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Sexual orientation and bullying involvement in adolescence: the role of gender, age and mental health

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Abstract

We analyzed the associations between sexual orientation and subjection to/ perpetration of bullying at school, taking into account confounding by psychiatric symptom dimensions and involvement in the other role. Survey data among 25,147 boys and 25,257 girls in comprehensive school, and 33,231 boys and 36,765 girls in upper secondary education in Finland were used. Data were analyzed using cross-tabulations with Chi-square statistics and logistic regression. Even though associations between sexual minority status and subjection to bullying grew weaker when confounding was controlled for, independent associations were found in both boys and girls, and in both younger and older adolescents. Positive associations first seen between same sex attraction and bullying perpetration leveled out and partially turned inverse when controlling for confounding. Uncertainty about one's interests had different associations with involvement in bullying in different age groups.

Keywords: sexual minority youth, bullying, mental disorders, adolescence, population survey

Sexual orientation and bullying involvement in adolescence: the role of gender, age and mental health

Bullying is aggressive behavior, where one or more pupils deliberately harm victims psychologically, verbally or physically, repeatedly over time and in situations with a power imbalance between victim and perpetrator(s) (King, World, Tudor-Smith, & Harel, 1996; Olweus, 2013). Of children and adolescents, 10–20% are frequently involved in bullying, either as victims, as bullies or as both, boys more than girls, younger subjects more than older (Kaltiala-Heino & Fröjd, 2011).

Sexual minority status may be a factor that predisposes adolescents to subjection to bullying (Burton, Marshal, Chisolm, Sucato, & Friedman, 2013). Sexual orientation refers to the sex of those to whom an individual is erotically attracted. Sexual minority youth (SMY) have same-sex or both-sex sexual attractions and/or partners or they self-identify as lesbian, gay, or bisexual (LGB) (Adelson & American Academy of Child and Adolescent Psychiatry [AACAP], 2012).

Research has suggested that SMY are subjected to bullying approximately twice as commonly as heterosexual youth (Berlan, Corliss, Field, Goodman, & Austin, 2010; Eisenberg, Gower, & McMorris, 2016; Birkett, Espelage, & Koenig, 2009; O'Malley Olsen, Kann, Vivolo-Kantor, Kinchen, & McManus, 2014; Williams, Connolly, Pepler, & Craig, 2003; Katz-Wise & Hyde 2012; Ramsey, DiLalla, & McCrary, 2016). Bisexual youth and those questioning their orientation report as much or even more subjection to bullying than those with same-sex interests (Birkett et al., 2009; Williams et al. 2003; Cénat, Blais, Hébert, Lavoie, & Guerrier, 2015; Russell, Everett, Rosario, & Birkett, 2014). Sexual minority boys further seem to be at greater risk of being bullied than sexual minority girls (Almeida, Johnson, Corliss, Molnar, & Azrael, 2009), maybe because male behavior deviating from culturally accepted masculine norms is less tolerated than behavior deviating from expected

feminine roles in girls (Ristori & Steensma, 2016). However, it is not known to what extent the associations between non-heterosexual attraction and subjection to bullying are independent main associations, and are such associations strengthened or weakened when emotional and behavioral problems and involvement in bullying as a perpetrator are accounted for, as these are all factors likely intertwined in complex ways with subjection to bullying, each other and sexual orientation.

Increased involvement in bullying in the role of the perpetrator has namely also been observed among SMY in some studies. According to Eisenberg, Gower, McMorris, and Bucchianeri (2015), proportions of SMY reporting bullying others were 1.5-fold greater than those among heterosexual youth. Berlan et al. (2010) reported increasing bullying perpetration among mostly heterosexual and bisexual girls, but decreasing bullying among gay males. Bullying and being bullied correlate (Kaltiala-Heino and Fröjd, 2011). Bullying perpetration among SMY has been attributed to elevated subjection to bullying (Berlan et al., 2010), when aggressive behavior would be coping mechanism, or self-protective behavior hiding the perpetrator's own vulnerability (Eisenberg et al., 2016). However, understanding the possible independent associations between belonging to sexual minority and bullying others requires further study in which the role of being subjected to bullying needs to be controlled.

Involvement in bullying is associated with emotional and behavioral symptoms and negative educational, physical, social, and emotional consequences (Kaltiala-Heino & Fröjd, 2011; Wormington, Anderson, Schneider, Tomlinson, & Brown, 2016). Subjection to bullying may be traumatizing and may predispose the victim to emotional and behavioral symptoms and lowered functioning. However, it is also possible that adolescents with emotional and behavioral problems expect that others behave in a rejective or hostile way and perceive so in social interactions that others mean to be neutral or even positive. Finally, it is

also possible that ability to defend oneself is impaired among adolescents with mental health problems, and they therefore become easy targets for bullies (Kaltiala-Heino and Fröjd, 2011). Subjection to bullying has been associated with mental health problems among SMY (Eisenberg et al., 2016; Birkett et al., 2009; Cénat et al., 2015; Collier, van Beusekom, Bos, & Sandfort, 2013). On the other hand sexual minority status is *per se* associated with excessive internalizing (Birkett et al., 2009; Marshal et al. 2011) and externalizing disorders / symptoms (Beaver et al., 2016). Sexual minority youth may display excessive symptoms and disorders due to increased direct victimization, but also without direct personal victimization, due to social stigma (Meyer, 1995, 2013). According to minority stress theory, those identifying in sexual minorities experience excessive stress not only due to personal experiences of discrimination and victimization, but also due internalized homophobia and perceived stigma. Internalized homophobia refers to having internalized the mainstream negative attitudes and beliefs about sexual minorities, which risks self-labeling and low self-esteem. Perceived stigma may result in expecting, and constantly being vigilant for, personal discrimination and rejection. Internalized homophobia and excessive vigilance create a stressful social environment and chronic stress, which increases the risk of mental health problems (Meyer, 1995, 2013). Adolescents explore their beliefs, attitudes, and roles in various life domains, and are particularly sensitive to how they meet societal expectations. Emerging sexuality and societal expectations regarding sexual orientation may cause developmental challenges for adolescents who become aware of their non-heterosexual orientation (Adelson & AACAP, 2012). This may increase the risk of emotional and behavioral problems even without actual external discriminating events, particularly if the adolescent feels a need to conceal his/her sexual attractions (Bos, Sandfort, Bruyn, & Hakvoort, 2008). Therefore, to elucidate the associations between sexual minority status and

involvement in bullying, internalizing and externalizing psychiatric symptom dimensions should be controlled for.

To summarize, research suggests that SMY are subjected to and perpetrate bullying more commonly than their heterosexual peers. Bullying perpetration among SMY has been attributed to their being excessively subjected to bullying: bullying perpetration could be a way of acting out the distress of being bullied, or self-defense behavior may be gone beyond necessary. However, associations detected between bullying and sexual orientation may (partially) be mediated by psychiatric symptom dimensions not controlled for in earlier studies. Knowledge of independent main associations has implications for example for preventive approaches. Younger adolescents are more commonly involved in bullying than older. Older adolescents again are more often sexually active, more aware of their sexual orientation, and more likely to disclose it to others (Saewyc et al., 2004, Bos et al., 2008). Associations between sexual minority status and involvement in bullying may therefore be different in different phases of adolescence. Boys are still socially rewarded for sexual activity and girls disapproved of for it (Bordini & Sperb, 2013), but deviating from heterosexual norms is less accepted in boys (Ristori & Steensma, 2016), so differences between sexes can be expected in relation to sexual minority status and bullying. Girls also mature earlier than boys (Fechner, 2002; Klimstra, Hale, Raaijmakers, Branjete, & Meeus, 2009), and this has implications for sexual identity consolidation but also for bullying involvement.

This study aimed to explore the associations between sexual orientation and involvement in bullying as perpetrator or victim in two different age groups, 8th and 9th graders attending comprehensive school and 2nd year students of upper secondary education. More precisely, our research questions were:

- (1) Is belonging to a sexual minority associated with subjection to and perpetration of bullying in adolescence?
- (2) Are the associations similar among boys and girls, and among younger and older adolescents?
- (3) Do such associations persist when sociodemographic factors, emotional and behavioral disorders, and bullying involvement in the other role are controlled for?

Method

Participants and procedure

The School Health Promotion Study (SHPS) of the National Institute for Health and Welfare is a school-based survey designed to examine the health, health behaviors, and school experiences of teenagers. The survey aims mainly to produce national adolescent health indicators for municipalities' use in planning services. The survey is conducted among 8th and 9th graders of comprehensive school and 2nd year students of upper secondary education (junior high school and vocational school). In 2015, the SHPS data comprised 50,404 responses from comprehensive schools, 38,760 from junior high schools and 31,236 from vocational schools. This covers 64% of all 8th and 9th graders and 43% of all upper secondary education students in Finland. The National Institute for Health and Welfare (Halme, Kivimäki, Luopa, & Matikka, 2015) deemed the data to be of high quality and representative of the Finnish adolescent population.

Participants completed the online questionnaire anonymously during a school lesson. Participants were informed orally and in writing about the nature of the study and the voluntary nature of participation, also that completing and returning the survey constituted consent to participate. Parents were informed about the survey in advance by a letter, but according to Finnish legislation the adolescents had themselves the right to consent. The questionnaires took 30 to 45 minutes to complete. The study had been duly approved by the

ethics committee of Pirkanmaa Hospital District and the National Institute of Health and Welfare. Respondents in the comprehensive school sample were 25,147 boys, mean (sd) age 15.4 (0.66) years and 25,257 girls, mean (sd) age 15.3 (0.64) years. Respondents in upper secondary education were 33,231 boys, mean (sd) age 17.4 (0.74) years and 36,765 girls, mean (sd) age 17.5 (0.81) years.

Measures

Romantic and erotic interests. Adolescents in the 8th and 9th grades of comprehensive school were asked “Have you had a crush on or been in love with...”, with response alternatives yes, girl(s) / yes, boy(s) / yes, both girl(s) and boy(s) / no I haven’t / I don’t know. Those in upper secondary education were asked “Are you sexually interested in...” with response alternatives females / males / both females and males / neither females nor males / I don’t know.

Bullying. Bullying or being bullied was elicited using two questions derived from a World Health Organization study on youth health (King et al., 1996). Bullying was first defined as follows: “We say a student is being bullied when another student (or group of students), say or do nasty things to him or her. It is also bullying when a student is being teased repeatedly in a way she or he does not like. But it is not bullying when two students of about the same strength quarrel or fight”. Respondents were then asked how frequently they had been bullied during the ongoing school term, and how frequently they had bullied others: many times a week, about once a week, less frequently and not at all. In the analyses, responses to these questions were dichotomised to none vs. any involvement. Of those who reported subjection to bullying, 45.3% also indicated that they had bullied others during the ongoing school term. The other way around, of those who had bullied others, 53% had also been subjected to bullying.

Covariates used were firstly age, family structure (both parents vs. any other family constellation), parental education (both parents with only basic education vs. at least one of the parents with more) and parental unemployment (none of the parents vs. one vs. both unemployed or laid off during past year). These socioeconomic factors were controlled for because they have previously been associated with involvement in bullying (da Oliveira et al., 2016; Aho, Gren-Landell, & Svedin, 2016; Delfabbro et al., 2006) as well as with emotional and behavioral disorders in adolescence (Hill, 2002; Torikka et al., 2014). Next set of covariates comprised emotional (depression) and behavioral (delinquency) symptoms, and involvement in bullying in the other role. Depression was measured with two screening questions focusing on the two main criteria of major depression: "During the past month, have you often been bothered by feeling down, depressed, or hopeless?" and "During the past month, have you often been bothered by little interest or pleasure in doing things? These two questions have shown good psychometric properties in detecting depression in primary care in adolescents (Richardson et al., 2010). Delinquency was elicited with the seven self-report questions on delinquency adopted from the Finnish Self-Report Delinquency Study questionnaire, a modified version of the International Self-Report Delinquency Study (ISRD) instrument (Junger-Tas, Terlouw, & Klein, 1994). The respondents were asked: During the past 12 months have you 1) drawn tags or graffiti on walls or elsewhere?, 2) deliberately damaged or destroyed school property or the school building, 3) deliberately damaged or destroyed other property, 4) stolen from a shop or a stall, 5) stolen from school, 6) been involved in a fight, 7) beaten someone up? All these had response alternatives no (=0) / once (=1) / 2–4 times (=2) / more than 4 times (=3) a sum score was formed of the delinquent behaviors, theoretically ranging from 0 to 21. The ISRD instrument has shown adequate reliability in test–retest studies (Zhang, Benson, & Deng, 2000). In the present sample the scale yielded a very good internal consistency with Cronbach's alpha of 0.86.

Facetious responding

Adolescents are known to exaggerate belonging to minorities or negative experiences; bias due to such facetiousness can be reduced by excluding respondents reporting unlikely combinations of extreme responses outside the focus of present interest in topics theoretically not related to variables of interest for the actual study questions (Robinson-Cimpian, 2014). We accordingly excluded respondents reporting suffering at school from six out of eight negative physical conditions of the built environment (overcrowding, noise, poor light, poor air quality, inappropriate temperature, dirt, poor chairs, uncomfortable restrooms) and brushing their teeth less than weekly. The screening variable so created was associated in both educational groups and both sexes with reporting same-sex romantic and erotic interest at statistical significance level $p < .001$. This served to exclude 1.6% of boys and 0.4% of girls in the comprehensive school sample, and 0.6% of boys and 0.1% of girls in the upper secondary or vocational school sample.

Statistical analyses

The distributions of all variables studied appear in Table 1. Bivariate associations were first studied using cross-tabulations with chi-square statistics and unadjusted Odds Ratios. Multivariate associations were studied using logistic regression. Bullying and being bullied were entered in turn as dependent variables. Romantic / erotic interest was used as the independent variable, with opposite-sex interest as reference category. It was first entered alone to calculate unadjusted Odds Ratios (OR). Then romantic / erotic interest variable was entered controlling for age, family structure, parental education, and parental unemployment, and thereafter controlling further for depression and delinquency. Finally, also involvement in bullying as the other party was controlled for. ORs with 95% confidence intervals (95% CI) are given. All analyses were run separately for boys and girls, and for comprehensive

school and upper secondary education groups. Due to the large data the two-tailed level of significance was set at 0.01. SPSS 23.0 software was used to analyze the data.

Attrition

Of boys (girls) in the comprehensive school sample, 0.7% (0.4%) had not responded to the question eliciting romantic interest ($p < .001$). Non-response to this item was not related to sociodemographic or mental health variables. Of boys (girls) in upper secondary education, 0.2% (0.1%) ($p = ns$) did not respond to the question eliciting sexual orientation. Such non-response was statistically significantly ($p < .001$) associated with not living with both parents, but in practice the difference was negligible (0.2% vs. 0.1%).

Of boys (girls) in both samples, 1.1–1.2% (0.8%) had skipped both questions on bullying ($p < .001$). Non-response was related to family structure and SES in some subgroups, but in practice the differences between groups on these sociodemographic variables were 0.1–0.7% and thus negligible. Boys skipping all bullying items scored higher on delinquency than responders [in the comprehensive school sample: mean (sd) 9.2 (4.8) vs. 7.9 (3.0), $p < .001$, in the upper secondary education sample: mean (sd) 8.4 (4.0) vs. 7.8 (2.5), $p < .001$].

Results

The relationship between sexual orientation and subjection to bullying

In both sexes in the comprehensive school sample, subjection to bullying was more common among those reporting same-sex attraction and both-sex attraction than among those reporting opposite-sex attraction. In girls, those not attracted to anyone and those uncertain, and among boys, those not attracted to anyone reported less subjection to bullying than the heterosexually attracted youth (Table 2; Table 3 unadjusted Odds Ratios). These associations persisted when sociodemographic variables and further mental health variables were controlled for. In the final models additionally adjusted for bullying perpetration, attraction to

same sex and both sexes remained statistically significantly associated with subsection to bullying among both boys and girls.

Among the boys in the upper secondary education sample, subsection to bullying was more common among those attracted to same sex, those attracted to both sexes as well as among those not attracted to anyone and those uncertain than among the heterosexually attracted boys (Table 2; Table 3 unadjusted Odds Ratios). These associations weakened but persisted as statistically significant in the subsequent models, except that in the final model, those not attracted to anyone did not differ from the heterosexually attracted boys. Among the girls in the upper secondary education sample, the differences in subsection to bullying between heterosexually attracted and those attracted to same sex, both sexes or none were less pronounced to start with (Table 2; Table 3 unadjusted Odds Ratios), and they mainly levelled out when controlled for the confounders. Only attraction to both sexes displayed increased Odds Ratios for subsection to bullying in the older age group girls in the final model (Table 3).

The relationship between sexual orientation and bullying others

Among both boys and girls in the comprehensive school sample, bullying others was more commonly reported by those with same-sex and both-sex attractions than by those attracted to the opposite sex, and less commonly by those who were not attracted to anyone or were uncertain of whether they had felt attraction (Table 2, Table 4 unadjusted Odds Ratios). The positive associations of same-sex and both-sex attractions with bullying perpetration persisted when sociodemographics were controlled for (Table 4, Model 1) but were leveled out when mental health variables were added (Table 4 Model 3). In the final model also accounting for subsection to bullying, attraction to both sexes or to none as well as being uncertain about one's attraction displayed statistically significantly decreased Odds Ratios for being a bully, as compared to heterosexual attraction (Table 4).

Among boys in the upper secondary education sample, bullying others was more common among all other sexual interest groups than among those reporting opposite-sex attraction in bivariate models (Table 2; Table 3 unadjusted Odds Ratios). The positive associations persisted when sociodemographics were controlled for (Table 4, Model 1) but leveled out when mental health variables were added (Table 4 Model 3), and in the final model further controlling for subjection to bullying, bullying others was not associated with sexual orientation among upper secondary education boys (Table 4). Bullying perpetration was rare in the older age group girls in general, but reported slightly more commonly by those attracted to the same sex or to both sexes than those attracted to the opposite sex (Table 2; Table 4 unadjusted Odds Ratios). This association leveled out when the mental health variables were added into the model (Table 4 Model 3). In the final model, no statistically significant associations of sexual orientation and being a bully were seen in the older age group girls (Table 4).

Discussion

In our large, non-selected sample of different-aged adolescents, displaying non-heterosexual romantic and erotic interest was associated with subjection to bullying. The associations first detected grew weaker but were not leveled out when confounding by sociodemographic and mental health factors was controlled for. Demonstrating the independent main associations is a novel contribution of our study.

Bullying of SMY may be due to other adolescents' discomfort with non-heterosexual orientation and desire to ensure adherence to heterosexual norms (Johnson et al., 2011; Poteat & Espelage, 2005). SMY may be disproportionately subjected to bullying also due to differing from their peers e.g. in gender non-conformity and physical appearance (Berlan et al., 2010; Chesir-Teran & Hughes, 2009). On the other hand, non-heterosexual youth may be particularly sensitive to bullying, pay attention to and report more episodes than heterosexual

youth, who perhaps do not perceive similar interactions as bullying. Minority stress (Meyer, 1995, 2013) could contribute to such sensitivity through internalized homophobia and expectations of discrimination.

Earlier research has suggested that sexual minority boys are subjected to bullying and discrimination more commonly than sexual minority girls (Almeida et al., 2009; Katz-Wise & Hyde, 2012; O'Malley et al., 2014). In the present study boys at large reported more commonly subjection to bullying than girls, but subjection to bullying was similarly associated with same-sex and both-sex attractions in the younger age group boys and girls. This is contrary to expectations and may be explained by cultural differences. Most of earlier research on this topic originates from the USA, while our study is North European. However, among the older age group, that generally reported less subjection to bullying, more statistically significant associations were detected among boys than girls in subjection to bullying according to sexual attraction in the final models. This appears developmentally appropriate. Girls mature earlier than boys, and thus that may both socialize in peer groups where sexual diversity is more accepted, and they may also mature earlier beyond internal uncertainty and identity struggles related to sexual identity, which may decrease their sensitivity in social interactions.

Among the older age group girls, those interested in both sexes nevertheless stood out as reporting subjection to bullying more commonly than their heterosexual peers. Research has also earlier suggested that bisexual adolescents are in particularly increased risk of being bullied (Russell et al., 2014). It is possible that adolescents sexually interested in both sexes face rejection from both hetero- and homosexual peer groups. However, they may also present with more identity struggles and difficulties in feeling included, which could make them more sensitive to remember and report more subjection to bullying. More challenging

identity formation may need more time. Our cross-sectional data permit no conclusions on causality.

Boys and men display more aggression than girls and women (Berkout et al., 2011). However, gay males have been suggested to be less masculine than heterosexual males, and lesbian females to be as more masculine than heterosexual females (Lippa, 2008). Beaver et al. (2016) reported that heterosexual males and lesbian females hence displayed more violent delinquency than gay males and heterosexual females. Similarly, bullying others could be expected to be associated with same-sex interest in girls but to be reduced in boys with same-sex interest. In our large adolescent population data, however, those interested in the same sex or in both sexes reported more commonly bullying perpetration than those attracted heterosexually, among both boys and girls in both studied age groups. However, these bivariate associations leveled out when controlling for internalizing and externalizing psychopathology. Thus, sexual minority status *per se* is not associated with bullying others. Internalizing and externalizing psychopathology, associated with both sexual minority status and bullying during adolescent development, explains the positive association between sexual minority status and bullying perpetration. The bivariate associations between sexual minority status and bullying perpetration in our data were similar to those reported by Eisenberg et al. (2015). However, our novel contribution is in accounting for psychopathology in this context. Possible increased bullying perpetration among SMY has also been suggested to be due to their own victimization (Berlan et al., 2010; Eisenberg et al., 2015). We therefore finally controlled for the adolescents' subjection to bullying when studying perpetration of bullying. When this was done, even statistically significant *inverse* associations were seen between same sex / both sex attraction and bullying others, both among boys and girls in the younger age group. This suggests that if anything, belonging to sexual minority in itself reduces an adolescent's likelihood of bullying others. This is understandable since being a bully implies

power imbalance, whereas LGB youth are rather unlikely to be in a dominant position, given the mainstream heteronormative culture (Poteat & Rivers, 2010; Chesir-Teran & Hughes, 2009).

Our study contributes new insights regarding no or uncertain romantic / sexual interest and involvement in bullying. Students uncertain of or questioning their sexual orientation have previously been reported in increased risk of being subjected to bullying (Birkett et al., 2009; Williams et al., 2003). To the best of our knowledge, such students' acting as bullying perpetrators has not been studied before. Among the younger boys and girls in our study, those not romantically interested in either sex and those not knowing if they had had a crush on or been in love with someone reported less frequently subject to bullying and bullying others than those heterosexually attracted. The inverse associations between no or uncertain romantic attraction and bullying perpetration persisted when confounders were controlled for. Among the older age group boys, not knowing and not being interested were positively associated with being bullied and bullying others in bivariate models. Being uncertain about one's sexual attraction persisted in this group as positively associated with subject to bullying also when confounders were controlled for. Among older girls, however, not knowing about or not having erotic interests was not associated with bullying when confounders were controlled for.

In the younger age group, lack of interest in romantic attractions may be developmentally normative. Much bullying in adolescence is of a sexual nature (Ashbaug & Cornell, 2008). The younger adolescents not interested or not knowing if they have had romantic interests may simply not yet have entered the domain of romantic and erotic encounters and do not attract or pay attention in social interactions with a sexual flavor. However, by age 17 most adolescents in Finland have had intimate sexual experiences (Savioja, Helminen, Fröjd, Marttunen, & Kaltiala-Heino, 2015). In the older age group, boys

uncertain of their erotic interest may stand out from the mainstream. They may, like those interested in same sex or both sexes, express themselves in ways that challenge heterosexual norms (Chesir-Teran & Hughes, 2009) and this may predispose them to being bullied.

However, our cross-sectional study cannot shed light on causality in the detected associations. Boys uncertain of their sexual interests beyond middle adolescence may also have been somehow traumatized, e.g. by experiences of being bullied, and this may have delayed their sexual development. Sexually uncertain boys in the older group may also be distressed about differing from the majority, and therefore particularly sensitive to negative interactions or even attribute hostile intentions to neutral interactions.

Girls are still expected to be less sexually active than boys (Bordini & Sperb, 2013), and therefore uncertain or non-interested girls even among late adolescents may not be perceived as challenging, and it may be less stressful for them to feel no sexual interest. Girls also mature earlier than boys (Fechner, 2002; Klimstra et al., 2009), which may contribute to greater acceptance of sexual diversity among older girls, and consequently less aggression and less distress related to not being in the mainstream.

Initiatives to reduce bullying need to pay special attention to protecting SMY. Approaches that reduce prejudice and promote sexual equality, such as Gay-Straight alliances, likely both reduce bullying against SMY and empower them to cope effectively by increasing sense of belonging in the school (Wormington et al., 2016). Adults working in schools do not always recognize homophobic language commonly used by adolescents (McCabe, Dragowski, & Rubinson, 2013). Teachers need to be aware of the particular vulnerability of SMY and to be active in intervening in bullying and discrimination (Berger, Poteat, & Dantas, 2017). As emotional and behavioral problems mediate sexual minority youth's involvement in bullying, another important line of work is to recognize and treat mental health problems in non-heterosexual youth.

Methodological considerations

Strength of this study is a large population based sample enabling us to identify young people in hard-to-reach sexual minority group and to study different sexual minority groups, as well as younger and older adolescents separately. We could also control for sociodemographics, internalizing and externalizing symptoms, and involvement in bullying in the same study.

Reliance on self-report items regarding bullying involvement may constitute a methodological limitation of this study. An attempt to avoid misunderstandings has been made by a clear definition of bullying in the questionnaire before eliciting frequency of involvement. An observational study or peer nomination might have yielded more accurate information on bullying than a self-report study (Kaltiala-Heino & Fröjd, 2011). Self-report survey method may result in underreporting of victimization (Theriot, Dulmus, Sowers, & Johnson, 2005), and the same could concern self-reporting of being a bully, due to social desirability. Self-report, actually with the same WHO questions, has nevertheless been used in many studies (Kaltiala-Heino & Fröjd, 2011). Self-report and peer nomination actually seem to yield similar findings on who are the victims, but regarding who is a bully, self-report may further identify more emotionally disturbed adolescents than peer nomination (Kaltiala-Heino & Fröjd, 2011). This may also explain why sexual minority status first appeared to have positive associations with bullying perpetration.

A further limitation is that involvement in bullying, depression and delinquency were elicited with different time frames.

Bullying and being bullied are known to overlap, as was the case in the present data. Adolescents who are both bullies and victims display the most psychopathology (Kaltiala-Heino & Fröjd, 2011). Our chosen method for analysis did not allow focusing on bully-victim problem, but this deserves future research. Another aspect of interest would be to analyze the

impact of school level variables on the detected associations. Our data did not include school level variables, which is a limitation.

Sexual orientation comprises attraction, behavior and identification (Marshal et al., 2011). We were concerned solely with attraction. A more comprehensive understanding of involvement in bullying and sexual orientation might have resulted if all aspects of sexual orientation had been elicited. However, it is suggested to be developmentally more appropriate to assess romantic and/or sexual attractions than sexual identity especially among young adolescents as self-identification as LGB has been shown to come after first experiences of same-sex attractions (Saewyc et al., 2004). A further limitation is that among the younger age group, romantic experiences (“has had a crush on or been in love with”) were elicited, whereas among the older age group, sexual attraction was asked about. The aim was to provide each age group with developmentally appropriate questions, but it reduces comparability of results between age groups. However, the proportions of same-sex and both-sex attractions were nevertheless similar in both age groups, and as is developmentally appropriate, the proportions of not being attracted to anyone and of being unsure of one’s attraction were greater in the younger groups (see Table 1). This yields support to reliability of the measurement and comparability of findings in the two age groups. Not including gender identity is a limitation of this study.

On any given day 10–15% of pupils are invariably absent. Psychosocial problems including bullying may be more common among them. However, even high levels of non-responses may not necessarily have an effect on the associations studied between the psychosocial phenomena (Van Loon, Tjihuis, Picavet, Surtees, & Ormel, 2003).

In the present study we attempted to control for facetious responding using the guidelines of Robinson-Cimpian (2014). Indeed, our screen for facetious responding caught a

disproportionate share of adolescents reporting non-heterosexual interests and involvement in bullying. The use of such a screen is a strength of the present study.

Conclusion

Same-sex and both-sex attractions are associated with being subjected to bullying across adolescence, even when confounding by mental health problems and bullying perpetration is accounted for. Specific anti-bullying approaches are needed that promote sexual equality and acceptance of sexual diversity. Increased bullying perpetration is not associated to sexual minority status *per se* but is mediated by internalizing and externalizing disorders and subjection to bullying. Future research should focus on causal relations in longitudinal study designs. As sexual minority youth's involvement in bullying is partially mediated by mental health problems, particular attention should also be paid to self-esteem and positive identity development of SMY. Future research should explore the impact of school level variables such as anti-bullying and equality policies and programs on the associations between sexual minority status and involvement in bullying.

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Table 1. Frequencies of sexual orientation, involvement in bullying, and covariates among females and males at comprehensive school and in upper secondary education

	Comprehensive school N = 49 885				Upper secondary education N = 69 763			
	Females (N = 25 147)		Males (N = 24 738)		Females (N = 36 723)		Males (N = 33 040)	
	%	(n)	%	(n)	%	(n)	%	(n)
Age	n = 21 941 M 15.3, SD 0.6 ^a		n = 21 321 M 15.4, SD 0.7 ^a		n = 36 723 M 17.5, SD 0.8 ^a		n = 33 040 M 17.4, SD 0.7 ^a	
Being bullied	n = 24 998		n = 24 519		n = 36 547		n = 32 784	
Yes	23.6	(5 903) ^a	26.9	(6 603) ^a	11.1	(4 073) ^a	13.7	(4 481) ^a
No	76.4	(19 095) ^a	73.1	(17 916) ^a	88.9	(32 474) ^a	86.3	(28 303) ^a
Bullied others	n = 24 970		n = 24 487		n = 36 483		n = 32 761	
Yes	13.2	(3 303) ^a	29.3	(7 175) ^a	6.9	(2 500) ^a	15.0	(4 929) ^a
No	86.8	(21 667) ^a	70.7	(17 312) ^a	93.1	(33 983) ^a	85.0	(27 832) ^a
Attracted to	n = 25 048		n = 24 553		n = 36 671		n = 32 978	
Female(s)	1.5	(369)	74.3	(18 244)	2.0	(731)	94.1	(31 045)
Male(s)	75.4	(18 879)	1.7	(407)	87.4	(32 054)	1.3	(444)
Both female(s) and male(s)	6.4	(1 602)	1.8	(453)	6.8	(2 500)	2.1	(707)
Neither females nor males	9.0	(2 265)	11.9	(2 934)	0.9	(345)	0.8	(265)
Do not know	7.7	(1 933)	10.2	(2 515)	2.8	(1 041)	1.6	(517)
Family structure	n = 24 944		n = 24 131		n = 36 597		n = 32 591	
Living with both parents	66.5	(16 583) ^a	67.8	(16 367) ^a	59.2	(21 675) ^a	64.0	(20 842) ^a
Any other family constellation	33.5	(8 361) ^a	32.2	(7 764) ^a	40.8	(14 922) ^a	36.0	(11 749) ^a
Mother's educational level	n = 24 200		n = 23 317		n = 36 275		n = 32 122	
Comprehensive school only	6.8	(1 655)	6.8	(1 595)	93.4	(33 884)	93.4	(30 013)
Higher than comprehensive school	93.2	(22 545)	93.2	(21 722)	6.6	(2 391)	6.6	(2 109)
Father's educational level	n = 23 808		n = 23 000		n = 35 855		n = 31 780	
Comprehensive school only	10.8	(2 560) ^a	10.0	(2 298) ^a	88.1	(31 601) ^a	89.2	(28 353) ^a
Higher than comprehensive school	89.2	(21 248) ^a	90.0	(20 702) ^a	11.9	(4 254) ^a	10.8	(3 427) ^a
Parental unemployment/layoff	n = 24 856		n = 24 028		n = 36 451		n = 32 425	
Neither parent	66.6	(16 549) ^a	68.7	(16 516) ^a	66.4	(24 191) ^a	67.9	(22 030) ^a
One parent	29.7	(7 371) ^a	27.7	(6 656) ^a	29.5	(10 737) ^a	28.1	(9 113) ^a

Both parents	3.8 (936) ^a	3.6 (856) ^a	4.2 (1 523) ^a	4.0 (1 282) ^a
Depression	n = 24 963 M 0.8, SD 0.9 ^a	n = 24 407 M 0.5, SD 0.7 ^a	n = 36 570 M 0.8, SD 0.9 ^a	n = 32 745 M 0.5, SD 0.8 ^a
Delinquency	n = 24 592 M 7.7, SD 2.0 ^a	n = 23 869 M 8.5, SD 3.3 ^a	n = 36 074 M 7.3, SD 1.1 ^a	n = 32 096 M 7.8, SD 2.5 ^a

Note. ^aDifference(s) between males and females statistically significant; M = Sample mean, arithmetic average; SD = Standard deviation

Table 2. Involvement in bullying according to sexual orientation [%, (n)]

	Attracted to										<i>p</i>
	Female(s)		Male(s)		Both sexes		Neither sexes		Do not know		
Comprehensive school											
Males											
Being bullied n = 24 348											<.001
No	73.2	(13 248)	49.9	(201)	51.9	(231)	77.9	(2 265)	74.4	(1 851)	
Yes	26.9	(4 859)	50.1	(202)	48.1	(214)	22.1	(641)	25.6	(636)	
Bullied others n = 24 321											<.001
No	68.9	(12 467)	55.5	(223)	57.5	(256)	81.1	(2 356)	76.6	(1 901)	
Yes	31.1	(5 622)	44.5	(179)	42.5	(189)	18.9	(548)	23.4	(580)	
Females											
Being bullied n = 24 905											<.001
No	63.1	(231)	77.0	(14 450)	60.6	(966)	81.9	(1 843)	80.1	(1 541)	
Yes	36.9	(135)	23.0	(4 322)	39.9	(627)	18.1	(406)	19.9	(348)	
Bullied others n = 24 876											<.001
No	75.5	(277)	86.0	(16 126)	82.9	(1 320)	93.0	(2 093)	92.3	(1 771)	
Yes	24.5	(90)	14.0	(2622)	17.1	(272)	7.0	(157)	7.7	(148)	
Upper secondary education											
Males											
Being bullied n = 32 733											<.001
No	87.1	(26 851)	72.5	(319)	74.5	(522)	77.4	(202)	72.5	(371)	
Yes	12.9	(3 968)	27.5	(121)	25.5	(179)	22.6	(59)	27.5	(141)	
Bullied others n = 32 711											<.001
No	85.5	(26 334)	76.6	(337)	76.4	(535)	76.5	(199)	76.2	(387)	
Yes	14.5	(4 469)	23.4	(103)	23.6	(165)	23.5	(61)	23.8	(121)	
Females											
Being bullied n = 36 496											<.001
No	85.0	(620)	89.5	(28 549)	82.6	(2 055)	83.9	(287)	88.9	(923)	
Yes	15.0	(109)	10.5	(3 350)	17.4	(433)	16.1	(55)	11.1	(115)	
Bullied others n = 36 432											<.001

No	90.4	(657)	93.4	(29 748)	90.6	(2 247)	92.1	(316)	94.0	(971)
Yes	9.6	(70)	6.6	(2 100)	9.4	(234)	7.9	(27)	6.0	(62)

Table 3. Odds ratios (95 % confidence intervals) for frequent subsection to bullying according to sexual orientation

	Frequent subsection to bullying (unadjusted)			Frequent subsection to bullying (Model1), controlled for age, family structure, parental education and parental unemployment			Frequent subsection to bullying (Model 2), controlled for age, family structure, parental education, parental unemployment, depression and delinquency			Frequent subsection to bullying (Model 3), controlled for age, family structure, parental education, parental unemployment, depression, delinquency and bullying perpetration		
	OR	95 % CI	<i>p</i>	OR	95 % CI	<i>p</i>	OR	95 % CI	<i>p</i>	OR	95 % CI	<i>p</i>
Comprehensive school												
Males												
Attracted to												
Female(s)	1.0			1.0			1.0			1.0		
Male(s)	2.7	[2.2, 3.3]	<.001	2.4	[1.9, 3.0]	<.001	1.9	[1.5, 2.4]	<.001	2.2	[1.7, 2.8]	<.001
Both sexes	2.5	[2.1, 3.1]	<.001	2.3	[1.8, 2.8]	<.001	1.6	[1.3, 2.0]	<.001	1.9	[1.5, 2.5]	<.001
Not attracted	0.8	[0.7, 0.8]	<.001	0.8	[0.7, 0.9]	<.001	0.8	[0.7, 0.9]	.001	1.0	[0.9, 1.1]	.78
Do not know	0.9	[0.8, 1.0]	.18	0.9	[0.8, 1.1]	.29	1.0	[0.9, 1.1]	.84	1.2	[1.0, 1.3]	.02
Females												
Attracted to												
Female(s)	2.0	[1.5, 2.4]	<.001	1.9	[1.5, 2.4]	<.001	1.5	[1.2, 2.0]	.002	1.5	[1.1, 1.9]	.007
Male(s)	1.0			1.0			1.0			1.0		
Both sexes	2.2	[2.0, 2.4]	<.001	2.1	[1.9, 2.4]	<.001	1.6	[1.4, 1.8]	<.001	1.7	[1.5, 1.9]	<.001
Not attracted	0.7	[0.7, 0.8]	<.001	0.7	[0.6, 0.8]	<.001	0.8	[0.7, 0.9]	.001	0.9	[0.8, 1.0]	.13
Do not know	0.8	[0.8, 1.9]	.002	0.8	[0.7, 1.0]	.01	0.9	[0.8, 1.0]	.19	1.0	[0.9, 1.2]	.73
Upper secondary education												
Males												
Sexually attracted to												
Females	1.0			1.0			1.0			1.0		
Males	2.6	[2.1, 3.2]	<.001	2.4	[1.9, 3.0]	<.001	1.7	[1.4, 2.2]	<.001	2.0	[1.5, 2.7]	<.001
Both sexes	2.3	[2.0, 2.8]	<.001	2.0	[1.7, 2.3]	<.001	1.3	[1.1, 1.6]	.006	1.4	[1.1, 1.8]	.002
Not attracted	2.0	[1.5, 2.6]	<.001	1.8	[1.3, 2.4]	<.001	1.3	[0.9, 1.8]	.13	1.2	[0.8, 1.8]	.26
Do not know	2.6	[2.1, 3.1]	<.001	2.3	[1.8, 2.8]	<.001	1.7	[1.3, 2.1]	<.001	1.9	[1.4, 2.4]	<.001

Females

Sexually attracted to

Females	1.5	[1.2, 1.8]	.001	1.4	[1.2, 1.8]	.001	1.1	[0.9, 1.5]	.17	1.2	[0.9, 1.5]	.17
Males	1.0			1.0			1.0			1.0		
Both sexes	1.8	[1.6, 2.0]	<.001	1.7	[1.5, 1.9]	<.001	1.2	[1.1, 1.4]	<.001	1.3	[1.1, 1.4]	<.001
Not attracted	1.6	[1.2, 2.2]	.001	1.5	[1.1, 2.0]	.01	1.0	[0.7, 1.4]	.86	1.1	[0.7, 1.5]	.66
Do not know	1.1	[0.9, 1.3]	.55	1.0	[0.8, 1.3]	.69	0.9	[0.7, 1.1]	.14	0.9	[0.7, 1.1]	.31

Note. OR = odds ratio; CI = confidence interval

Table 4. Odds ratios (95 % confidence intervals) for frequently bullying others according to sexual orientation

	Frequent bullying perpetration (unadjusted)			Frequent bullying perpetration (Model 1), controlled for age, family structure, parental education and parental unemployment			Frequent bullying perpetration (Model 2), controlled for age, family structure, parental education, parental unemployment, depression and delinquency			Frequent bullying perpetration (Model 3), controlled for age, family structure, parental education, parental unemployment, depression, delinquency and bullying victimization		
	OR	95 % CI	<i>p</i>	OR	95 % CI	<i>p</i>	OR	95 % CI	<i>p</i>	OR	95 % CI	<i>p</i>
Comprehensive school												
Males												
Attracted to												
Female(s)	1.0			1.0			1.0			1.0		
Male(s)	1.8	[1.5, 2.2]	<.001	1.6	[1.3, 2.0]	<.001	1.0	[0.7, 1.3]	.88	0.7	[0.5, 1.0]	.03
Both sexes	1.6	[1.4, 2.0]	<.001	1.4	[1.1, 1.7]	.004	0.7	[0.6, 0.9]	.02	0.6	[0.4, 0.7]	<.001
Not attracted	0.5	[0.5, 0.6]	<.001	0.5	[0.4, 0.6]	<.001	0.5	[0.5, 0.6]	<.001	0.5	[0.5, 0.6]	<.001
Do not know	0.7	[0.6, 0.7]	<.001	0.7	[0.6, 0.8]	<.001	0.7	[0.7, 0.8]	<.001	0.7	[0.6, 0.8]	<.001
Females												
Attracted to												
Female(s)	2.0	[1.6, 2.5]	<.001	1.8	[1.3, 2.3]	<.001	1.2	[0.9, 1.7]	.17	1.1	[0.8, 1.5]	.56
Male(s)	1.0			1.0			1.0			1.0		
Both sexes	1.3	[1.1, 1.5]	.001	1.1	[1.0, 1.3]	.11	0.8	[0.7, 1.0]	.02	0.7	[0.6, 0.8]	<.001
Not attracted	0.5	[0.4, 0.5]	<.001	0.5	[0.4, 0.6]	<.001	0.5	[0.4, 0.6]	<.001	0.5	[0.4, 0.6]	<.001
Do not know	0.5	[0.5, 0.6]	<.001	0.5	[0.4, 0.6]	<.001	0.5	[0.5, 0.7]	<.001	0.5	[0.4, 0.7]	<.001
Upper secondary education												
Males												
Sexually attracted to												
Females	1.0			1.0			1.0			1.0		
Males	1.8	[1.4, 2.3]	<.001	1.7	[1.3, 2.1]	<.001	1.1	[0.8, 1.4]	.61	0.7	[0.6, 1.0]	.05
Both sexes	1.8	[1.5, 2.2]	<.001	1.6	[1.3, 1.9]	<.001	1.0	[0.8, 1.2]	.87	0.8	[0.6, 1.0]	.09
Not attracted	2.0	[1.4, 2.4]	<.001	1.7	[1.2, 2.3]	.001	1.2	[0.8, 1.6]	.37	1.0	[0.7, 1.5]	.96
Do not know	1.9	[1.5, 2.3]	<.001	1.7	[1.3, 2.1]	<.001	1.2	[0.9, 1.5]	.25	0.8	[0.6, 1.1]	.20

Females

Sexually attracted to

Females	1.5	[1.2, 1.9]	.001	1.3	[1.0, 1.8]	.03	1.0	[0.8, 1.4]	.92	0.9	[0.7, 1.3]	.93
Males	1.0			1.0			1.0			1.0		
Both sexes	1.5	[1.3, 1.7]	<.001	1.3	[1.2, 1.6]	<.001	1.0	[0.8, 1.2]	.90	0.9	[0.8, 1.1]	.90
Not attracted	1.2	[0.8, 1.8]	.34	1.1	[0.7, 1.7]	.63	0.8	[0.5, 1.2]	.24	0.7	[0.5, 1.2]	.74
Do not know	0.9	[0.7, 1.2]	.45	0.9	[0.7, 1.2]	.38	0.7	[0.6, 1.0]	.04	0.8	[0.6, 1.0]	.77

Note. OR = odds ratio; CI = confidence interval