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Bullying behavior in relation to psychiatric disorders and physical health among adolescents: A clinical cohort of 508 underage inpatient adolescents in Northern Finland

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ABSTRACT

The aim was to investigate the association of bullying behavior with psychiatric disorders and physical health in a sample of adolescent psychiatric patients, as there have to our knowledge been no previous studies using actual psychiatric diagnoses examining this relationship in boys and girls. We studied 508 Finnish adolescents (age 12–17) admitted to psychiatric inpatient care between April 2001 and March 2006 from the geographically large area of Northern Finland. The Schedule for Affective Disorder and Schizophrenia for School-Age Children, Present and Lifetime (K-SADS-PL) was used to obtain psychiatric diagnoses of adolescents according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) and information on bullying behavior. Logistic regression analyses showed that having an externalizing disorder increased the likelihood of being a bully or a bully-victim (i.e. a person who is both a bully and a victim of bullying) among both the boys (odds ratio, OR = 14.4, $P = 0.001$) and the girls (OR = 10.0, $P < 0.001$). In addition, having an internalizing disorder increased the likelihood of being a victim of bullying among the boys (OR = 3.4, $P = 0.008$), but not the girls. Chronic somatic diseases were also significantly associated with being bullied among the boys (OR = 2.5, $P = 0.041$). Our results suggest that adolescents who are involved in bullying behavior should be evaluated psychiatrically, as this might be an early marker of psychiatric disorders.

1. Introduction

According to several studies, bullying behavior is associated with various psychosocial (Forero et al., 1999; Kaltiala-Heino et al., 2000; Bond et al., 2001; Fekkes et al., 2004; Ivarsson et al., 2005; Nishina et al., 2005; Fekkes et al., 2006; Menesini et al., 2009) and psychosomatic problems among adolescents (Kaltiala-Heino et al., 2000; Wolke et al., 2001; Nishina et al., 2005; Gini and Pozzoli, 2009). Being a victim of bullying is mainly associated with internalizing problems (such as anxiety, depression, fussiness, or feeling miserable, fearful or worried) (Bond et al., 2001; Fekkes et al., 2004; Fekkes et al., 2006; Kumpulainen, 2008; Menesini et al., 2009). Conversely, being a bully is generally related to externalizing symptoms (e.g. delinquent and aggressive behavior, irritability, disobedience, temper tantrums, and lying) (Ivarsson et al., 2005; Kumpulainen, 2008; Menesini et al., 2009). However, some studies have reported that bullies have also internalizing problems, especially depressive symptoms (Kaltiala-Heino et al., 2000; Saluja et al., 2004; Brunstein Klomek et al., 2007; Carlyle and Steinman 2007; Klomek et al., 2008). The limitation in all of these previous studies has been that their data on psychiatric symptoms are based on self-reports or evaluations by teachers or parents.

Sourander et al. (2007) have recently examined the associations between bullying and victimization among boys at the age of 8 and psychiatric diagnoses 10 to 15 years later, thus becoming the first to investigate this relation in a prospective study in which psychiatric diagnoses were used. They demonstrated that being a victim of bullying at the age of 8 predicts anxiety disorders in early adulthood, whereas being a bully predicts future antisocial personality disorders (odds ratios (OR) from 2.6 to 2.9). Meanwhile, being a bully-victim (i.e. a person who is both a bully and a victim of bullying) in childhood

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increased the likelihood of having an anxiety disorder in early adulthood more than five-fold, and that of an antisocial personality disorder almost four-fold, compared with subjects who were not involved in bullying behavior. Sourander et al.'s (2007) database did not include females, however, and the diagnoses were not based on a systematic structured diagnostic interview.

Relatively few studies have focused on the association between bullying behavior and physical health (such as somatic diseases or overweight) in adolescents. A recent meta-analysis of 11 reports showed that the risk of psychosomatic problems (range 3–8 symptoms, e.g. headache, abdominal pain and sleeping problems) was 2.00 (OR) for victims, 1.65 for bullies and 2.22 for bully-victims (Gini and Pozzoli, 2009), and previous examinations of the relationship between obesity and bullying have shown that obese adolescents are more likely to be victims of bullying than their normal-weight peers (Janssen et al., 2004; Griffiths et al., 2006). On the other hand, childhood trauma such as a history of being bullied has also been shown to predict adult obesity in men (Gunstad et al., 2006).

The aim of the present work was to examine the association of bullying behavior with psychiatric disorders and physical health in a clinical sample of underage adolescent Finns. To our knowledge, we are the first to investigate this relation using data gathered during psychiatric hospitalization of the adolescents at a university hospital clinic. This treatment period made it possible for us to go through the time-consuming semi-structured interview schedule with every adolescent, enabling us to obtain reliable current psychiatric diagnoses of adolescents according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (Kaufman et al., 1997; Ambrosini, 2000; Kim et al., 2004).

2. Methods

2.1. Sample

This work, which formed as part of the STUDY-70 project, was initiated to examine the association of various psychosocial risk factors with severe psychiatric disorders among hospital-treated adolescents aged 12–17 years, focused on 508 adolescents (300 girls, 208 boys) who had been admitted to the inpatient adolescent psychiatric Unit 70 at the Oulu University Hospital between April 2001 and March 2006. The STUDY-70 project has been described in detail earlier (Makikyro et al., 2004). The catchment area of Unit 70 covers the geographically large area of Northern Finland (the provinces of Oulu and Lapland) and provides initial treatment for all underage adolescents from this area who are in need of acute psychiatric hospitalization in a closed ward. The protocol was approved by the Ethics Committee of the University of Oulu.

2.2. Instruments

The subjects were interviewed using the semi-structured Schedule for Affective Disorder and Schizophrenia for School-Age Children, Present and Lifetime (K-SADS-PL) to obtain DSM-IV diagnoses. If some information was missing or remained unreliable after interviewing the patient, the interview was complemented by interviewing the parents. K-SADS-PL is known to be a reliable method for defining DSM-IV diagnoses (Kaufman et al., 1997; Ambrosini, 2000; Kim et al., 2004). Data were gathered based on both information provided by the patients and the physician's evaluation of the diagnostic interview (Ilomaki et al., 2007).

In addition to DSM-IV diagnoses, all the other data except for the height and weight of the adolescents were also obtained using K-SADS-PL. The adolescents' height and weight were measured by a nurse as a part of the European Addiction Severity Index (EuropASI), which is an objective structured face-to-face interview containing questions on general information, medical status, alcohol and drug use, employment/support, family and social relationships, legal status and psychiatric status (Kokkevi and Hartgers, 1995).

2.3. Bullying

The information on bullying behavior was gathered from two sections of the K-SADS-PL. That on bullying of others was obtained from the K-SADS-PL criteria for conduct disorder, for which the adolescents were asked: Has there ever been a time when any kids really got on your nerves? Did you sometimes do things to get back at them? Like what? Call them names? Threaten to beat them up? Push them? Trip them? Knock their books out of their hands? Come up from behind and slap them in the face? How often did you do these things? K-SADS-PL categorizes bullying behavior as follows: 0 = no information, 1 = not present, 2 = subthreshold (bullied, threatened or intimidated another on only one or two occasions, or 3 = threshold (bullied, threatened or intimidated another on three or more occasions). For our purposes, bullying was defined as present if a subject was categorized as having a threshold level of bullying behavior. The adolescents were categorized into four groups based on this information and their answers to the question in the non-structured part of the K-SADS-PL (School adaptation and social relations) as to whether or not they had been bullied: bullies, victims of bullying, bully-victims (i.e., both bullies and victims) and those who had not been involved in bullying behavior.

2.4. Psychiatric disorders

Having used the K-SADS-PL to obtain DSM-IV-based psychiatric diagnoses for the adolescents, we then categorized the diagnoses into internalizing and externalizing disorders. Externalizing disorder was defined as present if the adolescent had a substance-related disorder or conduct disorder, whereas internalizing disorder was defined as present if the adolescent had at least one of the following diagnoses: affective disorder, anxiety disorder or psychotic disorder. The detailed diagnostic distributions are presented in an earlier publication (Luukkonen et al., 2009).

2.5. Somatic health

Two variables were used to describe the physical health status of adolescents. Firstly, data on chronic somatic diseases were obtained from the non-structured part of the K-SADS-PL (Child and adolescent health screening), where the adolescents were asked if they had any somatic illnesses or conditions for which they had received or should receive regular care (yes or no, and if yes, identified). Secondly, the adolescents were categorized as overweight if their body mass index (BMI) was equal to or greater than the 85th percentile cut-off point for the BMI in the corresponding sex and age-specific general population in terms of the BMI growth reference for Finnish adolescents (Wei et al., 2006). The BMI of the each adolescent was calculated using the patient's weight and height measured by a nurse as a part of the EuropASI interview by dividing the subject's weight in kilograms by the square of the height in meters.

2.6. Family and school factors

Information from the non-structured part of the K-SADS-PL (Background information) was used to define the family type of each patient (2 biological parents, 1 biological parent, other). They were categorized as living in a family of two biological parents only when they were actually living with both biological parents. A single-parent families and families comprising one biological parent and a stepmother or a stepfather were defined as having one biological parent. The 'other' family type included all the remaining types which did not fulfill the criteria mentioned above (residential placements, adoptive/foster parents and cases of subjects living with their grandparents, other relative(s) or non-relative(s)). Information on school performance was obtained from the non-structured part of the K-SADS-PL (School adaptation and social relations), where the subjects were asked whether they had ever repeated grade (s) at school (yes, no).

2.7. Statistical methods

Statistical significances of group differences were analyzed with Pearson's Chi-square test or Fisher's exact test for categorial variables and Student's *t*-test for continuous variables. A logistic regression analysis was used to examine the association between bullying behavior and psychiatric disorders and somatic health after adjusting for age at admission, family type and repeated grades at school. All the tests were two-tailed, and statistical significance was set at $P<0.05$. The statistical software used was SPSS for Windows, version 14.0.

3. Results

3.1. Characteristics of the subjects

The characteristics of the subjects in the various bullying subgroups are shown in Table 1. Both externalizing ($\chi^2=24.6$, $df=3$, $P<0.001$) and internalizing ($\chi^2=11.0$, $df=3$, $P=0.012$) disorders were statistically significantly associated with bullying behavior among the boys, whereas for the girls the only statistically significant association was found between bullying behavior and externalizing disorders ($\chi^2=29.4$, $df=3$, $P<0.001$).

As seen in Table 1, the bullying and bully-victim girls statistically significantly more often came from a home environment where no biological parent was present, while the girls who were victims of bullying statistically significantly more often came from families with two biological parents ($\chi^2=28.3$, $df=6$, $P<0.001$). Furthermore, the bullying and bully-victim girls had repeated grades at school statistically significantly more often than those who were not