Can social support protect bullied adolescents from adverse outcomes? A prospective study on the effects of bullying on the educational achievement and mental health of adolescents at secondary schools in East London

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ABSTRACT

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This paper investigates the extent to which social support can have a buffering effect against the potentially adverse consequences of bullying on school achievement and mental health. It uses a representative multiethnic sample of adolescents attending East London secondary schools in three boroughs. Bullied adolescents were less likely to achieve the appropriate academic achievement benchmark for their age group and bullied boys (but not girls) were more likely to exhibit depressive symptoms compared to those not bullied. High levels of social support from family were important in promoting good mental health. There was evidence that high levels of support from friends and moderate (but not high) family support was able to protect bullied adolescents from poor academic achievement. Support from friends and family was not sufficient to protect adolescents against mental health difficulties that they might face as a result of being bullied. More active intervention from schools is recommended.

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Introduction

Bullying is broadly defined as a desire to hurt and the execution of a harmful action; it is characterised by repetition and either a physical or a psychological power imbalance (Farrington, 1993; Rigby, 2002; Smith & Brain, 2000; Smith & Sharp, 1994). It may come in the form of verbal abuse, physical aggression or relational victimisation. The first two forms of bullying have sometimes been called "direct bullying" as they include directly aggressive behaviour. Relational victimisation is the manipulation of peer relationships in order to exclude someone (Wolke, Woods, Bloomfield, & Karstadt, 2000). Numbers bullied vary by location and definition. Around 30% of children are bullied at some point whilst at school and between 5% and 10% are regularly bullied (Newman, Holden, & Delville, 2005).

Research has shown that boys are more likely to be involved in bullying, either as bullies or as victims, than girls (Forero, McLellan, Rissel, & Bauman, 1999; Kaltiala-Heino, Rimpela, Rantanen, & Rimpela, 2000; Nansel et al., 2001; Rigby, 2000; Seals

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& Young, 2003). Rigby (2000) found that boys and girls were similarly likely to be bullied through name calling, teasing and deliberate exclusion. Boys are more likely to receive threats of harm and be physically bullied (Baldry, 2004; Owens, Shute, & Slee, 2000; Rigby, 2000; Roland & Idsoe, 2000). There is evidence that prevalence of bullying declines with age (Newman et al., 2005; Smith, Madsen, & Moody, 1999).

Cross-sectional research on the effects of bullying on psychological health has consistently found that those that are bullied exhibit poorer emotional adjustment in early to late adolescence, indicating an association but no direct causality (Alikasifoglu, Erginoz, Ercan, Uysal, & Albayrak-Kaymak, 2007; Baldry, 2004; Brunstein Klomak, Marrocco, Kleinman, Schonfeld, & Gould, 2007; Espelage & Holt, 2001; Fekkes, Pijpers, & Verloove-Vanhorick, 2004; Forero et al., 1999; Greco, Freeman, & Dufton, 2007; Kaltiala-Heino, Rimpela, Marttunen, Rimpela, & Rantanen, 1999; Kaltiala-Heino et al., 2000; Kumpulainen, Rasanen, & Puura, 2001; Saluja et al., 2004; Seals & Young, 2003; Smith, Talamelli, Cowie, Naylor, & Chauhan, 2004; van der Wal, de Wit, & Hirasing, 2003). Few studies have prospectively examined the relationship between bullying and the psychological health of the victim. One study found that bullied Australian secondary school students in year 8 (age 13) had a higher risk of depression and anxiety over the following school year (Bond, Carlin, Thomas, Rubin, & Patton, 2001). The association between bullying and poor psychological health may work in both directions; Fekkes et al. found that victims of bullying had significantly higher chances of psychosomatic and psychosocial problems compared with children who were not bullied; conversely, children with depressive and anxiety symptoms had a higher chance of being bullied (Fekkes, Pijpers, Fredriks, Vogels, & Verloove-Vanhorick, 2006).

A limited amount of research has been carried out on the relationship between bullying and educational achievement in adolescence, although there have been some studies on the potential effects of bullying (Nansel et al., 2001). A few studies have been carried out using younger pupils. One US study found a link between bullying at elementary school and low achievement (Glew, Fan, Katon, Rivara, & Kernic, 2005). A longitudinal study in UK primary schools found that being a victim of relational bullying was the second most important predictor of academic achievement for year 2 (age 6–7 years); no effect was found for direct bullying (Woods & Wolke, 2004). The study was limited by the short time lag between the measure for bullying and that for academic achievement. Other studies have not looked specifically at bullying but have found links between "peer rejection" and academic achievement (Ladd, 1990; Wentzel & Caldwell, 1997). A prospective study found that, amongst the youngest cohort, those that were most rejected by their peers performed worse on tests. However, they found no direct relationship between peer rejection and later academic achievement (DeRosier, Kupersmidt, & Patterson, 1994). Responses to peer rejection have also been found to be important; aggressive-rejected but not submissive-rejected adolescents had low academic achievement (Wentzel & Asher, 1995).

Although a large number of studies have looked at bullying prevention strategies, few studies have examined processes that may already be operating to mitigate the negative effects of bullying (Baldry & Farrington, 2005). One such process is social support. Support from family, particularly parents, is one important form of social support. However, it has been argued that in adolescence, individuals spend more unsupervised time with their peers and friends are increasingly relied upon for support (Marini, Dane, Bosacki, & Ylc-Cura, 2006). Adjustment to secondary school may therefore have important links with the ability of young people to initiate and maintain positive peer relationships (Wentzel & Caldwell, 1997). This may impact on eventual academic success.

There are a number of mechanisms whereby high levels of social support might translate into more positive outcomes for students who are bullied. House (1981) identified 4 main types of social support: emotional, instrumental, informational and appraisal support. Later work by House et al. places particular emphasis on "the emotionally or instrumentally sustaining quality of social relationships" in relation to social support (House, Landis, & Umberson, 1988). Both emotional and instrumental support may be used by victims of bullying. Emotional support may be particularly salient when a young person is experiencing bullying. Newman et al. (2005) conceptualise bullying as a chronic stressor and social support as one of the coping resources on which bullied students can draw. Instrumental support may also be important; as well as operating to enable individuals to cope with bullying whilst it is occurring, high levels of social support may stop bullying at an earlier stage. Bullying is a group phenomenon; bystanders can have an important impact on the trajectory that the bullying takes by either assisting the bully, not getting involved or by intervening. In most cases bystanders will remain uninvolved which enables the bully to continue (Fekkes, Pijpers, & Verloove-Vanhorick, 2005). It has been shown, however, that if bystanders do try to stop the bullying, it usually ceases (Hawkins, Pepler, & Craig, 2001). There is also a possibility of reverse causation; students with low levels of social support may be more likely to be bullied; their isolation may draw bullies to them (Newman et al., 2005).

The pathways whereby social support may bolster academic achievement are not well understood. Again, support might be instrumental or emotional. One way in which instrumental support might work is through students with more friends receiving more academically-related assistance. In this way social support might have a direct impact on achievement (Wentzel & Caldwell, 1997). Alternatively, the impact of social support may be indirect; students with high levels of emotional social support may be less likely to suffer from psychological distress which in turn predicts higher academic achievement (Wentzel, 1994; Wentzel, Weinberger, Ford, & Feldman, 1990). Vygotsky's augmentation of Cognitive Development Theory, which gave prominence to social interaction in influencing language and thought development, also places emphasis on interaction with peers as an important factor in facilitating intellectual progress (Vygotsky, 1978).

Studies examining social support as a moderator have had mixed findings. Rigby (2000) found that social support and bullying contributed independently to poor mental health but that perceived availability of social support did not impact on victimised adolescents more than pupils that were not victimised. Another study found evidence for a buffering effect of social support against anxiety and depressive symptoms for victims of bullying (Davidson & Demaray, 2007). Holt and

[Espelage (2007)](#) found the lowest levels of anxiety and depression amongst bullies, victims and bully-victims with moderate peer social support ([Holt & Espelage, 2007](#)). [Newman et al. (2005)](#) looked at "isolation" as a moderator in reactions to bullying and found that being bullied does the most damage (measured by stress on reaching college) to those with high levels of perceived isolation.

Because bullying has a negative influence on children's health and educational outcomes it is important that healthcare workers and teachers have a good understanding of bullying and its potential consequences. This paper studies the association between bullying and both educational achievement and the exhibition of depressive symptoms in British secondary schools.

Based on the literature, the key hypotheses are as follows:

1. Victims of bullying will have a greater propensity to exhibit depressive symptoms
2. Victims of bullying will be less likely to reach national achievement benchmarks
3. Social support from friends will be more effective as a protective factor than social support from the family
4. Bullied students with low levels of perceived social support will exhibit poorer outcomes than bullied students with higher levels of perceived social support.

Methods

Participants

The data come from the Research with East London Adolescents: Community Health Survey (RELACHS), a school based epidemiological study of a representative sample of 2790 adolescents from year 7 (11–12 years) and year 9 (13–14 years) attending 28 comprehensive schools in Hackney, Newham, and Tower Hamlets in 2001 ([Stansfeld et al., 2003](#)). Of those pupils that did not participate, the majority were not available during due to school absence, illness or other school activities. The second phase of data collection took place in 2003. 2093 pupils in the original sample completed the questionnaire.

Measures

Bullying

Bullying was measured at baseline with a self-report question. The item used to measure whether an adolescent had been subjected to bullying was as follows: "how often have you been bullied in school this term?". Possible responses were: "I haven't been bullied in school this term", "once or twice", "sometimes", "about once a week", "several times a week". A further category of "never bullied" was added based on another item: "have you ever been bullied at school". The variable was then recoded into a binary variable whereby being a victim constituted experiencing bullying "sometimes", "about once a week" or "several times a week". Being bullied once or twice in a term was combined with the category for never being bullied because bullying is defined as a repeated action ([Baldry & Farrington, 2004; Olweus, 1993; Smith & Brain, 2000](#)).

Educational achievement

Educational achievement was measured two years after the baseline survey. For the younger age group, the benchmark used for educational achievement at age 13–14 was the attainment of level 5 or above in English, mathematics and science in the Key Stage 3 examinations. These national tests are intended to indicate if a student is working at the target level for their age. For the older group, the benchmark was the attainment of 5 or more General Certificate of Secondary Education Examinations (GCSEs) at grades A*–C (taken at age 15–16). These benchmarks are used by the Department of Education and Skills as an indicator of adequate performance ([Department for Education and Skills, 2006](#)). Data on educational achievement at Key Stage 3 and GCSE was obtained from Local Education Authorities.

Depressive symptoms

Depressive symptoms were measured using the Short Moods and Feelings Questionnaire (SMFQ) two years after the baseline survey ([Angold et al., 1987](#)). Statements about the emotions and behaviour of the respondent over the past 2 weeks were rated. Examples of items include: "I felt miserable or unhappy", "I didn't enjoy anything at all", "I cried a lot". There are 13 items in this scale: "true", "sometimes true", or "not true". The scores for these items were summed to produce an overall magnitude of symptoms, with a score of 8 or above indicating the presence of depressive symptoms. In the original validation against the Diagnostic Interview Schedule for Children – Depressive Scale this threshold yielded a positive predictive value to 80 per cent and a negative predictive value of 68 per cent ([Angold et al., 1995](#)). The Cronbach's alpha reliability coefficient for this sample is 0.90.

Social support

The degree of social support derived from family and friends was measured at baseline using the Multidimensional Scale of Perceived Social Support (MSPSS) ([Zimet, Dahlem, Zimet, & Farley, 1988](#)). This is a 12-item scale which produces scores that measure levels of social support from three sources: family, friends and a significant other. Items included: "my family really

tries to help me", "I can count on my friends when things go wrong", "I can talk about my problems with my family". This scale has been found to have a high level of internal and test–retest reliability; the overall reliability coefficient is 0.88 (Zimet et al., 1988). The scale has been found to have good concurrent, construct and discriminant validity (Zimet et al., 1988). The Cronbach's alpha reliability coefficient for this sample is 0.90. Social support scores were split into tertiles (high, moderate and low support).

Ethnicity

Ethnicity was categorised as follows using a revised version of the 2001 census: white UK, Bangladeshi, Pakistani, Asian Indian, black African, black Caribbean, other.

Free school meals

Pupils are eligible for free school meals if their parents receive Income Support, Income Based Jobseekers' Allowance, support under part VI of the Immigration and Asylum Act 1999 or (with some conditions) Child Tax Credit. Data on free school meals was collected from school records.

Procedure

All 42 schools in the three London boroughs were stratified by borough and school type (comprehensive, voluntary, other). Thirty schools were randomly selected. Head teachers were informed about the study and asked for permission for their school to participate. Within the 28 schools that agreed to take part, four representative, mixed ability classes were selected (two from year 7 and two from year 9). The overall response rate was 84% at baseline. Information sheets explaining the study were given to teachers, parents and pupils a week before the visit to the school. Parents were given the opportunity to opt their child out of the study and pupils gave fully informed consent on the day. A team of researchers administered the questionnaire in class-rooms in one session of 40–50 min. One member of the team led the class, explaining the questionnaire and providing assurance that all answers would be anonymous and confidential. Three or four additional researchers assisted, answering queries from participants, ensuring that participants did not confer with each other and checking for missing data on completion of the questionnaires. These methods were used at both data collection phases. Meetings were held with a community advisory group, consisting of teachers, parents, health and social care professionals, to advise on ethical aspects of the work and on the research process. The study protocol was approved by the East London and the City Local Research Ethics Committee.

Statistical analysis

Because the primary sampling unit for the study was the school, it was necessary to make adjustments for the clustered survey design in the analyses. Failing to adjust for this would result in an overstatement of precision by ignoring the possible lack of independence of observations within the same school. Adjustments were made for survey design using the *svy* suite of commands in Stata. An equal number of classes were selected in each school regardless of school size, so that probability of selection varied by school. Data were reweighted to ensure that the data were representative of all adolescents attending comprehensive schools in the three boroughs at the time of the baseline survey.

Missing data was analysed using crosstabulation and the chi-squared option in Stata. Odds ratios and confidence intervals were calculated using the Stata logistic regression command. These analyses were carried out for boys and girls combined. Mantel–Haenszel analysis was carried out to identify possible confounding variables. For the achievement models, these were gender, age group, ethnicity and eligibility for free school meals. For the SMFQ models, potential confounders were gender, age group and ethnicity. Mantel–Haenszel analysis was carried out to identify possible interactions. Separate models were run for achievement and SMFQ as the outcome variable. Independent variables were dropped from the model if they did not result in a change in the odds ratio for bullying.

For the analysis examining the impact of bullying on depressive symptoms, there was the option of excluding those depressed at baseline. This has disadvantages as a reduced number of adolescents would be included. However, if bullied children with a specific problem at baseline were to be included, it is harder to study the causal relationship between bullying and health outcomes. Two sets of analyses were therefore carried out firstly including those depressed at baseline (reported here) and then excluding them. The results were in the same direction, although there was greater statistical evidence for the associations when those depressed at baseline were included.

Results

Participants

48.6% of the participants were male; 27.0% were white, 25.1% Bangladeshi, 20.9% black, 9.1% Indian, 6.7% Pakistani and 11.2% of other ethnic origin. 47.6% were eligible for free school meals. The average age of the younger age group was 12.18 (standard deviation = 0.33) and the older age group 14.22 (standard deviation = 0.33); 49.5% of the sample was in the younger age group.

2734 participants had complete data on bullying. Those who did not reach the academic benchmark were less likely to have data on bullying ($p = 0.003$). 2145 participants had complete data on achievement. Pupils who were bullied were less likely to have data on achievement ($p = 0.007$), as were white pupils ($p < 0.0001$) and pupils eligible for free school meals ($p = 0.076$). 1876 participants had complete data on depressive symptoms at time 2. Those that were bullied ($p < 0.0001$), white pupils ($p < 0.0001$) and pupils eligible for free school meals ($p = 0.001$) were less likely to have complete data on depressive symptoms.

Bullying prevalence

9.1% of the sample reported being bullied "sometimes" or more often in the term in which the survey was taken. Table 1 shows the crude odds ratios for the association between bullying and the variables of interest. There was very strong evidence that those in the older age group were less likely to have been bullied (OR = 0.56, 95% CI 0.39, 0.80). There was some evidence that Indian pupils were less likely to have been subject to bullying in the last term (OR = 0.53, 95% CI 0.29, 0.96). There was evidence that those with moderate (OR = 0.57, 95% CI 0.46, 0.71) and high (OR = 0.54, 95% CI 0.35, 0.83) levels of social support from friends were about half as likely to have been bullied.

Bullying and academic achievement

45.6% of the sample reached the academic achievement benchmark. Table 2 shows the crude odds ratios for the association between achievement and the main exposure variables. Those that had been bullied in the last term were approximately half as likely to achieve the benchmark (OR = 0.46, 95% CI 0.29, 0.72). Those in the older age group were 1.5 times more likely to reach the benchmark than those in the younger age group (OR = 1.50, 95% CI 1.12, 2.03). Girls were more likely to reach the benchmark than boys (OR = 1.84, 95% CI 1.18, 2.86). Indian children were approximately twice as likely to reach the achievement as white pupils (OR = 1.97, 95% CI 1.37, 2.84). There was very strong evidence for lower performance by those pupils eligible for free school meals (OR = 0.55, 95% CI 0.43, 0.71). There was some evidence that high levels of social support from family were associated with lower levels of achievement (OR = 0.74, 95% CI 0.59, 0.93).

Table 3 shows the adjusted models with achievement as the outcome variable. Adjusting for age group, gender, ethnicity and eligibility for free school meals reduced the crude odds ratio for the sample to 0.46 (95% CI 0.28, 0.76), a very modest reduction.

There was little evidence for social support from friends as a confounder of the relationship between bullying and achievement; the odds ratio fell to 0.45 when this was added to the model (95% CI 0.27, 0.75). Support from family also had little effect (OR = 0.46, 95% CI 0.28, 0.76). Mantel–Haenszel analysis provided some evidence for an interaction between bullying and social support from friends (test for homogeneity of odds ratios p-value = 0.013) and a very weak suggestion of an interaction between bullying and social support from family (test for homogeneity of odds ratios p-value = 0.130). Social

Table 1
Characteristics of sample and association between key variables and being bullied: univariate logistic regression analyses.

	%	N	OR (95% CI) bullied this term	p-value
Age group				
Younger	49.5	1381	1	
Older	50.5	1408	0.56 (0.39, 0.80)	0.003
Gender				
Male	48.6	1355	1	
Female	51.4	1434	0.88 (0.64, 1.22)	0.432
Ethnicity				
White	27.0	742	1	
Bangladeshi	25.1	690	0.69 (0.42, 1.14)	0.142
Black	20.9	575	0.84 (0.48, 1.45)	0.510
Indian	9.1	250	0.53 (0.29, 0.96)	0.036
Pakistani	6.7	184	1.12 (0.56, 2.24)	0.741
Other	11.2	308	1.36 (0.75, 2.45)	0.294
Eligible for FSM				
No	52.4	1338	1	
Yes	47.6	1217	0.75 (0.47, 1.19)	0.211
Family soc support				
Low	30.0	805	1	
Moderate	36.2	974	0.91 (0.56, 1.52)	0.735
High	33.8	909	1.13 (0.75, 1.69)	0.551
Friends soc support				
Low	30.9	830	1	
Moderate	33.9	912	0.57 (0.46, 0.71)	<0.0001
High	35.2	946	0.54 (0.35, 0.83)	0.006

Table 2
Association between key variables and reaching achievement benchmark: univariate logistic regression analyses.

	OR (95% CI) reached achievement benchmark	*p*-value
Bullied		
No	1	
Yes	0.46 (0.29, 0.72)	0.002
Age group		
Younger	1	
Older	1.50 (1.12, 2.03)	0.009
Gender		
Male	1	
Female	1.84 (1.18, 2.86)	0.009
Ethnicity		
White	1	
Bangladeshi	1.10 (0.72, 1.68)	0.635
Black	1.22 (0.79, 1.88)	0.360
Indian	1.97 (1.37, 2.84)	0.001
Pakistani	0.82 (0.49, 1.36)	0.423
Other	1.86 (1.10, 3.16)	0.022
Eligible for FSM		
No	1	
Yes	0.55 (0.43, 0.71)	<0.0001
Family soc support		
Low	1	
Moderate	0.94 (0.74, 1.20)	0.624
High	0.74 (0.59, 0.93)	0.011
Friends soc support		
Low	1	
Moderate	1.15 (0.93, 1.41)	0.182
High	1.04 (0.80, 1.35)	0.753

support from friends was protective. After adjustment for a bullying × friends social support interaction, bullying was not associated with educational achievement for students with high levels of support from friends. For students who did not have high levels of support from friends, bullying was associated with lower odds of achieving the academic benchmark. Bullied students with moderate (OR = 0.27, 95% CI 0.11–0.65) or low (OR = 0.38, 95% CI 0.19–0.76) levels of support had approximately a third of the odds of achieving the academic benchmark, compared to students who were not bullied.

Introducing the bullying × family social support interaction resulted in an interesting finding; for students with moderate levels of support from family, bullying did not appear to be associated with lower odds of achieving the academic benchmark (OR = 1.00, 95% CI 0.49–2.06). However, there was evidence that bullied students with either high (OR = 0.20, 95% CI 0.07–0.51) or low (OR = 0.40, 95% CI 0.21–0.76) levels of social support from family had lower odds of achieving the benchmark compared to those students who were not bullied.

Bullying and depression

27.3% of the sample had depressive symptoms. Table 4 shows the crude odds ratios for the association between depressive symptoms and the main exposure variables. Those bullied in the last term were approximately one and a half times more likely to have depressive symptoms (OR = 1.42, 95% CI 1.05, 1.94). There was weak evidence that those in the older age group were more likely to be depressed (OR = 1.25, 95% CI 0.99, 1.59). There was very strong evidence for a higher prevalence of depressive symptoms amongst girls. They were more than twice as likely to show depressive symptoms as boys (OR = 2.16,

Table 3
Association between bullying and reaching achievement benchmark: multivariate logistic regression analyses (N = 1587).

	OR (95% CI)	*p*-value
Crude OR	0.48 (0.30, 0.75)	0.002
Adjusting for age group, gender, ethnicity, eligibility for free school meals	0.46 (0.28, 0.76)	0.004
+Friends social support	0.45 (0.27, 0.75)	0.004
+Family social support	0.46 (0.28, 0.76)	0.004
+Bullying × friends social support	Low support: 0.38 (0.19, 0.76)	0.009
	Moderate support: 0.27 (0.11, 0.65)	0.005
	High support: 0.89 (0.40, 1.99)	0.775
+Bullying × family social support	Low support: 0.40 (0.21, 0.76)	0.007
	Moderate support: 1.00 (0.49, 2.06)	0.999
	High support: 0.20 (0.07, 0.51)	0.002

Table 4
Association between key variables and depressive symptoms: univariate logistic regression analyses.

	OR (95% CI) depressive symptoms	p-value
Bullied		
No	1	
Yes	1.42 (1.05, 1.94)	0.026
Age group		
Younger	1	
Older	1.25 (0.99, 1.59)	0.058
Gender		
Male	1	
Female	2.16 (1.74, 2.68)	<0.0001
Ethnicity		
White	1	
Bangladeshi	1.37 (0.92, 2.03)	0.111
Black	1.01 (0.73, 1.38)	0.965
Indian	1.53 (0.93, 2.51)	0.091
Pakistani	0.87 (0.56, 1.36)	0.526
Other	1.36 (0.95, 1.95)	0.954
Eligible for FSM		
No	1	
Yes	0.91 (0.71, 1.17)	0.441
Family soc support		
Low	1	
Moderate	0.60 (0.49, 0.72)	<0.0001
High	0.44 (0.31, 0.61)	<0.0001
Friends soc support		
Low	1	
Moderate	0.79 (0.61, 1.02)	0.070
High	0.90 (0.69, 1.16)	0.400

95% CI 1.74, 2.68). Pupils with high levels of family social support were less than half as likely to have depressive symptoms (OR = 0.44, 95% CI 0.31, 0.61). Moderate family social support was also associated with lower odds of depressive symptoms (OR = 0.60, 95% CI 0.49, 0.72).

Table 5 shows the adjusted models with depression as the outcome variable. There was evidence from the Mantel–Haenszel analysis for a difference in odds ratios by gender (test for homogeneity of odds ratios p-value = 0.019). Adjusting for age group, gender and ethnicity with a gender × bullying interaction led to an odds ratio for bullying for boys of 2.34 (95% CI 1.41, 3.87) and an odds ratio of 1.11 (95% CI 0.67, 1.84) for girls. Bullying thus appeared to have an effect on the mental health of boys, but not that of girls. Adjusting for social support from friends led to a reduction in the odds ratio for boys to 2.17 (95% CI 1.31, 3.61) although bullying still had a significant impact (p = 0.004). Adjusting for social support from family did not result in the impact of bullying on depression being attenuated (OR = 2.29, 95% CI 1.34, 3.93). Adding depressive symptoms at baseline to the model resulted in a reduction in the odds ratio for bullying to 1.60 (95% CI 0.92, 2.77). Weak evidence for an association between being bullied and depressive symptoms for boys at follow-up remained (p = 0.091).

Discussion

9.1% of adolescents in our sample reported being bullied in the previous term. Bullying had a strong impact on academic achievement for boys and girls. It also impacted negatively on boys' mental health. Boys and girls were equally likely to be victims of bullying. There were few differences in the percentage of students who were bullied across ethnic groups. There was evidence that bullying decreased with age and that those with high levels of social support from their friends were less

Table 5
Association between bullying and depressive symptoms: multivariate logistic regression analyses (N = 1794).

	OR (95% CI)	p-value
Crude OR	1.42 (1.02, 1.95)	0.035
Adjusting for age group, gender, ethnicity, gender × bullying	Boys: 2.34 (1.41, 3.87)	0.002
	Girls: 1.11 (0.67, 1.84)	0.682
+Friends social support	Boys: 2.17 (1.31, 3.61)	0.004
	Girls: 1.08 (0.65, 1.79)	0.760
+Friends social support, family social support	Boys: 2.29 (1.34, 3.93)	0.004
	Girls: 1.10 (0.65, 1.88)	0.708
+Friends social support, family social support, depressive symptoms at baseline	Boys: 1.60 (0.92, 2.77)	0.091
	Girls: 0.84 (0.48, 1.45)	0.512

likely to be bullied. There was evidence that a high level of support from friends was able to protect bullied adolescents from poor achievement at school. A moderate (but not high) level of support from the family was also protective.

Bullying prevalence

Other research has observed a decline in bullying prevalence with age, as is found here (Newman et al., 2005; Smith et al., 1999). The importance of social support from friends (as opposed to family) in reducing an adolescent's chance of being bullied is of interest. This supports previous literature which has argued that adolescents spend increasing amounts of unsupervised time with their peers rather than their family (Marini et al., 2006; Wentzel & Caldwell, 1997). It has been argued that their support may be more important than family support as it is in adolescence that independence from parents is developed (Sebald, 1992; Youniss & Smollar, 1985).

Academic achievement

Being bullied had a strong impact on an adolescent's chances of achieving the national academic benchmark for their age. One possible mechanism for the finding is that those that are bullied have been found to be more likely to play truant or be absent from school for other reasons (Smith et al., 2004). It does not support accounts that suggest that bullied pupils are able to turn to and succeed at school work in order to escape from the problems that they are experiencing (Sharp, 1995).

Family social support protects against poor outcomes only when it is provided at a moderate level. Low or high support is associated with decreased odds of reaching the academic benchmark for pupils who are bullied. It may be that social support operates to produce a variety of outcomes. Whilst some argue that parental support is important for the development of resilience in adolescents, over-protective parenting may have the opposite effect and make young people less assertive and independent (Bowen, Smith, & Binney, 1994; Olweus, 1993; Swihart & Cotter, 1997). High levels of social support from friends, on the other hand, do appear to be able to protect against the negative impact of bullying. It may be that a high level of social support from friends has a particular role in limiting the extent of any bullying that does occur. Friends may intervene rather than standing by; it has been shown that if bystanders become involved in preventing their friends being bullied, they are usually successful (Hawkins et al., 2001).

Depression and bullying

Being bullied had a strong impact on the odds of being depressed. When a gender × bullying interaction was introduced into the analysis, it was found that this was only the case for boys. A key question raised by the analysis, then, is why boys are affected by the stress of bullying and girls are not. A Finnish study found that girls more often reported using the more constructive tactic of "stress-recognition" (for example crying or screaming in addition to seeking support) as a strategy than boys (Olafsen & Viemero, 2000). Another study in Finland found that a higher proportion of girls than boys used the effective strategy of "nonchalance" in response to bullying, although both boys and girls frequently used less helpful responses. In the case of girls this was more usually "helplessness" and for boys "counteraggression" (Salmivalli, Karhunen, & Lagerspetz, 1996). Strategies that seek compromise may also be effective (Feldman & Gowan, 1998). It has been found that girls are more likely to run for help or comfort the victim or demonstrate conflict resolution strategies (Feldman & Gowan, 1998; Osterman et al., 1997; Salmivalli, Lagerspetz, Bjorkqvist, Osterman, & Kaukiainen, 1996).

Limitations and strengths

The main strengths of the study lie in its use of a representative sample of young people and the availability of standardised and previously validated measures of psychological distress. The large minority ethnic component of the sample enabled analysis by ethnic grouping; this has often been a problem in analysis of educational differentials by ethnicity (Demack, Drew, & Grimsley, 2000; Drew & Gray, 1990). The data is also unusual in that it provides comprehensive measures of psychological distress alongside information on educational achievement; few British datasets provide this.

The bullying items do not provide a definition of what bullying is. However, the term "bullying" is more familiar in English than in a number of other languages and has been in usage for a long time (Smith, Cowie, Olafsson, & Liefooghe, 2002). Smith et al. (2002) found that fourteen year olds in their sample were able to clearly separate physical "aggression" and physical "bullying" using cartoon depictions.

The fact that the key measures are self-report raises issues. One is the unmeasured results of an adolescent's realisation that they are being bullied. It may be that adolescents who recognise the bullying that they are being subjected to are better equipped than those that do not as they are more prepared to respond in an assertive manner. It is possible, then, that the analysis reported here underestimates the negative effects of bullying as it does not take account of those adolescents that are bullied but are unable or unwilling to recognise the nature of the treatment that they are experiencing. There is a similar problem with the measurement of social support. However, perceived support has been found to be protective, even when perceptions are not accurate (Lakey & Cassady, 1990).

A final issue is that of missing data. There was evidence that those who did not reach the academic benchmark and who had depressive symptoms were less likely to have data on bullying. This may have led to an over- or underestimation of the

association between bullying and the key outcomes. Sensitivity analysis was carried out whereby it was assumed in the first set of analyses that all pupils with missing data on bullying had experienced being bulled and in the second set of analyses that they had not. The main findings were the same.

Conclusions and future research

Although support from family and friends can protect adolescents against poor academic outcomes, the analysis here has demonstrated that support from friends and family alone cannot mitigate against the strong negative effect that bullying has on mental health amongst secondary school pupils in East London. It has been shown in other studies that being bullied can have a longer term impact and contribute to both poor mental health, trouble with personal relationships and unemployment risk in adulthood (Gladstone, Parker, & Malhi, 2006; Hugh-Jones & Smith, 1999; Varhama & Bjorkqvist, 2005). Given its substantial impact, it seems vital that strategies to tackle the problem are developed to prevent the development of the most serious consequences such as suicide attempts (Rigby & Slee, 1999). Early and wide-ranging intervention may avoid the need for specialist psychiatric consultation, to which bullied children are disproportionately referred (Kumpulainen et al., 1998, 2001).

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