compared to adolescents who reported not being peer victimized. Our results showed that these problems had an impact in the peer victimized adolescents everyday life; interfering with their home life, friendships, classroom learning and leisure activities. Peer support moderated the relationship between peer victimization and mental health problems. In addition parental support did not have the same effect.

Conclusions: Adolescents who are peer victimized are in risk of developing adjustment difficulties that affect their development negatively. The results of this study highlight the public health relevance and the importance of establishing preventive interventions to mitigate peer victimization in schools.

The article by Rasalingam and colleagues (in prep) is likely to be submitted to the “Journal of Pedriatric Psychology”.

Sammendrag

Bakgrunn: Mobbing blant jevnaldrende er et utbredt fenomen og et alvorlig problem i skolen. Det er dokumentert at mobbing blant jevnaldrende er assosiert med ulike typer tilpasningsproblemer knyttet til mental helse, skoleprestasjoner, og det sosiale liv. Målet med denne studien er å beskrive prevalensen av mobbing basert på selv rapportering. Videre å undersøke assosiasjonen mellom det å være utsatt for mobbing og psykiske vansker. Foreldrestøtte og jevnaldrende støtte antas å være beskyttende faktorer mot utviklingen av psykiske vansker forårsaket av mobbing.

Metode: Denne studien er basert på datamateriale fra en tverrsnittstudie, helseprofil for barn og unge i Akershus fylke i 2002. I denne studien er 9707 (87.2 %) ungdommer i 5-7 klasse og deres foreldre 8603 (78 %) inkludert. Informasjon om mobbing, jevnaldrende forhold, familieforhold og psykiske vansker var innhentet fra ungdommene. Foreldrene bidro med informasjon om demografisk informasjon. Strengths and Difficulties Questionnaire (SDQ) ble brukt til å måle psykiske vansker.

Resultater: Totalt 18.4 % av guttene og 15.8 % av jentene rapporterte at de var utsatt for mobbing av jevnaldrende. Sammenlignet med ungdommer som ikke var utsatt for mobbing, hadde de som var utsatt for mobbing større plager på emosjonelle problemer, atferdsproblemer og hyperaktivitet /konsentrasjons vansker. Assosiasjonen mellom det å være utsatt for mobbing og total symptom skår på psykiske plager var nesten fire ganger høyere, sammenlignet med de som ikke var utsatt for mobbing. Ungdommer som rapporterte at de var utsatt for mobbing hadde mer enn fire ganger høyere risiko for å utvikle sosiale vansker, sammenlignet med ungdommer som ikke var blitt utsatt for mobbing. Våre resultater viste at vanskene hadde innvirkning i deres hverdagsliv; negativ påvirkning i forhold til familielivet, vennskapsforhold, undervisning på skolen, og fritidsaktiviteter. Støtte fra jevnaldrende hadde en modererende effekt på sammenhengen mellom det å være utsatt for mobbing og psykiske plager. Foreldrestøtte hadde imidlertid ikke samme effekt.

Konklusjon: Ungdommer som er utsatt for mobbing er i risiko for å utvikle tilpasningsproblemer som kan påvirke utviklingen deres negativt. Resultatene i denne studien har betydning for folkehelse og er viktig ved etablering av forebyggende tiltak som kan redusere mobbing i skolen blant jevnaldrende.

Artikkelen av Rasalingam og medarbeidere (under utarb.) tenkes å sendes inn til ”Journal of Pedriatric Psychology”.

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1 Introduction

1.1 Peer victimization in a public health perspective

Mental health has been increasingly accepted as an important public health issue over the last two decades (WHO 2001). There has also been a considerable concern about children and adolescents mental health, with more evidence that mental health problems that emerge during childhood, early adolescence or adolescence are predictive of disorders later in life (Harrington 2001). Peer victimization has existed in schools for a long time. In Norway this century-old phenomenon has traditionally been regarded as a natural part of growing up and helpful to toughen up children and make them stronger individuals (Olweus 1993). A remarkable shift in public awareness took place in the early 1980's when three boys aged 10-14 committed suicide partly as a result of peer victimization (Olweus 1991). Peer victimization relevance in the public health policy is notable; hardly a day goes by without news in the press, radio, or television about a victimization incident and the profound adjustment difficulties it has had on the victim. In parallel to research efforts, peer victimization has become a growing concern among parents, school staff, and local authorities who fear for children's safety at school (Solberg 2010).

Dan Olweus has been recognized as a pioneer and founding father of research on bully/victim problems worldwide. His definition of peer victimization is that" a person is being peer victimized when he or she is exposed, repeatedly and over time, to negative actions from one or more powerful peers" Olweus (1991) p.412. The crucial element that distinguishes peer victimization from other types of negative encounters, such as conflict, is that there is an imbalance of power between perpetrator and target.

1.1.1 Peer victimization and related internal and external mental health problems

It is a well-documented fact that peer victimization is associated with various kinds of adjustment problems such as internalizing and externalizing problems (Berger 2007; Sourander et al. 2009). The theoretical distinction made between internal and external adjustment is related to the empirically established differentiation between children's behavioural and emotional problems. The two groups of disturbances have been labelled externalizing and internalizing by Achenbach (1966), reflecting that *externalizing problems* involve conflict with the environment, while *internalizing problems* occur within the self. Children who experience interpersonal victimization are at risk for the development of

maladaptive social-cognitive biases (Dodge et al. 1990) which may underlie aggressive subtypes of externalizing behaviour. The development of aggressive behaviour has been linked to antisocial and criminal behavior later in life (Sourander et al. 2007). Peer victimization causes internalizing symptoms such as considerable fear, avoidance and feelings of hopelessness that may contribute to childhood anxiety disorders and depression (Reijntjes et al. 2010).

Peer victimization among early adolescents can cause disability in terms of their daily activities. Because peer victimization often occurs within the context of the school environment researches have hypothesized that peer victimization might lead to poor performance in the classroom through a proximal impact on psychological adjustment (Buhs et al. 2006). Peer victimized adolescents report feeling less happy at school, unfortunately there is evidence that they are cut off from their peers and rated as less popular (Olweus 1993). The outcome being isolated from one's peers leads to a sense of loneliness (Greiff 2005).

Long term associations between child maltreatment and external and internal mental health problems have been suggested in several studies (Arseneault et al. 2006; Hanish & Guerra 2002). Fosse (2006) revealed in her longitudinal Norwegian study that of 160 adult psychiatric outpatients that almost fifty percent had been peer victimized at school. These patients had low levels of self- esteem and high levels of anxiety. They were also characterized by lower levels of education. Furthermore, a recent large prospective study found that for 8 year old school children, peer victimization as determined by pooled data from the child, parent, and teacher was associated with suicidal behavior up to the age of 25 years (Klomek et al. 2009). Anxiety and depression are according to the WHO among the 10 leading causes of disability worldwide, and they rank fourth in the ten leading causes of the global burden of disease (WHO 2001). Mental health problems that emerge in childhood carry high personal and social expenses in terms of level of functioning and cost of rehabilitation and treatment. Hence, there is no doubt that peer victimization at school affects at individual level, but also at the level of families and schools and society at large.

1.2 Aims of the study

Previous studies have primarily based their prevalence results on peer victimization on small populations. The first aim of the present study is to address the prevalence of peer victimization based on self-reports in a representative sample of nearly 10.000 5-7th grade early adolescents in Norway. Despite profound documentation of negative influence on mental health problems contributed by peer victimization, few studies have examined effects of internalizing and externalizing problems in the same study population and the impact of these difficulties in everyday life. Hence, the second aim of

this study is to measure peer victimization's association with externalizing problems such as conduct and hyperactivity/inattention problems, and internalizing problems such as emotional problems. We hypothesize that being peer victimized would predict both internalizing and externalizing problems. Further we want to investigate the impact of problems on home life, friendships, leisure activities and classroom learning. We expect profound impact of the problems on everyday life. Since some studies have reported buffering effects related to factors like parental support and peer support (Erath et al. 2010; Stadler et al. 2010) the third aim of this study was to see if these variables could act as protective factors towards the development of mental health problems. Parental support and peer support is expected to act as buffering factors reducing the negative influence on peer victimization on mental health.

1.3 Peer victimization

Despite preventive interventions against peer victimization such as several manifestos, anti-bullying campaigns and legislation, no schools have ever been studied in which there is zero peer victimization (Rigby 2008). A large number of surveys have been conducted in a number of countries, and peer victimization is well documented in Europe, Canada, Australia, and New Zealand. The first large scale prevalence study of peer victimization in schools was conducted in 1983 in Norway by Dan Olweus. The study was conducted in primary and lower secondary schools as a part of a nationwide campaign against bully/victim problems launched by the ministry of Education (Olweus 1983). Schoolchildren 84,000 participated, of these approximately 15% indicated that they had been peer victimized during the school year, on average 10.8% of the boys and 8.0% of the girls. Recent prevalence rates in Norway shows that 371604 students (grade 5 in primary school to the last year of high school), of these 10% of the boys reported being peer victimized two to three times a month. For girls the results were 6, 8% (Wendelborg et al. 2011). Peer victimized adolescents report that victimization at school is most frequent in the playground, but may also occur in classrooms and corridors (Wolke et al. 2001). Peer victimization may be manifested in various ways; physical attacks, social manipulation and verbal victimization are the most frequent and disturbing acts of aggression in schools (Berger 2007). It is mainly caused by someone in their own class (Wolke et al. 2001), but also by pupils in other classes at their own grade level or above their own grade level (Olweus 1993). Peer victimization is often caused by a small group of two or three students, often with a negative leader (Olweus 1993). Gender differences have been observed in peer victimization; boys are more likely than girls to be bullies as well as victims (Scheithauer et al. 2006). Peer victimization may occur already in preschool (Monks 2011), but is more prevalent in early adolescence up to fifteen years of age and tends to decline with an increase in maturity (Carney 2001).

1.3.1 Who is the peer victim?

Researches in peer victimization have attempted to determine chronic victims by mapping typical characteristics of peer victimized children (Solberg 2010). It is well established that there are two types of victims; provocative victims or passive victims. The provocative victims behave in ways, which may bring out irritation and tension around them. Many of them act aggressively and unlike passive victims they tend to defend themselves when insulted (Griffin & Gross 2004). These children often demonstrate poor social adjustments and are often anxious (Olweus 1993). According to Carney (2001) these victims are the least liked of their peer group. Approximately one in five victims is provocative (Olweus 1993). Hence, revealing that passive victims are far more prevalent than the provocative victims. Passive victims have in the literature been characterized as insecure and helpless, and appear cautious, sensitive, and nervous on the surface. According to Olweus passive victims are also submissive because these victims submit to attacks and insults by bullies without retaliation. The only physical characteristic that has been associated with the victim is weak physical strength (Olweus 2003). Olweus has found no support for other physical factors such as weight, wearing glasses or type of clothing.

1.4 Early adolescence

Adolescence (*latin*) means "to grow up" and is defined as the second decade of life. Early adolescence, the first phase of adolescent is often referred to as the years between 10-14 years (Adams 2010). This phase is dynamic and characterized by great changes within him or her such as hormonal and pubertal as well as changes in relation to social structures (Hall 1904). According to Hall (1904) this phase is a time of storm and thunder. The quantum leap into a higher level of cognitive functioning makes life exiting and intriguing. At the same time many early adolescents experience the fear of becoming small or insignificant (Lerner & Foch 1987). In the context of the present study perspectives relating to early adolescents social-cognitive development is important; the notion of adolescent egocentrism. The changes in early adolescent's relations with parents and peers, as well as the importance of social support are described.

1.4.1 Early adolescent egocentrism

"Everybody, I mean everybody else is looking at me like they think I am totally weird"

Harter et al. (1999) p.68

Adolescent egocentrism is about two distinct but related ideation patterns, the imaginary audience and the personal fable (Elkind 1967). Imaginary audience refers to early adolescent's self- centeredness, believing that others are always watching and evaluating them, they are the centre of the stage. Personal fable is complementary function to the imaginary audience, there is a development of an exaggerated sense of self-importance that makes early adolescents feel very special and unique, and has been linked to risk-taking behaviors (Elkind 1967). Early adolescents are prone to believe in the intensity and purity of their feelings and actions, causing them to experience life in black or white, there are no shades of grey (Harter et al. 1999). With continued intellectual development and social interactions, adolescent egocentrism is overcome. In the literature the imaginary audience and personal fable are discussed in relation to number of issues, for example cognition of other people's views, self-consciousness and peer conformity (Schave & Schave 1989).

1.4.2 Early adolescents' relations with parents

Parental warmth is important in the socialization process (Bowes et al. 2010). Emotional closeness and time spent with parents decrease during early adolescence (Larson 1996) and although adolescents strive for more independence, they also require emotional closeness and rely on them for guidance and support in critical situations (Gutman & Eccles 2007). The familiar notion of a "generation gap" reflects the generational conflict over fundamental values, norms and ideas between adolescents and their parents. The confronting attitude of the early adolescent is a result of establishing oneself as an autonomous being, and stress within the family often revolves around issues of autonomy versus control (Schave & Schave 1989). While early adolescent strive for more freedom and push their parents for more decision-making power, their parents are more concerned about their safety and often provide less opportunities for independent decision making (Gutman & Eccles 2007). One of the most visible, and at times, most frustrating behaviours for parents is the early adolescents increased secretiveness about their thoughts and actions (Schave & Schave 1989). Not only are early adolescents able to recognize that their own thoughts are private, but they now have the capacity to say things which are directly opposite to their feelings or thoughts (Schave & Schave 1989). This ability to use "social disguise" can lead parents into believing that everything is perfectly fine when it is not.

1.4.3 Early adolescents' relations with peers

There are few things that are more important to early adolescents than acceptance by their peers. Good experiences can lay the foundation for healthy adult social interactions, but bad ones can lay a heavy burden on the developing early adolescents (Hetherington et al. 1999). Indeed, some would even argue that peer influences on psychological development overshadow those of parents (Harris 1995). Peers provide opportunities for socializing and developing relationships and a sense of belonging. These functions increase in importance as the early adolescent begins to spend more time with peers than family (Larson 1996). Most social interactions with peers occur in play settings, and early adolescents spend more of their time outside of school playing with friends than they spend in any other activity. Peer interactions provide a critical opportunity for children to acquire certain social and cognitive competencies; in play for example it permits the early adolescent to explore their environment, learn about things in that environment, and solve problems (Zarbatany et al. 1990). Early adolescents display a marked increase in their use of social comparison, with the peer group as a means of self-evaluation. The early adolescents self-image and self- acceptance are closely associated with how he/she is received by peers (Harter et al. 1999). Adolescents need to fit in among their peers and susceptibility to peer pressure, may be an emotional "intermediate" between becoming emotionally autonomous from parents and a subjective sense of self-reliance (Schave & Schave 1989).

1.4.4 Social support

Social support includes problem-solving assistance, offering or availability of resources, healthy appraisals of stress and the ability to cope, and a sense of care, love, worth and belonging (Cohen 1984). This indicates that social support can function as a protective barrier against negative outcomes and promote physical and emotional health (McMahon et al. 2011). Cohen and Wills (1985) describes the "stress-buffering" model. The term "buffering" refers to social support being protective from the potentially pathogenic influence of stressful events. The stress buffering model has a moderating influence indicated by an interaction effect, meaning that the effect of social support is dependent on the level of stress experienced. More health benefits are experienced from social support when the early adolescent is under high levels of stress.

2 Materials and methods

Materials and methods are described in the article (Rasalingam in prep). This study used materials from the cross-sectional health survey "The health profile for children and adolescents" undertaken in Akershus County in 2002 by the Norwegian health services research centre (Rødje & Grøholt 2004). In this thesis additional information will be given on how this survey was conducted, and also additional information about the Strengths and Difficulties Questionnaire (SDQ) that was used to measure mental health problems. Statistical methods and missing data are also described.

2.1 The study "Health profile for children and adolescents in Akershus" and included sample

The aim of the health profile was to obtain information on different aspects of somatic and mental health in children and young adults in all of the 22 municipalities in Akershus County in order to develop preventive strategies within the local public health policy. The information obtained could be used by the health services, schools, parents, teachers, voluntary organizations and others that have contact with children and young adults in their childhood development (Rødje & Grøholt 2004). The health profile questionnaire was developed by the Norwegian health research centre (HELTEF) in collaboration with the project group, were the questions were partially taken from other studies conducted in Norway and partially developed especially for this study. The questionnaire covered a number of different areas, such as socio-demographic information, physical health, mental health, lifestyle, school experiences and social network, body image and nutrition, communication patterns, family relationships, and contact with health services (Rødje & Grøholt 2004).

The health profile included pupils from grade three in primary school (8-9 year olds) to the last year of high school (18-19 year olds). A minimum of 1000 pupils participated from each of the 22 municipalities in Akershus County, apart from Gjerdrum and Hurdal where there were fewer than thousand students living there. Whole classes were invited to participate, and all classes had an equal chance of being selected. The selection was conducted in every municipality. Number of classes that were selected was calculated from the number that should be included in the study from the municipality and the average number of pupils in classes in the municipality. The selection was conducted for each grade level, where all the schools in the municipality were represented with the number of classes it had for the current grade (Rødje & Grøholt 2004). This means that all pupils in that age group were potential participants in the survey and that they were representative of the entire group of children and young people in the County. Of the 43,248 pupils that were invited to participate in the study (which is 47.8% of the total population of Akershus) 36,456 volunteered to participate in

the health profile, (response rate: 84.3%, age range: 8-19 years). The SDQ self- report was included in the health profile questionnaire from grade five to obtain information about the child's mental health as seen from his/her own perspective. The present study is based on primary school early adolescents in 5-7th grade, among which 11153 pupils were invited to participate. Of these 9707 participated (response rate; 86.2%). Mean age was 11.5 years, range: 9-14 years. Among the parents 8603 participated, response rate 78%.

2.2 Strengths and Difficulties Questionnaire (SDQ) as a measure of mental health problems

Mental health problems were measured with the Strengths and difficulties Questionnaire (SDQ). SDQ is a screening instrument for mental health and psychological adjustment in children and adolescents, age 4-16 years (Goodman 1997). It was developed from the well-established British Rutter scales, in 1994 by Robert Goodman. Before the appearance of SDQ two rating scales had commonly been used for the screening process in community-based studies of children; the Rutter scales and The Achenbach system of Empirically Based Assessment (ASEBA) questionnaires, including the Child Behaviour Checklist (CBCL) for parents, the teacher Report Form (TRF) and the Youth Self Report (YSR) (Bourdon 2005). Although the ASEBA questionnaires were established as a useful screening instrument, it was criticized for being unnecessarily long and for having a negative perspective. SDQ was first published in 1997; the aim was to make a short questionnaire (one page), reliable, clinically relevant and easy to use. Given the high rate of comorbidity among children and adolescents it was important not be restricted to a narrow focus but attempt to cover a broader range of different behaviours (Rothenberger & Woerner 2004). It was also important to include items that assessed positive behaviours, protective factors and compensatory resources.

The SDQ can be used for screening, as a part of a clinical assessment, as a treatment-outcome measure, and as a research tool (Goodman et al. 2000). Identical or nearly identical versions can be completed by the parents or teachers of 3-16-years olds and by 11-16-year olds themselves. The SDQ questionnaire includes 25 items, divided into five scales of five items each: hyperactivity/inattention problems, emotional problems, conduct problems, peer problems and prosocial behaviour. All the scales expect for the prosocial behaviour are summed to generate a total difficulties score (Goodman 1997). In the present study prosocial behaviour was not included. Peer problem was also not included because it correlates with being peer victimized (See the article (Rasalingam in prep) for further information).

The selection of the items and their grouping into different scales is based on previous factor analyses and current classification of diseases. The subscales cover both internalizing and externalizing

problems and social problems. As an example the choice of items in the hyperactivity-inattention scale was constructed to consist of both inattention (two items) and impulsiveness (one item), because these are the three key symptom domains for a DSM-IV diagnosis of attention-deficit/hyperactivity disorder (ADHD) (American Psychiatric Association 1994). Hyperactivity/inattention may be an outburst for many other problems and is particularly important in relation to school functioning and social life.

Goodman conducted a survey in Great Britain in 1999 to assess mental health of children and adolescents. Results from this survey showed an overall prevalence of 10% for mental disorders among children and adolescents aged from 5-15 years. The ICD-10 diagnoses for emotional disorders, conduct disorders and hyperactivity/inattention disorder was used (Ford et al. 2003). Hence, cut-off points at the upper 10% of the highest score on the SDQ were used to define caseness in the UK population. The next 10% were considered borderline, and the remaining 80% were low risk (Goodman et al. 2003). Van Roy has in her study adjusted these cut- off points to Norwegian conditions, using the same statistical banding as Goodman and defined Norwegian cut-off points to get approximately a 10% high risk group, 10% borderline and 80% low risk group (Van Roy 2010). The article (Rasalingam in prep) is based on these Norwegian cut-off points when assessing mental health problems in early adolescents 5-7th grade who were peer victimized.

Goodman extended the SDQ with an impact supplement in 1999 (Goodman 1999). The impact supplement can provide useful additional information to clinicians who are interested in psychiatric caseness and not defining disorders solely in terms of psychiatric symptoms. The first question of the self-reported impact supplement asks whether the respondent perceives having difficulties with one or more of the following areas which includes emotions, concentration, behaviour and getting along with other people. If the respondent believes that he/she has problems, the questionnaire inquires further about the chronicity of the problems, overall distress and the impact the perceived difficulties have on home life, friendships, and classroom learning and leisure activities. Further about the burden of these difficulties impose upon family, friends and teachers (www.sdqinfo.com). The items on chronicity and burden are not included in the total impact scale (Goodman 1999). The scoring of the response categories of each item in the impact supplement is described in the article (Rasalingam in prep).

SDQ covers the age range between 4-16 years. There is a wide difference in what is perceived as risk behaviour and what can be considered as normal behaviour through the years, as well as clear differences between genders. SDQ questionnaire consist of questions that is considered to be relevant for the wide age range and for both genders (Goodman 1997). The questions for parents and teacher are the same, while the SDQ self- report are written in "I"-term, to make it more adaptable for children and adolescents. The SDQ questionnaire has during the last decade been translated into many different languages, and established as a widely used instrument in research of children's developmental risks of emotional and behavioural difficulties, increasing its utility for cross- country comparisons.

2.3 Statistical analysis

Statistical methods are described in the article (Rasalingam in prep). Additional information is given in this document to explain how certain analyses were conducted. In this study, multivariate regression analysis was chosen to predict dichotomous outcomes of the dependant mental health variables (emotional problems, conduct problems, hyperactivity/inattention problems, total symptom scale and total impact scale). The main predictor variable was "Peer victimization" (dichotomized). Logistic regression in this study attempts to model the probability of having mental health problems, when being peer victimized. An interpretation of logistic regression is the value of odds ratios (OR). The OR is a measure of effect size, describing the strength of association between two binary data values, in this study this is the association between being peer victimized and having mental health problems (Field 2009). Hierarchical regression was utilized to see to what extent parental support and peer support acted as protective factors against the development of mental health problems among adolescents who were peer victimized. Parental support variable and peer support variables were entered in steps (blocks). The effect of each independent variable is assessed in terms of what it adds to the prediction of the dependent variable. A reduction of the association of peer victimization and mental health problems when parental support or peer support is added introduces a protective effect. When the confidence intervals do not overlap, thus the difference between the estimates is statistically significant (Field 2009). The precision of the associations (odds ratios) in this study were assessed using 95% confidence interval and different levels of significance. Other analysis that was done is multicollinearity. According to Pallant (2010) one should always check for high intercorrelations among predictor (independent) variables. Ideally, the predictor variables will be strongly related to the dependant variable, but not strongly related to each other. In this study the variables did not violate the multicollinearity assumption (tolerance value being less than .10, or a VIF value above 10). The tolerance values for each of the independent variable range from .937-.987 and VIF values range from 1.001-1.072.

When one is doing research, particularly with human beings, it is rare that one will obtain complete data from every case (Pallant 2010). In this study there was a total population of 9707 (87.2%) early adolescents and parents 8603 (78%). The variables in this study have relatively few missing cases. The items chosen from the questionnaire obtained by early adolescents had a missing range from 65-256. The two items chosen from the questionnaire obtained by parents however had high missing data with a range from 1495-1568. This is due to a lower response rate from parents than children. When including these two variables in the logistic regression analysis, nearly 1600 cases were not selected. SPSS version 17 excludes cases listwise; it includes cases in the analysis only if they have full data on all of the variables listed in the variable box for that case (Pallant 2010)

3 Ethical aspects

The health profile study was conducted after approval from the Regional Ethics Committee. Data were collected April-May in 2002 (Rødje & Grøholt 2004). Information about the study was sent out to contact persons, the administration at schools, teachers, students and parents in advance of the study. Contact person in the municipality was responsible for that a person in the administration of each school handed out and collected all written materials related to the study. The teachers were responsible for providing students with an information letter prior to the study and giving them a copy to give to their parents at home. Information letters consisted of information about the purpose of the study and that it was anonymous and voluntarily. The parents were asked to give their consent (Rødje & Grøholt 2004). Participants completed the set of questionnaires at school during regular classes, while the parents received the questionnaire at home via the child and returned the materials in a sealed envelope. The questionnaires had the same registration number for each parent and their child so that they could be matched without violating the anonymity of the participants. Contact person in the municipality had the responsibility to collect all the materials from the schools and deliver it to HELTEF (Rødje & Grøholt 2004). When working with this study, the material used for the analysis was kept under secure and restricted access at the Norwegian Institute of Public Health Institute.

4 Results

The results are described in the article (Rasalingam in prep). Only the main results will be briefly summarized in this document. In addition some additionally results will be presented, describing early adolescent's self- report on how they responded to each of the five items in each of the three subscales of the total symptom scale; emotional problems, conduct problems and hyperactivity/inattention problems. Also results are given on how they responded to the 4 items on social impairment (home life, friendships, classroom learning, and leisure activities) in the impact supplement.

4.1 Summary of main results

Early adolescents who reported being peer victimized showed a significantly higher association of having of internalizing and externalizing difficulties than peers their own age who were not peer victimized. Both genders reported having emotional problems, conduct problems and hyperactivity/inattention problems that were strongly associated with peer victimization. Boys reported having more emotional problems than girls, while there were small differences in gender in both conduct problems and hyperactivity/inattention problems. The total difficulties score that reflects these problems were significantly higher among peer victimized early adolescents than non-peer victimized early adolescents (OR=3.900 CI=3.425-4.440). The impact of these difficulties on peer victimized adolescents were highly significant (OR=4.327 CI=3.734-5.014), interfering with their home life, classroom learning, friendships and leisure activities. Parental support did not moderate the negative effect on mental health contributed by peer victimization; peer support however did show great reduction in mental health problems.

4.2 Additional results

Emotional problems

From Figure 1 we can see that overall peer- victimized early adolescents clearly have more symptoms of emotional problems than non-peer victimized early adolescents. Peer victimized adolescents especially experience feeling nervous in new situations with a percentage of 22.1 compared to non-peer victimized adolescents with only a percentage of 11.4. Peer victimized adolescents also experience getting a lot of headaches, stomach-aches or sickness, the difference is twice as high compared to non-victimized adolescents, and the same result is found on the item "I worry a lot". The difference among peer victimized adolescents and non-peer victimized adolescents is strongest on the item "I am often unhappy, downhearted or tearful", where the prevalence is nearly three times higher for peer victimized adolescents.

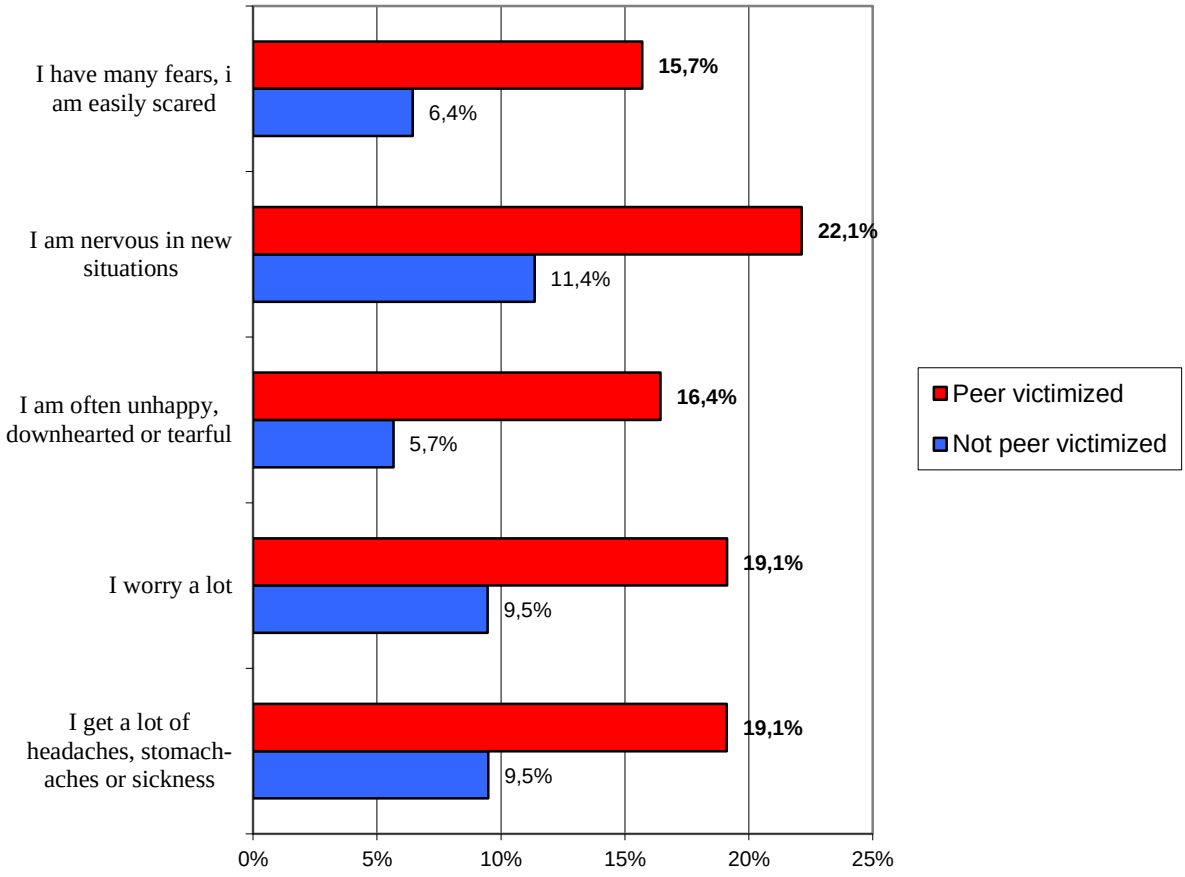

Figure 1: Self –report on emotional problems by adolescents who responded to the response alternative "certainly true". Results from n= range 254-356 peer victimized adolescents and n= range 444-889 not peer victimized adolescents.

Conduct problems

We can see in Figure 2 that on all of the items peer victimized early adolescent's reports having more conduct problems than early adolescents who are not peer victimized. Two items are especially notable, the first being; "I am often accused of lying or cheating", the prevalence among peer victimized adolescents is nearly four times higher with 22.4% compared to non-peer victimized adolescents with 6.3%. The second item being; "I get very angry and often lose my temper, among peer victimized adolescents the prevalence is 23.3% which is twice as high compared to non-peer victimized adolescents with only 10.7%. The Figure shows that although peer victimized adolescents experience becoming angry and often loses their temper, this does not cause them to get involved in fights; the prevalence on this item is only 4.5%, lower than the other items on the conduct problem scale.

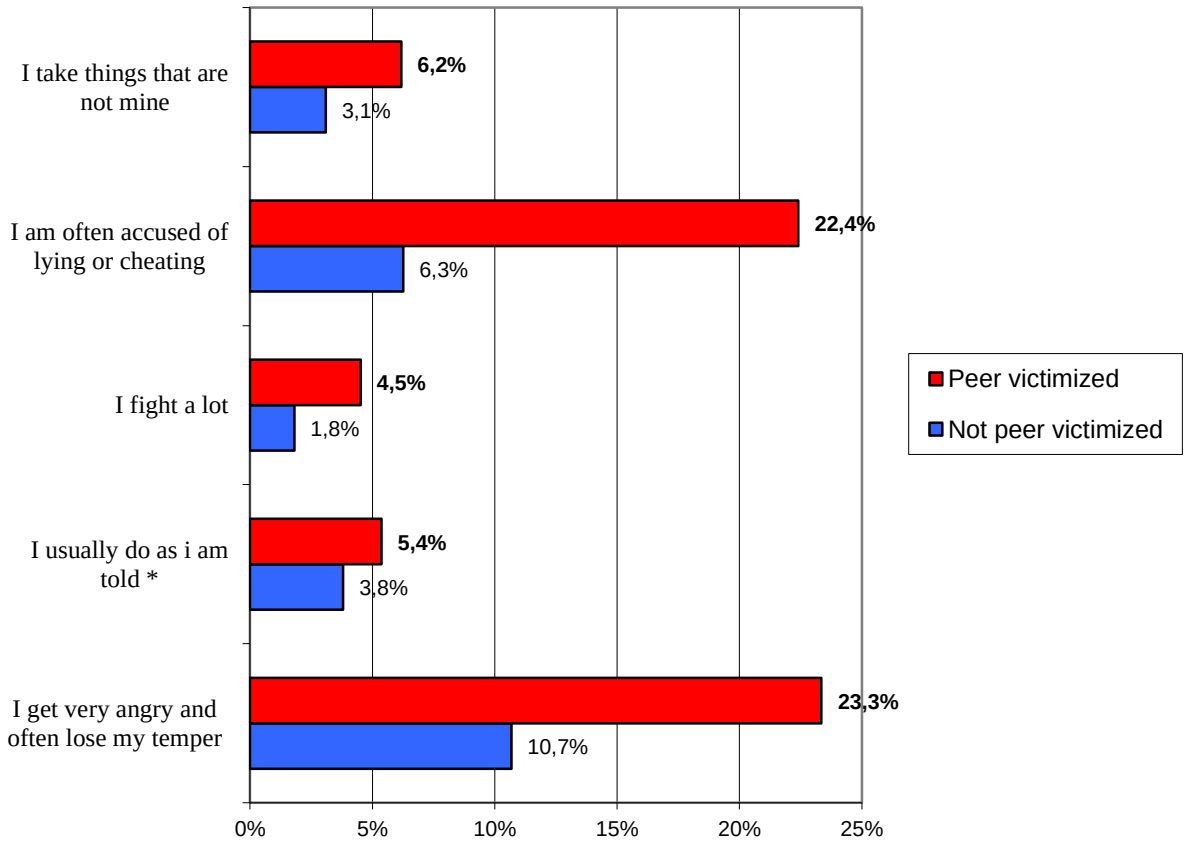

Figure 2: Self –report on conduct problems by early adolescents who responded to the response alternative "certainly true". Results from n= range 73-375 peer victimized adolescents and n= range 142-835 not peer victimized adolescents. Note*: For this item we chose to present it reversed, that is "not true" instead of "certainly true".

Hyperactivity/Inattention problems

Peer victimized early adolescents experience being more hyperactive and inattentive than peers their own age who are not peer victimized (Figure 3). Among peer victimized adolescents, the item that has the highest prevalence is "I am constantly fidgeting or squirming", with a percentage of 26.4. However the prevalence is not much higher compared to adolescents who are not peer victimized with a percentage of 20.5. The Figure shows that peer victimized adolescents report twice as high prevalence of being easily distracted, than adolescents their own age who are not peer victimized. The positive worded item "I finish the work I am doing" shows the proportion of the adolescents who answered "not true". Meaning that nearly twice as many peer victimized adolescents reported not finishing the work they are doing compared to adolescents who are not peer victimized.

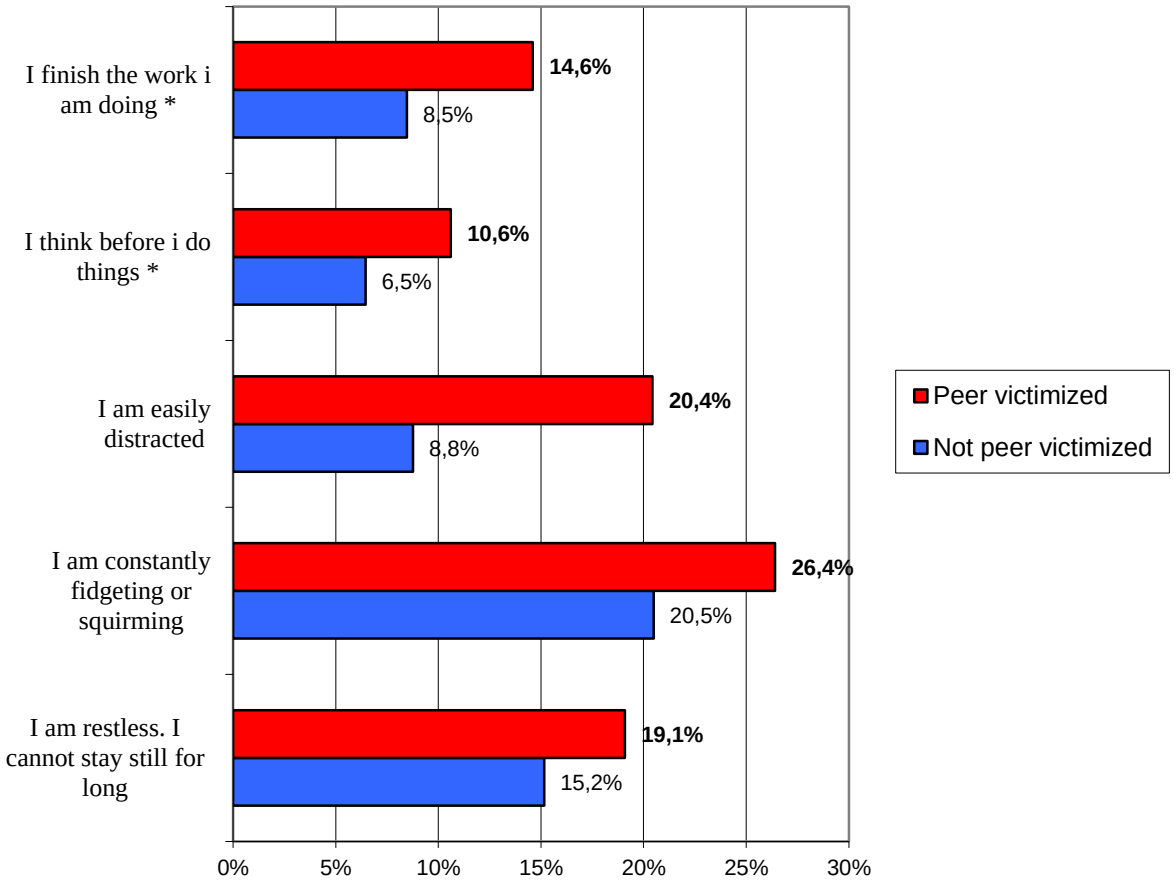

Figure 3: Self –report on Hyperactivity/inattention problems by adolescents who responded to the response alternative "certainly true". Results from n= range 170-426 peer victimized adolescents and n= range 666- 1605 not peer victimized adolescents. Note*: For these items we chose to present they reversed, that is "not true" instead of "certainly true".

Impact on everyday life

From Figure 4 we can see clearly that peer victimized early adolescents experience adjustment difficulties when it comes to everyday functioning. There is an overall higher prevalence of these difficulties related to classroom learning, friendships, leisure activities and home life among peer victimized adolescents compared to non-peer victimized adolescents. Classroom learning is the area where peer victimized adolescents report that the symptoms of problems interferes the most, with a prevalence of 8.5%, although not much difference compared to non-peer victimized adolescents. The strongest difference between these two groups is found on their relationships with friends. Peer victimized adolescents report nearly three times higher of interference with their friendships compared to adolescents who are not peer victimized. Almost the same results are found on interference with leisure activities.

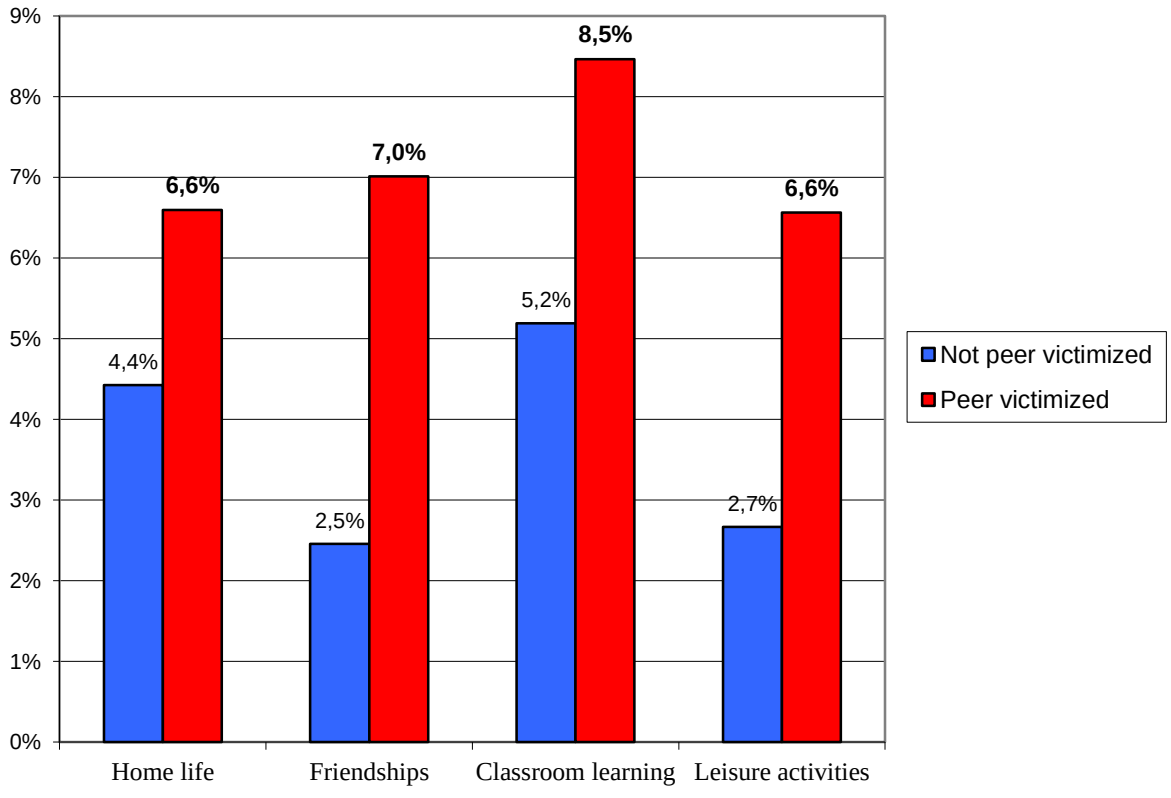

Figure 4: Early adolescents self-report on the total impact score; impact on everyday life. Response alternative: "A great deal". Results from range n= range 52-70 peer victimized adolescents and n= range 47-95 not peer victimized adolescents.

5 Discussion

In this chapter there will first be a discussion of methodological considerations; reliability, validity and representativeness of this study. Further there will be an elaboration of the discussion of the research questions, also presented in the article (Rasalingam in prep). This consists of a discussion on the prevalence of peer victimization among early adolescents. Further on peer victimization and its association with internalizing and externalizing problems, and as well the impact of these problems in everyday life. Last, there will be a discussion of the role of parental support and peer support as protective factors towards the development of mental health problems.

5.1 Reliability

Reliability is the "accuracy of precision of a measuring instrument" (Kerlinger 1986). To measure reliability (internal consistency) coefficient alpha was used. This is the degree to which the items that make up the scale are all measuring the same underlying attribute (Cronbach 1951). This is the most commonly used statistical method, and provides an indication of the average correlation among the items that make up the scale. Values range from 0 to 1, with higher values indicating greater reliability. The SDQ scale was used in this study to measure mental health problems among peer victimized adolescents. The internal reliability of the SDQ has in other studies been considered satisfactory, despite the modest levels of internal reliability for several of the subscales (Goodman 2001). In this study the total difficulties symptoms scale had an average Cronbach alpha of 0.70. The total impact score however showed a very good internal reliability, with a Cronbach alpha of .97. There were low reliability coefficients of emotional problems, hyperactivity/inattention and especially for conduct problems. This poses a problem what regards the unity of the underlying structure of the constructs as it threatens the validity of the scales. In addition conduct subscale consists of items that refers to clearly different kinds of problems; both aggressive behaviour and rule breaking behaviour (Van Roy 2010). Lundh and colleagues (2008) argues that different kinds of problems within a scale do not correlate highly and gives low alphas. In order to use a brief screening instrument such as the SDQ that covers a diversity of problems, we have to use instruments with low alphas. Despite the fact that these coefficients are low in other studies (Ruchkin 2008) it has been concluded that SDQ subscales have good diagnostic properties.

An aspect concerning reliability is that the alpha coefficients are a function of the number of items in the scale, alpha increases with an increasing number of items in the scale (Cortina 1993). The SDQ subscales consist of only five items in each scale, which might explain the low alphas. If a scale has

numerous items (e.g, more than 20), then it can have an alpha of greater than 0.70 even when the correlation among the items is very small (Cortina 1993). It has also been argued that low internal reliability may be due to the positively worded reverse-scored items in the conduct and hyperactivity subscales (Goodman 2001).

5.2 Validity

Validity refers to the approximate truth of an inference (Shadish et al. 2002). This usually comes from empirical findings and the consistency of these findings, with other sources such as earlier findings and theories. Although we can never be certain that the inferences we draw from a study are true, or that other inferences in the study have been conclusively falsified.

5.2.1 Statistical conclusion validity

Statistical conclusion validity is the validity of the existence and size of covariation between variables. The researcher has to examine whether the variables of interest are associated and if they are, how strongly (Shadish et al. 2002). This is challenged by two possible sources of error; Type 1 error and Type II error. Both types of error are related to statistical significance. The P-value (probability-value) shows the probability of observing the actual result or an even more extreme result is given the null hypothesis (the hypothesis of no significant difference). This reflects whether the result is obtained by chance, and to what degree the results from the studied population can be generalised (Field 2009). As in most research, the statistical level in this study is defined at the 95% level, however the probability levels of significance are presented as p<0,001, p<0, 01, and p<0, 05.
In small samples, the statistical power is small, leading towards failing to recognize a difference being real, when it is (Type II error). However in large samples as in this study (n=9707) the statistical power increases. This represent greater variability in the values observed and the risk of accepting a difference as significant when it is not (type I error), is possible (Bjørndal & Hofoss 2004). The p-values found in this study were all less than p<0,001, reduces the chance of Type I error, one can have confidence that the observed differences are real. An association must not only be statistically significant but also clinically significant. Clinical relevance has to be decided on other grounds than p-values only, such as social or human value of the observed differences. In clinical research, this might be the cost/benefit of achieving the observed differences in results (Van Roy 2010).

In this study several of the research variables were dichotomized. The methodological literature shows that dichotomization of quantitative measures often leads to substantial negative consequences (MacCallum et al. 2002). Statistical conclusion validity may be threatened by loss or effect size and power. There is chance of spurious statistical significance and overestimation of effect size. Thus, the statistical validity might have been strengthened in this study if the variables were not dichotomized. In this study "listwise deletion" of cases was performed when values were missing. This causes a narrowed sample variance. Missing modelling such as imputation of missing variables takes care of the true variance in the population to a greater extent (Newman 2003). However this option was not performed. Nevertheless, this study had a high participation and missing data because of the lower response rate from parents (78%) compared to children (87.2%), led to a substantial amount of missing data, the resulting sample size was more than sufficient to do the analysis.

5.2.2 Construct validity

One of the most important properties of a measurement tool is construct validity. Construct validity refers to the extent a measure relates in a logical or expected way to other measures based on theory or previous research (Nunnally 2004). Prevalence of peer victimization is dependent upon how it is defined and measured. There has been a considerable agreement on the definitional aspects of victimization in the field of research, but regard to the measurement procedures there is much more variability (Solberg 2010). The most commonly used definition of peer victimization is Olweus definition (see introduction). Studies within the peer victimization line of research have mainly addressed the power-imbalance by providing students with an explanation of peer victimization before filling out the questionnaire (Solberg 2010). In the present study such an explanation was not given before filling the questionnaire. This might have led to misunderstandings about what peer victimization consist of and give us incorrect results. However, a study in the UK concluded that 6-7 year olds (Smith & Levan 1995), as well as older pupils (Arora 1987) have reasonably good understanding of the term peer victimization. Using a validated questionnaire, such as the Olweus Bully/victim questionnaire could have led to more valid prevalence estimates. Nevertheless the two items chosen to measure peer victimization in this study covered both the frequency and duration (six months).

To make prevalence estimates of peer victimization one has to choose a certain cut-off point for classifying a student as a victim/non-victim. In peer victimization research, cut -off point has received very little attention (Solberg 2010). Some researches prefer to use rather strict criteria whereas others use more lenient criteria. Apart from studies based on simple yes/no dichotomies, the researcher have to decide which category should be used as lower- bound cut off point. There are no absolute or

natural criteria which can guide this decision (Solberg 2010), hence different cut-offs are used. When estimating the prevalence of peer victimization, the ultimate goal is to pick out the "true" victims, and to avoid as far as possible both false negatives and false positives. In this study we used a fairly strict criteria for the cut-off point to try and reach this goal (see the article by Rasalingam and colleagues (in prep)). The prevalence of peer victimization in this study did not differ substantially with previous findings of Norwegian early adolescents (Craig et al. 2009; Greiff 2005).

A common way of addressing validity issues among peer victimization researches has been to make comparisons between different sources of data. For instance, self-reports of peer victimization have been compared with reports from peers or teacher/parent (Solberg 2010). In this study we compared the self-report and parent report, using the similar item on peer victimization from the SDQ questionnaire. Several early adolescents reported being peer victimized than what their parents had knowledge of. Hence, self- report was used in further analysis. This is in accordance with Olweus (2002), who found out that not all parents know about or talk to their children about peer victimization. According to Cassidy (2009) peer victimization often occurs when parents or teacher are not around, and most early adolescents are cautious of disclosing such events. Self-reports are therefore likely to be a reliable source on these matters.

To what degree is the questionnaire items valid measure of the constructs of the SDQ? Convergent and discriminant validity are main aspects of construct validity. Convergent validity refers to the degree to which a measure is correlated with other measures that it is theoretically predicted to correlate with (Shadish et al. 2002). The convergent validity of the SDQ scale has been evaluated by showing good correlations with other instruments used to measure mental health problems in children/adolescent, such as the Rutter scale which it was originally based upon, the Child Behaviour Check List and the Youth Self- report (Goodman et al. 2003). The SDQ is also believed to discriminate well between children with and without psychopathological symptoms (Goodman 2001). Discriminant validity on the other hand, is the notion of whether measurements that are supposed to be unrelated are, in fact, unrelated (Shadish et al. 2002). To test discriminant validity Goodman used Receiver Operating Characteristics Curves (ROC), which was used to determine a cut-off value for the different questionnaires (parents, teacher, self-report). According to Goodman (1999) ROC analyses showed satisfying results for the different informants.

Self-report of the SDQ questionnaire was used to address mental health problems among peer victimized early adolescents. This may lack the specificity and additional depth that is needed to give more objective results, which could have been higher if parent ratings had been assessed in addition to self-reports. In the absence of adult informant reports, the SDQ self- report has proved to be as good as the parent-rated version in predicting the overall presence of a psychiatric diagnosis (Becker 2004). Although parental SDQ information was available, it was chosen to use the self- report version. Van

Roy and colleagues (2010) summarized in her study of discrepancies in parent-child reporting of emotional and behavioural problems, how important it is to pay attention to children's reports of emotional- behavioural difficulties, when the children in the same population as ours did report more symptoms of problems than their parents had knowledge of. When SDQ is employed as a screening instrument to identify "high risk" children for more detailed assessment least two informants should be used (Goodman 2001). Obviously, one cannot either replace clinical detailed psychiatric assessments.

The SDQ variables were dichotomized into "low risk" group and "borderline/high risk" group. This has also been done in other studies (Haines et al. 2002). Borderline cases were included with high risk group because preventive interventions are important in the public health policy. In an ideal situation early adolescents who are in the borderline of developing mental health problems should seek clinical consultation, to determine the extent of the problems (Haines et al. 2002). Clinicians can then help to prevent a possible "caseness".

Norwegian cut- off points in the SDQ measurement of the subscales was used in this study (Van Roy 2010). Cut-off points differ between cultures because of the differences in prevalence or reporting of symptoms. These differences in psychological adjustment reveal the need for adjusted cut off- points to get an appropriate evaluation of the mental health of children and adolescents in different countries. In a previous Norwegian epidemiological study of child behaviour and emotional problems, the same prevalence of mental disorders was found as a study conducted by Goodman in 1999 in UK (Novik 1999). Therefore Van Roy (2010) used the same statistical banding as Goodman and defined a 10% high-risk group, 10% borderline group, and 80% low-risk group.

Peer support was measured with four items chosen from the "peer problem" scale in SDQ (reversed to be in a positive direction). This scale has been validated to measure well children's relationships with peers (Goodman 2001).

To measure parental support, only one item was chosen from the "health profile" questionnaire, due to lack of other items to choose. This is a limitation in this study. However parental support was included in this study because their influences are just as important as peer influences in the early adolescent's development (Hetherington et al. 1999). Nevertheless, the item that was chosen was relevant and informative. This item also has the lowest missing data of all the variables in the study.

5.2.3 Internal validity

Internal validity refers to inferences about a causal relationship between variables (Shadish et al. 2002). The study used a cross- sectional design, means that causality cannot be addressed in an appropriate way. However the study presents a clear indication of the links between being peer victimized and mental health problems among early adolescents. This information can be used to identify risk groups to target for prevention and early intervention.

5.2.4 External validity

External validity refers to the generalization of findings *to* or *across* target populations, settings and times (Cook et al. 1979). The term "generalizing to" concerns validity of generalizations from samples to populations of which the samples are presumably representative. While "generalization across" concerns the validity of generalization across populations. Notably, generalizing across logically presupposes validity of generalization to. This study has a large sample (87.2%) of participating early adolescents in 5-7th grade in Akershus County. A minimum of 1000 pupils participated from each of the 22 municipalities in Akershus County. Since Akershus County has urban, suburban, and rural areas with clear differences in socio- economic status (Van Roy 2010), this study is representative for this age group in rest of Norway. Ecological validity is a type of external validity, the degree to which the behaviours observed in a study reflect the behaviours that actually occur in natural setting (Cook et al. 1979). Early adolescents filled in the "health profile" questionnaire at school, under supervision of the teacher; this resembles their everyday situation. Parents filled in their questionnaire at home, in their natural setting. This increases the ecological validity of this study. The response rate from the parents was however slightly lower (78%). This might be a selection bias in the material, only those who are particular interested in this study volunteered. The fact that the materials were sent home with the adolescents and the parents filled in the questionnaire at home and not in a "fixed" setting could also have contributed to the lower response rate, but then again this might have reduced the ecological validity.

5.3 Prevalence of peer victimization during early adolescence

Prevalence of peer victimization has been regarded as essential knowledge for schools, parents and government bodies at both national and local levels. In this study the prevalence of peer victimization among boys were 18.4% and among girls 15.8%. The relatively high prevalence indicates that the

phenomenon of peer victimization is a serious problem in schools. Between 1993/94 and 2005/06 data on the prevalence of peer victimization in schools were collected as part of the Health Behavior in School-aged Children (HBSC) study of 11-15 years olds (Currie 2008; Currie 2004; King 1996). Data from above mentioned projects revealed that the prevalence of peer victims declined in Norway during the first years of the new millennium, for boys a range between 16.9%-9.7% in this period and for girls a range between 12.6%- 6.9% (Molcho et al. 2009). Recent data on peer victimization in schools in Norway "The pupil investigation" 2007-2011 (grade 5 in primary school to the last year of high school), reveal a range from 7%-10% among boys and a range from 5.1%- 6.8% among girls (Wendelborg et al. 2011). The prevalence of peer victimization is slightly higher in this study compared to those above mentioned studies, but does not differ substantially with other studies conducted in Norway, with estimates ranging from 15,3%-19,1% for boys and 8,4%-14,2% for girls (Craig et al. 2009; Greiff 2005). However, prevalence rates are difficult to compare, due to lack of uniform criteria and differences in study design and sample (Lien et al. 2009).

Boys in this study reported to be slightly more peer victimized than girls, this is in accordance with the literature. Boys are more likely than girls to be bullies as well as victims (Scheithauer et al. 2006). Although "maleness" itself is probably not a causal factor as some have suggested (Egger 1995), the social and situational forces that combine with masculinity may well be. For example, boys are more physically aggressive than girls, and express more anger, in both verbal and nonverbal forms (Crick & Zahn-Waxler 2003).

Peer victimization is according to studies most prevalent among early adolescents (Carney 2001). One can hypothesize that this might due to the fact that this period is characterized as "storm and thunder" (Hall 1904). There are many changes that occur within this phase, such as biological, cognitive and social. In schools the early adolescents are confronted with different pupils, many that they might have little in common with. The challenge to "get along" occurs at a stage in their life, where there is an increased social comparison, self-consciousness and concerns for social status (Harter et al. 1999). Peer victimization is often contributed by a group of two or three pupils, with one negative leader (Olweus 1993). According to Baumeister and Leary (1995) the bully may create a sense of "belongingness" to a group that gives the followers strong motivation to be a part of the victimization. Early adolescents need to fit in among their peers and this result in susceptibility to peer pressure (Schave & Schave 1989). Meanwhile the victimized early adolescent has not yet acquired the social skills to deal effectively with aggressive acts by other peers (Smith 2001). Not surprisingly does peer victimization decline with an increase in maturity (Carney 2001), one appear to be less likely to seek to hurt each other.

5.4 Peer victimization is related to internalizing problems

Results from this study show that peer victimized early adolescents experience high levels of internalizing problems. Internalizing problems such as emotional problems occurs within the self (Achenbach 1966). Peer victimization is associated with serious adjustment problems; including depression and anxiety (Menesini et al. 2009). Anxiety and depression are believed to have similar emotional features, but the predominant emotion in anxiety is fear whereas in depression it is sadness (Blumberg & Izard 1986). In this study peer victimized adolescents reported experiencing both fear and sadness. A cohort study over two years of peer victimized adolescents predicted the onset of anxiety or depression, this especially in adolescent girls (Bond et al. 2001). In this study, however, boys experienced having more internal problems than girls by being peer victimized. Olweus (2002) has shown that typical male victims are more anxious and insecure than students in general. Furthermore, these boys are often cautious, sensitive, and quiet. Researchers have found that boys, who sought out their feelings, were more likely to experience peer rejection (Chung 1996). The familiar notion of "boys don't cry" may be present. According to Ladd and Kochenderfer-Ladd (2002) boys that reported suppressed feelings (distance coping) by trying to convince themselves that their peer problems "are no big deal", exhibited greater signs of anxiety.

Our study revealed that peer victimized early adolescents often worry a lot and are tearful. Such an adolescent may conclude that "I'm the kind of person who deserves to be picked on" (Graham et al. 2009). Early adolescent's tendency to react to the imaginary audience is present in peer relationships (Elkind 1967). Sense of being on a darkened stage with bright spotlights always focused on themselves, waiting for the disapproval, judgments and put-downs by peers. The increased concern for social acceptance may be particularly detrimental for those children who are peer victimized; they may begin to internalize these negative thoughts regarding their self-worth (Kochenderfer- Ladd 2001).

Peer victimized adolescents in this study experienced having psychosomatic complaints; such as getting a lot of headaches and stomach aches. Peer victimization is associated with having high levels of stress (Storch 2003). Because stress is considered to contribute to the development of psychosomatic problems, being peer victimized likely contributes to the higher prevalence of these symptoms (Fekkes et al. 2004). In an international cross- sectional survey of schools in 28 countries Due and colleagues (2005) found that peer victimized experienced more psychosomatic problems compared to the other students. Longitudinal studies support the hypothesis that peer victimization causes psychosomatic problems and not the other way around (Biebl et al. 2011).

5.5 Peer victimization is related to externalizing problems

In this study early adolescents experiencing peer victimization showed high levels of having externalizing problems such as hyperactivity/inattention and conduct problems. For instance, our results showed that peer victimized adolescents are easily distracted and have problems with finishing the work their doing. This is in accordance with Pynoos (1988) who found that children may display impaired concentration and increased distractibility as a result of peer victimization. Children who are frequent in negative interactions with peers perform less competently than other children on a range of cognitive tasks (Dodge 1990). Peer victimization is a distressing experience (Olweus 2002), for example among English secondary school students, peer victimized children reported feeling irritable, nervous, and panicky after episodes of peer victimization. Thirty-two per cent had recurring memories of peer victimization incidents, and 29% found it hard to concentrate (Sharp 1995).

Our results revealed that peer victimized early adolescents tends to get very angry and often lose their temper. These victims are according to Olweus (2003) provocative; unlike passive victims they tend to defend themselves when being insulted. Our results showed that peer victimized adolescents got angry but they did not tend to fight back. Boivin and Hymel (1997) found that peer victims signal that they will be unlikely to successfully defend themselves against attacks. According to Olweus (2003) the only physical characteristic that has been associated with being peer victimized is weak physical strength. Furthermore, although these victims are aggressive, they are also often anxious (Olweus 2002). Because they might be afraid of fighting back, they use other revengeful strategies; such as telling the teacher just to get the perpetrator in trouble, or acting in ways designed for "making the perpetrator pay" (Nabuzoka et al. 2009). The personal fable may be present here; the peer victimized early adolescents have en exaggerated sense of self-importance (Elkind 1967), "no one can mess with me, and get away with it". Personal fable has been linked to risk taking behavior. According to Champion (2004) peer victimized adolescents tend to use ineffective strategies to respond to provocation by bullies, and lack friendships with peers that help ward off attacks. Not surprisingly these provocative victims have been found to be the least most liked by their peer group (Carney 2001).

Externalizing difficulties in particular are moderately to highly stable over time (Eron 1987). Relations between peer victimization and later adjustment difficulties might therefore reflect the stability of the concurrent behavioural correlates of peer victimization. Reactions of peer victimization can be dangerous; according to Carney (2001) aggressive victims are far more likely than non-victims to bring weapons to school to protect themselves. In rare cases, these victims have been so tormented by bullies that they plan and sometimes carry out acts of retribution. This sometimes occurs when they are still in school, but has also been documented years after the peer victimization.

5.6 Impact on everyday life

Early adolescents in this study reported that being peer victimized had an impact on their everyday life. Being peer victimized affected for instance their learning ability in school. Schwartz and colleagues (2005) found in their study that frequent peer victimization was associated with poor academic functioning. The decline in academic performance may due to absence from school; a study by Slee (1994) found that approximately 10% of the student sample reported staying away from school because they were afraid of peer victimization while 29% had thought of doing so. Peer victims may also lose interest in learning because their attention is distracted from learning, being afraid and anxious of the next victimization incidence. Both direct and indirect links have been found between peer victimization and indicators of school functioning, including decreased appreciations of school and lower academic grades (Buhs et al. 2006). According to Hanish and Guerra (2002) peer victimization can have lasting detrimental effects on children's social and emotional functioning and school adjustment. Stronger positive peer relations may provide with an appropriate environment to development in a healthy way and to achieve good academic results (Vaquera & Kao 2008).

Our results showed that peer victimization also had an interference with early adolescent's friendships. Studies have shown that peer victims have difficulties in making friends and also in maintaining friendships (Nansel et al. 2004). Making friends may be difficult because the bully have been found to isolate the victim, and shut him/her out from the peer groups (Hazler & Denham 2002). For instance, a study by Oliver (1994) showed that 48% of adolescents felt that they would lose social status among their peers if they had a peer victim as a friend. While maintaining friendships could be hard due to that many adolescents are afraid of spending too much time with the victim because they are afraid of becoming victims themselves (Nansel et al. 2001). Not surprisingly, peer victims report feeling lonelier and less happy at school and having fewer good friends (Boulton & Underwood 1992). Balding (1996) collected data from more than 11,000 schoolchildren from 11-16 years and the study showed clear relationships between fears of peer victimization, and reports of feeling uneasy when meeting someone for the first time of their own age. According to Hawker and Boulton (2000) being peer victimized damages the individual's sense of belonging, a highly valued human experience (Baumeister & Leary 1995). Peers provide opportunities for socializing and good experiences can lay the foundation for good healthy adult relationships, but bad experiences such as peer victimization can lay a heavy burden on the developing early adolescents (Hetherington et al. 1999).

Our study showed that peer victimization, not only interfered with early adolescents friendships but also their home life. According to Ambert (1994) peer victims often bring home their frustrations in school and lash out at their parents. This is in accordance with Nishina and colleagues (2005) who found out that on days which students had been peer victimized in school, they also reported increases

in daily negative mood. Although early adolescents strive for more independence, they also require emotional closeness and rely on their parents for guidance and comfort in critical situations (Gutman & Eccles 2007). According to Troy (1987) peer victims have inconsistent attachment patterns with their parents. They argue that parents who demonstrated rejection towards their children, teaches them how to be victims. This is somewhat supported by Rigby (1993) who found that peer victimized boys reported having negative relations to their fathers, and peer victimized girls described having negative relations to their mothers. Parental warmth is important in the socialization process (Bowes et al. 2010). Champion (1997) concluded that, in general, children who lack support in interpersonal relationships are likely to be peer victimized.

Early adolescents in our study reported that being peer victimized had an interference with their leisure activities. A study by Bukowski (2001) suggest that adolescents who get excluded from the peer group are often withdrawn and anxious, and they *choose* to be socially isolated. For instance, Gray and colleagues (2008) found in their study that peer victimization emerged as the strongest predictor of barriers to physical activity. According to Zarabatany and colleagues (1990) peer interactions, such as in play provides the early adolescents with an opportunity in acquiring social and cognitive competencies. However, peer victimized adolescents have been known to avoid certain places, that they know the victimization might happen, such as the playground (Wolke et al. 2001), because they are afraid of being insulted or physically attacked. Being peer victimized limits the early adolescent's access to prosocial peer interactions that may provide protection from further victimization (Nansel et al. 2004). Peer victimization likely creates an environment where adolescents are more self- conscious, worry that they might not be selected to participate, or be the last one standing to be selected in a group team. The most frequently cited motivation for peer victimization is that the victims "did not fit in" (Hoover 1992). Limited support from peers may cause peer victimized adolescents to avoid involvement in leisure activities.

5.7 Social support as a protective factor against mental health problems

One of the most widely acknowledged protective factors among multiple age groups, including among early adolescents is perceived social support (Cohen & Wills 1985). As anticipated, the results of our study showed that peer support moderated the relationship between peer victimization and mental health problems. This is in line with earlier findings, who have found that supportive peer relations following aversive peer experiences portend fewer internalizing and externalizing behaviour problems (Boivin 2001). Early adolescents spend considerable amounts of time with their peers, and friendships that are developed are important contribution to their self- worth (Hetherington et al. 1999). Hence, there is no surprise that early adolescent self- image and self- acceptance are closely associated with

how he/she is received by peers (Harter et al. 1999). Social support in forms of sense of care, love, worth and belonging (Cohen 1984), can buffer against negative factors. This is in accordance with Schmidt (2007), who found that having a friend who provided support and companionship buffered against the negative effects of peer victimization on anxiety and depression. Moreover it has been found that friends with prosocial characteristics may protect against risk of experiencing further peer victimization (Lamarche et al. 2007).

According to Furman and Buhrmester (1992) in childhood children tend to seek support primarily from parents but as children's transition into early adolescence peer support becomes more salient. This may explain the greater importance of peer support than parental support in our study. Thus our results showed that parental support did not moderate the relationship between peer victimization and mental health problems. In early adolescence emotional closeness and time spent with parents decreases, leading towards an increase in peer influences (Larson 1996). However a study by Bowes and colleagues (2010) concluded that warm family relationships and positive home environments help to buffer children from the negative outcomes associated with peer victimization. In early adolescence though, many homes are characterized by generational conflicts over fundamental values, norms and ideas between the early adolescents and their parents (Schave & Schave 1989). A study by Cassidy (2009) revealed that victims exhibited poorer family relations and less effective problem-solving styles. Stress within the family may due because of the confronting attitude of the early adolescents and issues revolving autonomy versus control (Schave & Schave 1989).

According to Cohen and Wills (1985) the stress buffering model has a moderating influence indicated by an interaction effect. Thus social support is depended on the level of stress experienced. That is, peer victimized early adolescents under high levels of stress experience more health benefits of social support. During and after a peer victimization incidence the early adolescent is under high levels of stress (Storch 2003). Since the peer victimization most likely happens at school, having supportive friends around at that time may explain the greater importance of peer support than parental support. In this situation the peer victimized adolescent don't have to actively seek support; supportive peers who are around can see clearly that their help is needed. Moreover their support is given when the peer victimized early adolescent is under high levels of stress. According to Olweus (2002) peer victims often do not report peer victimization incidents, because they are afraid of retaliation and inadequate support from adults. Many peer victimized early adolescents feel ashamed (Juvonen 2001), and they don't want to bother their parents with worries. According to Schave and Schave (1989) one of the most frustration behaviours for parents is the early adolescents increased secretiveness about their thoughts and actions, and their ability to use social disguise to hide their true feelings. This is in accordance with Olweus (2002), as not all parents know about or talk to their children about peer victimization.

6 Conclusion and Implications

In this study self- report of peer victimization among early adolescents and its associations with mental health problems were assessed. Our results show that peer victimization is highly related to internal and external mental health problems. Further our results reveal that these difficulties have a profound impact in the early adolescents everyday life; interfering with home life, classroom learning, friendships and leisure activities. Our findings also underline the importance of peer support, since it clearly moderated the relationship between peer victimization and mental health problems. In addition parental support did not have the same effect. The design of this study being cross – sectional, it limits the interpretation of the results because it does not allow to differentiate cause and effect. This suggests the need to do a longitudinal study, with multi-informant perspective if questions like this shall receive more solid answers.

Findings of this study highlight the need for public health interventions to prevent peer victimization among school children. Olweus (1993) has argued that it is a "fundamental democratic right" not to be peer victimized. Every child has a right to feel safe in school and not to be afraid of going to school for fear of being peer victimized. Although public health interventions such as anti- bullying campaigns, several manifestos, and legislation have been initiated peer victimization still exists in schools in Norway. Not adequately addressing the social, emotional and behavioural distress of peer victimized early adolescents can lead to even more serious consequences in their future development. From an educational point of view, we still need to raise more awareness about this important issue among teachers, clinicians and families, in order to mitigate the prevalence of peer victimization. Furthermore our results suggest strategies within the public health policy to establish safe community environments, and promote interventions that can help to establish healthy peer relations. Creating opportunities for early adolescents to participate in positive leisure activities and engage in prosocial play should by prioritize, so that supportive peer relations develops, as this contributes to reducing mental health problems.

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8 Peer victimization and related mental health problems among early adolescents; Results from a cross sectional survey in Norway.

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Abstract

Objective: The aim of this study was to examine the association between self-reported peer victimization and mental health problems. Parental support and peer support were assumed as protective factors against the difficulties caused by peer victimization. **Methods:** The study is based on data from a cross - sectional health survey (n=9707) among early adolescents in 5-7th grade (age 10-13) and their parents (n=8603). Information on peer victimization, peer relations, family relations and mental health problems were obtained from the early adolescents. The Strengths and Difficulties Questionnaire (SDQ) was used to measure mental health problems, as well as impact on everyday life. Demographic information was obtained from the parents.

Results: Totally 18.4% of the boys and 15.8% of the girls reported that they were peer victimized. Compared to early adolescents who were not peer victimized; victims had higher symptoms of internalizing problems such as emotional problems and externalizing problems such as conduct problems and hyperactivity/inattention problems. All symptom scales were strongly associated with perceived impact on everyday life. **Conclusions:** Early adolescents who are peer victimized experience increased internalizing and externalizing problems that affect their development negatively. This highlights the need for public health interventions in schools to prevent peer-victimization.

Keywords: Peer bullying, early adolescents, SDQ, internalizing problems, externalizing problems, social impairment, and social support.

Introduction

Peer victimization is a widespread phenomenon in childhood (Gini & Pozzoli 2009). Notably, peer victimization is especially prevalent in early adolescence up to fifteen years of age, and decreases as the children gets older (Rigby 1996). One of the most widely used definitions of peer victimization has been provided by (Olweus 1991). According to him a person is victimized when he/she is exposed, repeatedly and over time, to negative actions from one or more powerful peers. Such negative behaviour may be manifested in various ways; physical attacks, social manipulation and verbal victimization are the most frequent and disturbing acts of aggression in schools (Berger 2007).

Early adolescence, a developmental period extending from approximately 10-14 years of age, is a period of dramatic biological and social changes, with puberty and maturation accompanied by changes in peer relationships (Adams 2010). These relationships are important for children's development. They are believed to provide experiences that give the social skills needed for effective functioning within a social world, and nurture a growing awareness and mutual understanding of the social roles, norms, values and processes involved in interpersonal relationships (Zarbatany et al. 1990)

Peer victimization is a risk factor for children's health and psychological well-being (Arseneault et al. 2010). Frequent victimization is associated with internalizing problems, such as being unhappy and developing symptoms of depression, anxiety and suicidal ideation (Menesini et al. 2009; Winsper et al. 2012). Internalizing problems function as both antecedents and consequences of peer victimization, influencing a vicious cycle that contributes to the high stability of peer victimization (Reijntjes et al. 2010).

Graham and Juvonen (1998) found in their study that peer victims have a tendency to blame themselves for their experiences with victimization; they are more likely to believe that "it is something about me, things will never change, and that there is nothing that I can do about it". Peer victimization is also associated with having externalizing problems, such as being aggressive and disruptive and having attention problems (Hanish & Guerra 2002).

Peer victimization impacts on children's everyday life. Experiences of peer victimization have been found to be associated with poorer academic performance and increases in school avoidance (Kochenderfer & Ladd 1996; Schwartz et al. 2005). Studies on school-aged children have found a positive association between victimized children and fear of negative evaluation from peers and social avoidance (Storch & Masia-Warner 2004). The negative feedback from peers and social avoidance may also limit victimized children's positive interactions with peers, in for example leisure activities, influencing poor development of social skills (Zarbatany et al. 1990).

Prevalence of peer victimization varies across countries, one cross- national study of early adolescents (11, 13 and 15-years olds) from 40 countries in Europe and North America showed that

the highest prevalence was found in Baltic countries, whereas northern European countries reported the lowest prevalence (Craig et al. 2009). In Norway, a survey among 371604 students (grade 5 in primary school to the last year of high school) showed that 10% of the boys reported being peer victimized two to three times a month, for girls the results were 6, 8% (Wendelborg et al. 2011). According to several studies, parental support and peer support play an important factor in children's early development (Bowes et al. 2010; Parker 2006). Social support interacts with risk factors in reducing the probability of negative outcomes (Tanigawa 2011).

Since earlier studies have mostly based their results on small populations, the present study aimed to investigate the self-reported frequency of peer victimization and its association with mental health problems in a representative sample of nearly 10.000 5-7th grade early adolescents from a county in Norway. Despite profound documentation of negative influence on mental health by peer victimization, few studies have examined effects on internalizing and externalizing problems in the same group, and looked upon the impact of problems on everyday life. The second aim of this study is therefore to measure peer victimization's association with symptoms of externalizing problems, such as conduct problems and hyperactivity/inattention problems and internalizing problems such as emotional problems. To get a better insight into the impact of the problems on home life, friendships, classroom learning and leisure activities these variables were included in the study. Since some studies have reported buffering effects related to factors like parental support and peer support we wanted to see if these variables could act as protective factors towards the development of mental health problems by being peer victimized. We expect associations between being peer victimized and mental health problems, both internalizing and externalizing. We also hypothesize profound impact of the problems on everyday life. Parent support and peer support is expected to act as buffering factors reducing the negative influence on peer victimization on mental health.

Methods

Participants and Procedure

This study is based on data from a cross-sectional health survey, undertaken in Akershus County in 2002 by the Norwegian Health Services Research Centre. Pupils (n=11153) in 5-7th grade and their parents were invited to participate in the study. Of these n=9707 (87, 2%) early adolescents (mean age = 11.5, boys: 50.7 % girls: 49.3%) and parents n= 8603 (78%) responded to the questionnaire. To obtain a representative sample for the County, classes at each school level were selected randomly. Participation in the study was voluntary, and the parents were asked to give their consent. Early adolescents were filling in the questionnaire at school under teacher supervision. Early adolescents also received one questionnaire to take home to their parents for them to fill in, and return back in a sealed envelope. To match the questionnaires for each parent and their child without violating the anonymity of the participants, the same registration number was used. All of the questions were

treated anonymously. The study was approved by the regional committees for medical research ethics. Variables of interest in the present study were peer victimization, treated as independent variable and external and internal mental health problems, as well as its impact on everyday life, treated as dependent variables. In addition parental support and peer support were treated as possible moderating variables.

Measures

Peer victimization

To assess peer victimization two items were used. The first being "Have other students at school bullied you? ". Responses were given on a 3-point scale (0= almost never or never, 1= yes, sometimes, 2= yes, often). The second item was chosen from the Strengths and Difficulties Questionnaire (SDQ) (Goodman 1997) referring to how things have been over the last six months; "Other children or young people pick on me or bully me". Responses were given on a 3-point scale (0= not true, 1= somewhat true, 2= certainly true). Scores on the two questions were summed, responses varying from 0 to 4. In the analysis, scores ≥ 2 were classified as being peer victimized when dichotomizing the variable.

Mental health

To assess mental health problems SDQ was used (Goodman 1997). The validity and reliability of the SDQ in measuring children's behaviours, emotions and relationships has been established in a number of studies (Goodman 1997; Goodman 2001). The questionnaire has a total difficulties score, divided into four subscales with five items each; emotional problems, conduct problems, hyperactivity/inattention problems and peer problems. The respondents were asked to rate the occurrence of various psychopathological symptoms within the last six months. Responses were given on 3-point scales (for negatively worded items 0= not true, 1=somewhat true, 2=certainly true. For positively worded items the scoring is reversed). For each of the subscales items were summed to generate subscore (range 0-10). Norwegian cut-offs were used to band the population into 10% high-risk group, 10% borderline, and 80% low-risk group, using the same statistical banding as Goodman (Van Roy 2010). Cut off- points for conduct problems are (low risk= 0-2, borderline= 3, high risk= 4-10), for hyperactivity/ inattention problems (low risk= 0- 4, borderline= 5, high risk= 6-10) and emotional problems (low risk= 0- 2, borderline= 3, high risk= 4-10). These variables were dichotomized into "normal" and "borderline/high risk". We did not include the symptoms of peer problems because it correlates with being peer victimized. A total score was constructed based on the subscales emotional problems, conduct problems and hyperactivity/inattention problems. Total difficulty scores range from 0 to 30. Cut- off points banding lowest 80% (low risk= 0-11), next 10% (borderline=12-13) and 10% highest score (high risk=14-30). The total difficulties score was dichotomized into "normal" and "borderline/high risk". Cronbach's alpha for the total difficulties

dimension was .70. Cronbach's alpha for emotional problems was .61, for conduct problems it was .43, and for hyperactivity/inattention problems it was .60.

To assess the impact of mental health problems on everyday life the extended version of the SDQ which includes a "total impact score" was used. This impact score generates an impact score ranging between 0-10. Based on the two questions of whether the respondent thinks he has a problem, and if he does, how this might interfere with relations to family, friends, learning situation and leisure activities. Response were given on a 4-point scale (0= no, 0= little, 1= quite a lot, 2= a great deal). According to (Goodman 1999) a total impact score of 2 or more defines abnormal/caseness. The impact score is also dichotomized into "normal" and "borderline/high risk" group. For the impact score Cronbach's alpha was=.97.

Parental support

To assess parental support early adolescents were asked "Do you feel that someone at home cares about what you do?" Responses were given on a 4-point scale (0= no, 1= a little, 2= yes, 3=don't know). This variable was dichotomized, early adolescents who answered "yes", were classified as having good support at home, meanwhile early adolescents who responded to the other response alternatives were classified as not having good support at home.

Peer support

To assess peer support four items were chosen from the SDQ questionnaire. Early adolescents answered the questions; "I am usually on my own, I do things alone" and "I get on better with adults than with people my age" Responses were given on a 3-point scale (0= not true, 1= somewhat true, 2= certainly true). The next two questions; "I have one good friend or more" and "Other people my age generally like me"; responses were given on a 3-point scale (2= not true, 1=somewhat true, 0= certainly true). These four questions were reversed so as to be in a positive direction. The scores for each of the four positive questions were dichotomized prior to making the index such that low support =0 and high support = 1 (2 = 1, and 1 or 0 = 0). The dichotomous variables were summarized to make the index for peer support, such that the values ranged from 0 to 4. Parental support and peer support questions were used as covariates in the analysis to see if they moderate possible associations between victimization and mental health problems.

Demographic variables

Demographic information such as the early adolescent's gender, age, family income and family structure were controlled for. Information about family structure and family income was provided by the questionnaire filled in by the parents. Family structure was measured by asking if the early adolescent's lives with both parents. Responses were (0= no, 1= yes). Family income was measured by asking how well of the parents think their family income is, responses given on a 5-point scale (1=

very good, 2= good, 3= average, 4= not very good, 5= poor). This variable was recoded into reversed order from 1= “poor” to 5= “very good".

Statistical analysis

The Statistical Package for the Social Sciences (SPSS for Windows, version 17) was used for the data analyses. To analyse the association between early adolescents self-report of peer victimization and the outcome mental health variables (total difficulties score as well as emotional problems, conduct problems, hyperactivity/inattention problems and impact score) a multivariate logistic regression model was used to estimate odds ratios. Analyses were adjusted for demographic information, including gender, age, family’s income and family structure. Parental support and peer support were also included in the analysis stepwise to see to what extent they are protective/buffering factors of having mental health problems by peer victimization. When including the variables family income and family structure which were answered by the parents, nearly 1600 cases were not selected due to missing because of the parents’ lower response rate compared to the children. Hosmer and Lemeshow test and Omnibus Tests of Model Coefficients indicated good support for the model. Multicollinearity was used to identify if the independent variables showed some relationship with the dependent variable. Tolerance and VIF did not violate the Multicollinearity assumption (Tolerance value less than 0.1 and VIF value above 10). Precision of the associations (odds ratios) were assessed using 95% confidence intervals.

Results

Table 1 shows the prevalence of self- report peer victimization, mental health problems (SDQ) (the three subscales, total difficulties symptom scores, and impact), as well as demographic variables and moderating variables. Totally 883 (18.4%) of the boys and 741 (15.8%) of the girls reported that they had been peer victimized. More girls than boys reported having emotional problems, while conduct problems and hyperactivity/inattention problems was more common among boys.

In Table 2 the association between self-reported peer victimization and the three subscales for mental health problems are shown. There is a significant association between peer victimization and emotional problems, conduct problems, and hyperactivity/inattention problems, where those who report being peer victimized have more mental health problems. Boys reported having more emotional problems by being peer victimized than girls, with nearly a 1.2 higher odds ratios of emotional problems. Meanwhile there was a small difference in gender in developing symptoms of conduct problems by being peer victimized, and for hyperactivity/inattention problems the odds ratio was slightly higher for girls than boys.

Early adolescents that report being peer victimized have nearly four times larger prevalence (OR= 3.900 CI=3.425-4.440) of mental health problems measured with the total SDQ-score than early adolescents who do not report being peer victimized (Table 3). Although parental support has a protective effect on the early adolescents developing symptoms of emotional problems, conduct problems or hyperactivity/inattention problems, it does not have a significant protective effect on developing these symptoms as a result of peer victimization. However, peer support has a significantly protective effect on developing symptoms of mental health problems by being peer victimized. This indicates that peer support is more protective than parental support on developing symptoms of emotional and behavioural problems by peer victimization, although no significant difference between these two variables.

Table 4 shows the association between early adolescents being peer victimized and the impact in everyday life. Early adolescents who are peer victimized have more than four times higher risk of experiencing mental health problems and social impairment related to family, friends, learning situation and leisure activities, (OR =4.327, CI= 3.734 – 5.014). Parental support does not moderate the effect against developing mental health problems and social impairment by being peer victimized. However, peer support does moderate the effect of developing mental health problems and social impairment by peer victimization (Table 4).

Discussion

In this cross- sectional survey we assessed the frequency of self- report victimization by peers in 5-7th grade early adolescents and the association with mental health problems. We also investigated if parental support and peer support protected from developing mental health problems and social impairment by being peer victimized.

Totally 18.4% of the boys and 15.8% of the girls reported being peer victimized, this does not differ substantially from previous findings of Norwegian school children with estimates ranging from 15,3% – 19,1% for boys and 8,4% - 14,2% for girls (Craig et al. 2009; Greiff 2005). As expected, the prevalence is less when comparing with other non-Scandinavian countries in Europe (Craig et al. 2009). The higher prevalence among boys is consistent with prior studies (Scheithauer et al. 2006). Boys are more physically aggressive than girls, openly aggressive and express more anger, both verbally, through facial expressions and other nonverbal forms of expression (Crick & Zahn-Waxler 2003). The relatively high prevalence of peer victimization indicates that many early adolescents either directly or indirectly suffer from peer victimization, in a period of their lives where peer relationships are crucial for good and healthy development (Zarbatany et al. 1990).

The results of this study show that peer victimization is related to an increase in internalizing symptoms, such as having emotional problems. This finding is in line with earlier studies showing that early adolescents reporting peer victimization often feel unhappy and are tearful, more nervous and experience headaches (Karatas & Ozturk 2011). Contrary to earlier findings measuring emotional problems by peer victimization using SDQ (Nabuzoka et al. 2009), our study revealed that boys experienced more emotional problems than girls by being peer victimized. Hawker and Boulton (2000) found that internalizing difficulties were related to verbal and indirect form of peer victimization. But we did not ask what type of peer victimization the early adolescents had experienced. It could be that boys scored higher on emotional problems because they had more often than girls experienced being verbally attacked or indirectly been rejected in peer relations.

Early adolescents who reported being peer victimized also showed higher prevalence of having symptoms of externalizing symptoms, both conduct problems and hyperactivity/inattention problems. This is in accordance with previous studies showing similar results for conduct problems (Gini 2008; Nabuzoka et al. 2009) and hyperactivity/inattention problems (Nabuzoka et al. 2009; Shojaei et al. 2009). According to Nabuzoka and colleagues (2009) conduct problems and hyperactivity/inattention problems were associated with reactions of retaliation for both boys and girls. These victims are known to be aggressive or telling the teacher just to get the perpetrator in trouble (Nabuzoka et al. 2009). Studies have shown that fighting back only leads to further (stable) peer victimization, rather than reduction (Kochenderfer & Ladd 1997).

Peer victimization was associated with having mental health problems measured with the total SDQ- score, as also reported in other studies (Gini 2008). Meta- analytic review of cross-sectional studies concerning children who are peer victimized concluded that in both genders, in all age groups and with all subtypes of victimization there was a correlation with a range of internalizing difficulties, such as poor self-esteem, depression, social anxiety, and loneliness (Hawker & Boulton 2000). Kim and colleagues (2006) in their prospective cohort study supported that externalizing behavioural problems were a consequence rather than a cause of peer victimization experience.

In line with a previous study in a Norwegian population (Ronning et al. 2004) we found that both genders experienced social impairment. The results showed that peer victimization was associated with interference in classroom learning. Not only does school victimization play a disruptive role in early adolescent's development, but also interferes with educational processes and their opportunity to have a safe school environment. A recent Meta-analysis review of the association between peer victimization and academic achievement revealed that victimization in the peer group is related to concurrent academic functioning difficulties (Nakamoto & Schwartz 2010). Our findings also revealed that peer victimization interferes with early adolescents home life, which is somewhat supported by Ambert (1994) who found that peer victims often bring home their frustration in school and lash out at their parents who maybe unaware of their children's victimization in school. Further

our findings on peer victimization and interference concerning leisure activities, could be explained by that the bully prevent friendships to establish by isolating him/her (Hazler & Denham 2002), and this result in lack of social participation in for example leisure activities (Gray et al. 2008) that may delay and possibly weakened development of social interactions.

Our findings that peer support moderates the effects of peer victimization on mental health problems are as expected. Early adolescents spend considerable amounts of time with their peers, and good peer relations that are developed are important contribution to their self-worth, protecting against negative factors (Ciccetti 1995). This finding is also supported by Storch and Masia-Warner (2004), who found that peers provide victimized adolescents with support buffered against more loneliness. Parental support not moderating the relationship between peer victimization and mental health problems are somewhat surprising. Prior studies have shown that warm family relationships and positive home environments help to buffer children from the negative outcomes associated with peer victimization (Stadler et al. 2010). On the other hand, a study by Cassidy (2009) revealed that victims reported poorer family relations, less encouragement from parents and less effective problem-solving styles. The greater importance of peer support than parental support in reducing mental health problems could be explained by peer victimization most likely happens at school so that having supportive peers around at that time helps the peer victimized adolescents cope better. In addition, opening up to parents after school can be harder, according to Olweus (2002) as not all parents know about or talk to their children about peer victimization.

The present study is based on a large sample of early adolescents, with high response rate and few missing data. This data can also be regarded as representative for the rest of Norway, since Akershus County, surrounding the Norwegian capital of Oslo, has urban, suburban and rural areas with clear differences in socio-economic status (Van Roy 2010). When using a cross-sectional design, direction of effects cannot be inferred. However this study presents a clear indication of the links between being peer victimized and having mental health problems among early adolescents age 10-13 years. Another limitation of this study is that it was used a single source of information on the question of being peer victimized. Being peer victimized often occurs when parents or teacher are not around, and most early adolescents are cautious of disclosing such events (Cassidy 2009). Self-reports are therefore likely to be a reliable source on these matters. By definition, peer victimization is a distressing experience that occurs frequently and is often continuous over years (Olweus 1991). In the health profile questionnaire that was used, the definition of peer victimization was not given before the early adolescents' responded to the items on peer victimization. This might lead to misunderstandings about what peer victimization consist of, and possibly give us incorrect results.

Conclusions

Peer victimization is a universal public health problem and impacts large number of early adolescents. This study reveals the highly significant association of peer victimization and external and internal mental health problems. It also shows the profound impact these difficulties have on the early adolescent's everyday life. The awareness of the relation between peer victimization and mental health problems suggests the need for preventive interventions. Although public health interventions such as anti-bullying campaigns have been established in numerous of countries worldwide, we still need to raise more awareness about this important issue among teachers, clinicians and families. Moreover we need to address the importance of peer support and how it interacts with reducing mental health problems in peer victimized children.

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Table 1: Characteristics of early adolescents in 5-7th grade, with and without being peer victimized, according to self- report.

	Response alternatives	Boys	Girls
		Number of responses N (%)	Number of responses N (%)
Emotional problems	Low risk	4260 (87.5)	3619 (76.3)
	Borderline	300 (6.2)	466 (9.8)
	High risk	311 (6.4)	658 (13.9)
Conduct problems	Low risk	3900 (80.0)	4260 (89.8)
	Borderline	493 (10.1)	291 (6.1)
	High risk	481 (9.9)	193 (4.1)
Hyperactivity	Low risk	3877 (89.8)	4024 (93.5)
	Borderline	275 (5.6)	172 (3.6)
	High risk	224 (4.6)	135 (2.8)
Total difficulties score [1]	Low risk	3873 (80.0)	3749 (79.5)
	Borderline	423 (8.7)	463 (9.8)
	High risk	546 (11.3)	504 (10.7)
Impact	Low risk	4194 (87.6)	4023 (86.2)
	Borderline	283(5.9)	272 (5.8)
	High risk	309 (6.5)	370 (7.9)
Self-report of peer victimization	No	3911 (81.6)	3945 (84.2)
	Yes	883 (18.4)	741 (15.8)
Gender		4908 (50.7)	4763 (49.3)
Age	9 year	1 (0)	1 (0)
	10 year	837 (17.1)	793 (16.7)
	11 year	1648 (33.7)	1494 (31.5)
	12 year	1625(33.2)	1685 (35.5)
	13 year	773 (15.8)	770 (16.2)
	14 year	6(1)	3 (1)
Does the child live with both parents? [2]	No	1185 (28.9)	1179 (28.7)
	Yes	2916 (71.1)	2932 (71.3)
How well off is your family income? [2]	Very good	245 (6.0)	244 (6.0)
	Good	1508(37.1)	1497 (36.8)
	Average	1838 (45.2)	1898 (46.6)
	Not very good	380 (9.3)	328 (8.1)
	Poor	98 (2.4)	103 (2.5)
Do you feel that someone at home cares about what you do?	No	112 (2.3)	95 (2.0)
	Yes	513 (10.5)	473 (10.0)
	Little	3733 (76.3)	3749 (78.9)
	I don't know	532 (10.9)	435 (9.2)
I have one good friend or more	Not true	165 (3.4)	112 (2.4)
	Somewhat true	363 (7.5)	359 (7.6)
	Certainly true	4310 (89.1)	4240 (90.0)
I get better along with adults than with people my age [3]	Not true	2555 (53.3)	2872 (61.3)
	Somewhat true	1616 (33.7)	1364 (29.1)
	Certainly true	624 (13.0)	452 (9.6)
Other people my age generally like me	Not true	397 (8.3)	293 (6.2)
	Somewhat true	2199 (45.7)	2027 (43.2)
	Certainly true	2213 (46.0)	2372 (50.6)
I am usually on my own. I do things alone [3]	Not true	2980 (61.4)	2860 (60.7)
	Somewhat true	1420 (29.3)	1370 (29.1)
	Certainly true	450 (9.3)	484 (10.3)

[1] Total difficulties score: Emotional problems, conduct problems and hyperactivity/inattention problems. [2] These variables were contributes from the parents. [3] These variables were reversed so as to be in a positive direction.

Table 2: Logistic regression analysis examining associations between early adolescents self - report on peer victimization and the three subscales of SDQ total symptom scale; emotional problems, conduct problems and hyperactivity/inattention problems.

	Emotional problems	**Conduct problems**	**Hyperactivity/inattention**
	OR (95 % CI) N=7969	OR (95 % CI) N=7970	OR (95 % CI) N=7967
Boys	4.448*** (3.626-5.457)	3.434*** (2.861-4.123)	1.743*** (1.441-2.108)
Girls	3.276*** (2.733-3.927)	3.477*** (2.767-4.369)	2.071*** (1.673-2.563)

Note: *P <0, 05 **P <0, 01 ***P <0,001. CI = Confidence Interval
Adjusted for demographic information: Gender, age, family income and family structure
Reference group are early adolescents who are not peer victimized.

Table 3: Logistic regression analysis examining associations between early adolescents self-report on peer victimization and their reports on total difficulties symptoms controlling for demographic information, parental support and peer support.

Total difficulties	Step 1[1]	Step 2	Step 3
	OR (95 % CI) N= 7823	OR (95 % CI) N=7807	OR (95 % CI) N=7742
Peer victimization[2]	**3.900*** (3.425-4.440)**	**3.717*** (3.259-4.240)**	**2.871*** (2.496 -3.302)**
Parental support		**.506***(.445-.575)**	
Peer support			**.651*** (.616-.688)**

Note: *P <0, 05 **P <0, 01 ***P <0,001. CI = Confidence Interval
[1] Step 1= Adjusted for demographic information and victimization. Step 2= Adjusted for demographic information and parental support. Step 3= Adjusted for demographic information and peer support.
Total difficulties: Emotional problems, conduct problems and hyperactivity/inattention problems.
Demographic information: Gender, age, family income and family structure
[2] Reference group are early adolescents who are not peer victimized.

Table 4: Logistic regression analysis examining associations between early adolescent's self-report on peer victimization and their reports on impact controlling for demographic information, parental support and peer support.

Impact	Step 1[1]	Step 2	Step 3
	OR (95 % CI) N= 7823	OR (95 % CI) N=7807	OR (95 % CI) N=7634
Peer victimization[2]	**4.327*** (3.734-5.014)**	**4.073*** (3.508 -4.729)**	**2.996*** (2.551-.3.519)**
Parental support		**.485*** (.417-.564)**	
Peer support			**.628*** (.588-.671)**

Note: *P <0, 05 **P <0, 01 ***P <0,001. CI = Confidence Interval
[1] Step 1= Adjusted for demographic information and victimization. Step 2= Adjusted for demographic information and parental support. Step 3= Adjusted for demographic information and peer support.
Demographic information: Gender, age, family income and family structure
[2] Reference group are early adolescents who are not peer victimized

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9 Appendix

9.1 Appendix 1: Selected items from the health profile questionnaire, from the early adolescents and their parents.

Eksempel på utfylling:

Riktig utfylling:	Feil utfylling:
Er du gutt eller jente?	**Er du gutt eller jente?**
Gutt ☒	Gutt ☒
Jente ☐	Jente ☐

Litt om deg

Vil du være med på undersøkelsen?
Ja ☐
Nei ☐

1. Jeg er gutt ☐ Jeg er jente ☐

2. Jeg er ☐☐ år gammel.

3. Jeg går i 5. klasse ☐
Jeg går i 6. klasse ☐
Jeg går i 7. klasse ☐

Plaging og mobbing

37. Har andre elever på skolen mobbet deg?
Ja, ofte ☐
Ja, noen ganger ☐
Nesten aldri eller aldri ☐

Helse og trivsel

29. Føler du at noen hjemme bryr seg om hva du gjør?
Ja ☐ Litt ☐ Nei ☐ Vet ikke ☐

Bakgrunnsinformasjon

20. Hvem bor barnet sammen med?
(kan krysse av flere kryss)

Både mor og far	☐	Bare med mor	☐	Bare med far	☐
Mor og en stefar	☐	Far og en stemor	☐	Annenhver uke hos mor og far	☐
En av foreldrene har barnet ca. 1dg. i uka og annenhver helg	☐				
Annet	☐				

23. Hvor god råd synes du din familie har?

Svært god råd	☐
God råd	☐
Middels god råd	☐
Ikke særlig god råd	☐
Dårlig råd	☐

9.2 Appendix 2: SDQ and impact supplement for self-completion by 11-16 year olds (English)

Strengths and Difficulties Questionnaire S 11-17

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been for you over the last six months.

Your Name ..... Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings	☐	☐	☐
I am restless, I cannot stay still for long	☐	☐	☐
I get a lot of headaches, stomach-aches or sickness	☐	☐	☐
I usually share with others (food, games, pens etc.)	☐	☐	☐
I get very angry and often lose my temper	☐	☐	☐
I am usually on my own. I generally play alone or keep to myself	☐	☐	☐
I usually do as I am told	☐	☐	☐
I worry a lot	☐	☐	☐
I am helpful if someone is hurt, upset or feeling ill	☐	☐	☐
I am constantly fidgeting or squirming	☐	☐	☐
I have one good friend or more	☐	☐	☐
I fight a lot. I can make other people do what I want	☐	☐	☐
I am often unhappy, down-hearted or tearful	☐	☐	☐
Other people my age generally like me	☐	☐	☐
I am easily distracted, I find it difficult to concentrate	☐	☐	☐
I am nervous in new situations. I easily lose confidence	☐	☐	☐
I am kind to younger children	☐	☐	☐
I am often accused of lying or cheating	☐	☐	☐
Other children or young people pick on me or bully me	☐	☐	☐
I often volunteer to help others (parents, teachers, children)	☐	☐	☐
I think before I do things	☐	☐	☐
I take things that are not mine from home, school or elsewhere	☐	☐	☐
I get on better with adults than with people my own age	☐	☐	☐
I have many fears, I am easily scared	☐	☐	☐
I finish the work I'm doing. My attention is good	☐	☐	☐

Do you have any other comments or concerns?

Overall, do you think that you have difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

No	Yes- minor difficulties	Yes- definite difficulties	Yes- severe difficulties
☐	☐	☐	☐

If you have answered "Yes", please answer the following questions about these difficulties:

- How long have these difficulties been present?

Less than a month	1-5 months	6-12 months	Over a year
☐	☐	☐	☐

- Do the difficulties upset or distress you?

Not at all	Only a little	Quite a lot	A great deal
☐	☐	☐	☐

- Do the difficulties interfere with your everyday life in the following areas?

	Not at all	Only a little	Quite a lot	A great deal
HOME LIFE	☐	☐	☐	☐
FRIENDSHIPS	☐	☐	☐	☐
CLASSROOM LEARNING	☐	☐	☐	☐
LEISURE ACTIVITIES	☐	☐	☐	☐

- Do the difficulties make it harder for those around you (family, friends, teachers, etc.)?

Not at all	Only a little	Quite a lot	A great deal
☐	☐	☐	☐

Your Signature .....

Today's Date .....

Thank you very much for your help

9.3 Appendix 3: SDQ and impact supplement for self-completion by 11-16 olds (Norwegian)

Sterke og svake sider (SDQ-Nor) S 11-17

Vennligst kryss av for hvert utsagn: Stemmer ikke, Stemmer delvis eller Stemmer helt. Prøv å svare på alt selv om du ikke er helt sikker eller synes utsagnet virker rart. Svar på grunnlag av hvordan du har hatt det de siste 6 månedene.

Ditt navn ..... Gutt/Jente

Fødselsdato .....

	Stemmer ikke	Stemmer delvis	Stemmer helt
Jeg prøver å være hyggelig mot andre. Jeg bryr meg om hva de føler	☐	☐	☐
Jeg er rastløs. Jeg kan ikke være lenge i ro	☐	☐	☐
Jeg har ofte hodepine, vondt i magen eller kvalme	☐	☐	☐
Jeg deler gjerne med andre (mat, spill, andre ting)	☐	☐	☐
Jeg blir ofte sint og har kort lunte	☐	☐	☐
Jeg er ofte for meg selv. Jeg gjør som regel ting alene	☐	☐	☐
Jeg gjør som regel det jeg får beskjed om	☐	☐	☐
Jeg bekymrer meg mye	☐	☐	☐
Jeg stiller opp hvis noen er såret, lei seg eller føler seg dårlig	☐	☐	☐
Jeg er stadig urolig eller i bevegelse	☐	☐	☐
Jeg har en eller flere gode venner	☐	☐	☐
Jeg slåss mye. Jeg kan få andre til å gjøre det jeg vil	☐	☐	☐
Jeg er ofte lei meg, nedfor eller på gråten	☐	☐	☐
Jeg blir som regel likt av andre på min alder	☐	☐	☐
Jeg blir lett distrahert, jeg synes det er vanskelig å konsentrere meg	☐	☐	☐
Jeg blir nervøs i nye situasjoner. Jeg blir lett usikker	☐	☐	☐
Jeg er snill mot de som er yngre enn meg	☐	☐	☐
Jeg blir ofte beskyldt for å lyve eller jukse	☐	☐	☐
Andre barn eller unge plager eller mobber meg	☐	☐	☐
Jeg tilbyr meg ofte å hjelpe andre (foreldre, lærere, andre barn/unge)	☐	☐	☐
Jeg tenker meg om før jeg handler (gjør noe)	☐	☐	☐
Jeg tar ting som ikke er mine hjemme, på skolen eller andre steder	☐	☐	☐
Jeg kommer bedre overens med voksne enn de på min egen alder	☐	☐	☐
Jeg er redd for mye, jeg blir lett skremt	☐	☐	☐
Jeg fullfører oppgaver. Jeg er god til å konsentrere meg	☐	☐	☐

Har du andre kommentarer eller bekymringer?

Samlet, synes du at du har vansker på ett eller flere av følgende områder:
med følelser, konsentrasjon, oppførsel eller med å komme overens med andre mennesker ?

Nei	Ja-små vansker	Ja-tydelige vansker	Ja-alvorlige vansker
☐	☐	☐	☐

Hvis du har svart "Ja", vennligst svar på følgende spørsmål:

• Hvor lenge har disse vanskene vært tilstede?

Mindre enn en måned	1-5 måneder	6-12 måneder	Mer enn ett år
☐	☐	☐	☐

• Forstyrrer eller plager vanskene deg?

Ikke i det hele tatt	Bare litt	En god del	Mye
☐	☐	☐	☐

• Virker vanskene inn på livet ditt på noen av disse områdene?

	Ikke i det hele tatt	Bare litt	En god del	Mye
HJEMME / I FAMILIEN	☐	☐	☐	☐
FORHOLD TIL VENNER	☐	☐	☐	☐
LÆRING PÅ SKOLEN	☐	☐	☐	☐
FRITIDSAKTIVITETER	☐	☐	☐	☐

• Er vanskene en belastning for de rundt deg (familie, venner, lærere osv.) ?

Ikke i det hele tatt	Bare litt	En god del	Mye
☐	☐	☐	☐

Din underskrift ..... Datoen i dag .....

Tusen takk for hjelpen

9.4 Appendix 4: The selection of the items in SDQ into different scales by Robert Goodman

Emotional symptoms

I get a lot of headaches, stomach-aches or sickness

I worry a lot

I am often unhappy, down-hearted or tearful

I am nervous in new situations. I easily lose confidence

I have many fears, I am easily scared

Conduct problems

I get very angry and often lose my temper

I usually do as I am told

I fight a lot. I can make other people do what I want

I am often accused of lying or cheating

I take things that are not mine from home, school or elsewhere

Hyperactivity/inattention

I am restless, I cannot stay still for long

I am constantly fidgeting or squirming

I am easily distracted, I find it difficult to concentrate

I think before I do things

I finish the work I'm doing. My attention is good

Peer problems

I am usually on my own. I generally play alone or keep to myself

I have one good friend or more

Other people my age generally like me

Other children or young people pick on me or bully me

I get on better with adults than with people my own age

Prosocial

I try to be nice to other people. I care about their feelings

I usually share with others (food, games, pens etc.)

I am helpful if someone is hurt, upset or feeling ill

I am kind to younger children

I often volunteer to help others (parents, teachers, children)

9.5 Appendix 5: Regional Committees for Medical and Health Research Ethics

REGIONAL KOMITE FOR MEDISINSK FORSKNINGSETIKK

Helseregion Øst

Seniorforsker Jocelyne Clench-Aas
HELTEF – Stiftelse for helsetjenesteforskning
1474 Nordbyhagen

Deres ref.: Vår ref.: 40-02022 Dato: 31. januar 2002

Helseprofil for barn og ungdom i Akershus

Regional komite for medisinsk forskningsetikk, helseregion Øst, vurderte prosjektet på sitt møte 25.01.02.

Komiteen vil ikke motsette seg at studien blir gjennomført.

Komiteen synes at spørreskjemaundersøkelsen er svært omfattende og lite fokusert, og er noe i tvil om hva søker kan få ut av en slik undersøkelse. Det savnes en redegjørelse både for hvordan man har tenkt å følge opp med tiltak, og for evaluering av tiltakene.

Med vennlig hilsen

Knut Engedal
professor dr.med.
leder

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sekretær

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