Cyberbullying and adolescent well-being in England: a population-based cross-sectional study

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Summary

Background Bullying is a major public health problem. We aimed to estimate the prevalence of cyberbullying and traditional bullying among adolescents in England, and assess its relative effects on mental well-being.

Methods In this population-based study, we analysed data from a nationally representative cross-sectional study, What About Youth, which enrolled a random sample of 298 080 school pupils drawn from 564 886 National Pupil Database records of adolescents aged 15 years, living in England, with matching postcode and local authority data, to complete self-report surveys between Sept 22, 2014, and Jan 9, 2015. Mental well-being, defined as life satisfaction, fulfilling social relationships, purpose in life, and a subjective sense of flourishing, was assessed using the Warwick-Edinburgh Mental Well-being Scale and was compared between those adolescents who reported traditional bullying (including physical, verbal, and relational bullying) or cyberbullying 2–3 times a month or more compared with those adolescents who reported traditional bullying and cyberbullying once or twice in the past couple of months or less. Traditional bullying was defined as repeated, intentional aggression that is targeted at a person who cannot easily defend himself or herself; cyberbullying was additionally defined as taking place in an electronic context (eg, e-mail, blogs, instant messages, text messages).

Findings 120 115 eligible adolescents completed questionnaires, of whom 110 788 adolescents completed measures of bullying. 33 363 (adjusted: 30% total, 20 668 girls [36%], 12 695 [24%] boys) reported any form of regular bullying in the past couple of months. 29 302 (27% total, 17 745 [31%] girls, 11 557 [24%] boys) reported physical, verbal, and relational (ie, traditional) bullying only, while 406 (<1% total, 276 [<1%] girls, 130 [<1%] boys,) reported only cyberbullying, and 3655 (3% total, 2647 [5%] girls, 1008 [2%] boys) reported both traditional and cyberbullying. Both kinds of victimisation were related to poorer mental well-being (adjusted analyses, traditional: *b* coefficient=–1·99 (SE 0·001); cyberbullying: *b* coefficient=–0·86 (0·06). Cybervictimisation accounted for less than 0·1% of observed variability in mental well-being compared with 5·0% of variability accounted for by traditional victimisation.

Interpretation Traditional bullying is considerably more common among adolescents in England than cyberbullying. While both forms of bullying were associated with poorer mental well-being, cyberbullying accounted for a very small share of variance after adjustment for offline bullying and other covariates.

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Introduction

Bullying is a major public health problem. Adolescents who are victimised by their peers are at increased risk of multiple negative health outcomes. Population attributable fractions in the range of 25–40% suggest that a substantial proportion of mental health problems, including depression and self-harm, might be attributable to bullying if this is a causal relationship.[1,2] In view that children's use of the internet has doubled in the past decade,[3] much research has focused on the phenomenon of cyberbullying, defined here as repeated, intentional aggression that takes place in an electronic context (eg, e-mail, blogs, instant messages, text messages) and is targeted at a person who cannot easily defend himself or herself.[4] Concerns have been raised that cyberbullying has the potential to cause more harm than traditional bullying due to the relative anonymity of perpetrators in many cases, larger audiences, increasing prevalence, and permanence of posted messages.[5] Much debate remains over whether cyberbullying might be more or less strongly associated with harmful outcomes than traditional bullying.[4–9]

Prevalence rates of cyberbullying vary, partly because of the absence of a standardised definition and validated cutoffs, as well as non-nationally representative samples. A study by Vazsonyi and colleagues[10] published in 2012 sampled 1032 UK students as part of a larger study of 9–16-year-olds from 25 European countries (EU Kids Online II Project) and reported that 8% self-reported having been cyberbullied compared with 21% reporting any form of traditional bullying. In a 2017 study of 2745 11–16-year-olds in five secondary schools in the Midlands, UK, 29% reported having been bullied in the past 6 months, but only 1% of adolescents reported only cyberbullying and no traditional bullying.[11] Some studies have reported gender differences in prevalence rates, with girls reporting more cyberbullying victimisation than boys.[4] This finding is in keeping with studies of traditional bullying involvement.[9,11,12] Typically, boys have been reported to

Research in context

Evidence before this study

We searched PsycINFO and MEDLINE to identify potential literature published in English before May 19, 2017, using the search string "(bulli* OR bully* OR peer victimization) and (cyber*) and (prevalence)". We identified 257 peer-reviewed articles in PsycINFO and 132 in MEDLINE, of which 95 provided relevant data for prevalence. Prevalence rates for cyberbullying were generally reported to be lower than for traditional bullying, although it has been suggested that cyberbullying might be on the rise. Few studies used nationally representative samples. Systematic reviews support an association between adolescent bullying and poor mental well-being outcomes. Some claim that cyberbullying might place adolescents at greater risk of poor mental well-being than traditional bullying, however, evidence is conflicting.

Added value of this study

Our nationally representative sample of 120 115 adolescents in England is, to the best of our knowledge, the largest study to date that examines the prevalence rates of traditional and cyberbullying. We found that prevalence rates of cyberbullying (4%) are lower than that of offline bullying (30%). Cyberbullying remained associated with poorer well-being after adjusting for the effects of traditional bullying, but accounted for only 0.1% of variance in well-being scores, compared with 5.0% for traditional bullying.

Implications of all the available evidence

Our results and previous literature support an association between bullying (cyberbullying and traditional) and poorer well-being. The findings support the need for evidence-based interventions that target both traditional bullying and cyberbullying. Social media and internet connectivity are becoming an increasingly intrinsic part of modern childhood, and initiatives fostering resilience in online and every day contexts are needed.

be at increased risk of involvement in direct forms of bullying both as victims and perpetrators, while girls are more likely to both experience and engage in indirect forms of bullying.[13] In view of the rise in the use of mobile and online technologies among young people, an up to date estimation of the current prevalence of cyberbullying in the UK is needed. We report data from the largest study to date estimating the prevalence of bullying and cyberbullying among a nationally representative sample of adolescents aged 15 years across England, and estimate its effect on mental well-being, an important and widely studied aspect of child and adolescent health.

Mental well-being is more than the absence of psychopathology or ill health,[14] and reflects life satisfaction, fulfilling social relationships, purpose in life, and a subjective sense of flourishing.[15] Mental well-being could be protective for a range of health outcomes, as well as increased educational attainment in childhood and adolescence, and better occupational functioning in adulthood.[16] The promotion of mental well-being has large-scale social and economic benefits, placing this as an important component of public health policy.[17] This notion is of particular relevance to the UK, which was recently ranked 20th of 27 European Union countries on the mental well-being index. The effect of bullying on adolescents' mental well-being has been largely overlooked, with research focusing mainly on bullying as a risk factor for psychiatric morbidity.[1,18,19] Whether cyberbullying is related to mental well-being independent of involvement in traditional bullying is unknown. The promotion of well-being is now one of the key UN Sustainable Development Goals, and an analysis of the relation between bullying and adolescent well-being is timely.

For more on the **What about Youth Study** see http://www.whataboutyouth.com/who-we-are.aspx

For the **OECD Stat Better Life Index** see http://stats.oecd.org/index.aspx?DataSetCode=BLI

The aims of our research are three-fold. First, we report an up-to-date estimate of the prevalence of both traditional and cyberbullying among a large-scale, nationally representative sample of 15-year-olds in England. Second, we estimate the magnitude of the relations between these forms of bullying and mental well-being. Finally, we estimate the extent to which cyberbullying, a new medium for bullying behaviours, is related to mental well-being once the effect of more traditional forms of bullying has been accounted for.

Methods

Study design and participants

In this population-based cross-sectional study, data were collected as part of the What about Youth Study, which was conducted by the UK Health and Social Care Information Centre (now National Health Service Digital) between Sept 22, 2014, and Jan 9, 2015. Participants were identified using the UK's Department for Education National Pupil Database. Fieldwork covered 150 local authorities across England with the aim of making sufficient observations to attain a 0·3% margin of error at a 95% CI for youths in England aged 15 years. A prenotification letter was sent to parents or carers of participants giving them the opportunity to opt their child out of the survey. As shown in figure 1, 120 115 participants responded with usable data through the use of paper (n=100 850) or online questionnaires (n=19 265) and sensitivity analyses comparing the direction and strength of the results for each method indicated the pattern of findings did not vary between these methods. Response rates were typical of large-scale surveys of this kind, and varied by sex, with adjusted response rates of 57 153 (35%) for boys and 62 962 (49%) for girls.[20]

Response rates also varied across local authorities, with the lowest adjusted rates recorded in the London Boroughs of Kensington and Chelsea and Hammersmith and Fulham (both 28%). The highest response rates were recorded in Devon (50%), Wiltshire (50%), Poole (50%), and Somerset (50%). To correct for differences in the levels of non-response by different groups of the population, a non-response weight was used based on key variables for which it was possible to compare the whole population and the achieved sample. The key variables were ethnicity, eligibility for free school meals, and indices of multiple deprivation (IMD) quintile. Further details of the weighting procedure used can be found in the What About Youth Technical Report.[21]

Ethical review was conducted by the UK's National Children's Bureau and review for data analysis was conducted by the research ethics committee at University of Oxford (C1A16015).

Outcomes

The Warwick-Edinburgh Mental Well-being Scale, a unidimensional 14-item self-report instrument validated for use in general population samples of individuals aged 13 years and older, was used to measure psychosocial health, well-being, and functioning. Participants used a 5-point scale that ranged from 0 "None of the time" to 5 "All of the time". 117 842 participants (98%) completed this measure which showed robust internal consistency (α=0·90) and individual scores were computed for each participant by summing items (M=47·63 [SD 9·45]).

Procedures

Explanatory variable—traditional and cyberbullying

Participants completed a brief 8-item checklist derived from the revised Olweus Bully/Victim Questionnaire[22] meant to assess the extent to which they had recently experienced other children directing different types of bullying towards themselves. Bullying was described as "…when another person, or a group of people, say or do nasty and unpleasant things to him or her. It is also bullying when a person is teased repeatedly in a way he or she does not like or when he or she is deliberately left out of things. Bullying may happen over the Internet or by text or phone messages. It is not bullying when a person is teased in a friendly and playful way." Six statements reflecting traditional bullying (physical, verbal, and relational)—eg, "I was hit, kicked, pushed, shoved around, or locked indoors", "Other people left me out of things on purpose, excluded me from their group of friends, or completely ignored me", and two reflected cyberbullying—eg, "Someone sent mean instant messages, wall postings, emails and text messages, or created a website that made fun of me", were rated by participants using a 5-point response scale that ranged from 0="I haven't been bullied this way in the past couple of months" 1="It has happened once or twice", 2="2 or 3 times a month", 3="2 or 3 times a week", to 4="Several times a week." A cutoff "2 or 3 times a month" was selected to represent regular bullying in line with existing research[23] to distinguish between young people who were meaningfully involved in bullying and those who were not. 110 788 participants (92%) completed this measure which also showed good internal consistency (α=0·90). Using this well validated cutoff, 32 957 (30%) participants (adjusted) reported regular traditional bullying and 4061 (4%) participants reported regular cyberbullying. To obtain a measure of the degree of exposure to bullying, we summed the number of items of traditional bullying and, separately, cyberbullying each participant endorsed at greater than "2 or 3 times a month".

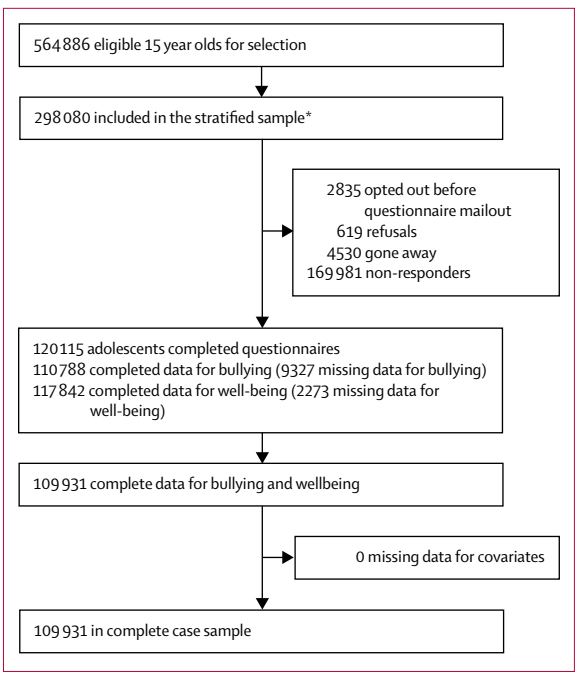

Figure 1: **Flow chart of What About Youth study participants**
*Stratified by sex within local authority and within each group ordered by postcode, output area, lower super output area, and rurality.

Control variables

Participant sex, material deprivation, and being a member of an ethnic minority were treated as control variables on the basis of previous research suggesting that these factors might be associated with differences in prevalence of bullying or its correlates.[23–25] Participants who self-identified as male were coded 1; females were coded 0. In line with the approach taken by the UK Department of National Statistics, postcode data were used to determine material deprivation; if participants lived in a relatively deprived local authority district, the lower two quintiles of the multiple deprivation index, they were coded 1; if not they were coded 0. If participants identified as having an ethnic background other than white they were coded 1; if not they were coded 0.

Statistical analysis

In line with the primary aims of our research, three kinds of statistical analyses were done. First, descriptive statistics estimating the period prevalence of both forms of traditional and cyberbullying were computed. Second, non-parametric (ie, Kendall's Tau-b) correlation analyses estimating the strength, direction, and significance of the relations between reporting recent regular experience with either form of bullying and psychological well-being were conducted. Finally, multiple regression models were used to estimate the strength, direction, and significance of the relations linking traditional and cyberbullying to psychological well-being, holding variability in the control variables constant. In this model we used the degree of exposure to each form of bullying, the sum of the items the participant endorsed at greater than "2 or 3 times a month". These primary analyses were supplemented with three sensitivity tests. The first two sensitivity tests examined life satisfaction as an alternative outcome using both correlational and multiple regression models following the procedure used for psychological well-being. The third sensitivity test was a multinomial regression model, which examined the relative odds that exposure to each form of bullying or a combination of the two related to the chance of adolescents reporting scores that fell in the bottom 20% of the psychological well-being distribution.

Role of the funding source

There was no funding for this study. Both authors have had full access to the data and take responsibility for its integrity and the accuracy of the data analysis. AKP had final responsibility for the decision to submit for publication.

Data sharing

All data, materials, and code are available for download using the Open Science Framework.

For the **data, materials, and code** see osf.io/6xkdv/

	Total (n=110 788)	Girls (n=57 938)	Boys (n=52 850)
Traditional bullying			
I was called mean names, was made fun of, or teased in a hurtful way			
Not bullied this way	74 866 (67%)	37 880 (65%)	36 986 (70%)
1–2 times in the past 2 months	23 182 (21%)	12 969 (23%)	10 213 (20%)
2–3 times a month	5110 (5%)	3020 (6%)	2090 (4%)
2–3 times a week	4159 (4%)	2296 (4%)	1863 (4%)
Several times a week	3471 (3%)	1773 (3%)	1698 (3%)
Other people left me out of things on purpose, excluded me from their group of friends, or completely ignored me			
Not bullied this way	79 882 (72%)	37 934 (65%)	41 948 (79%)
1–2 times in the past 2 months	20 676 (19%)	13 107 (23%)	7569 (14%)
2–3 times a month	4778 (4%)	3231 (6%)	1547 (3%)
2–3 times a week	2905 (3%)	1953 (4%)	952 (2%)
Several times a week	2547 (2%)	1713 (3%)	834 (2%)
I was hit, kicked, pushed, shoved around, or locked indoors			
Not bullied this way	101 358 (91%)	54 019 (93%)	47 339 (89%)
1–2 times in the past 2 months	6758 (6%)	2865 (5%)	3893 (8%)
2–3 times a month	1262 (1%)	521 (1%)	741 (2%)
2–3 times a week	815 (1%)	308 (1%)	507 (1%)
Several times a week	595 (1%)	225 (<1%)	370 (1%)
Other people told lies or spread false rumours about me and tried to make others dislike me			
Not bullied this way	78 291 (70%)	37 720 (64%)	40 571 (76%)
1–2 times in the past 2 months	22 192 (20%)	13 542 (24%)	8650 (17%)
2–3 times a month	5356 (5%)	3465 (6%)	1891 (4%)
2–3 times a week	2424 (2%)	1547 (3%)	877 (2%)
Several times a week	2525 (2%)	1664 (3%)	861 (2%)
Other people made fun of me because of my bodyweight			
Not bullied this way	92 182 (83%)	46 311 (79%)	45 871 (87%)
1–2 times in the past 2 months	11 899 (11%)	7406 (13%)	4493 (9%)
2–3 times a month	3014 (3%)	1981 (4%)	1033 (2%)
2–3 times a week	1861 (2%)	1143 (2%)	718 (1%)
Several times a week	1832 (2%)	1097 (2%)	735 (1%)
Other people made sexual jokes, comments, or gestures to me			
Not bullied this way	89 081 (80%)	44 119 (76%)	44 962 (85%)
1–2 times in the past 2 months	13 027 (12%)	8199 (14%)	4828 (9%)
2–3 times a month	3638 (3%)	2447 (4%)	1191 (2%)
2–3 times a week	2707 (3%)	1803 (3%)	904 (2%)
Several times a week	2335 (2%)	1370 (3%)	965 (2%)

(Table 1 continues in next column)

(Continued from previous column)

	Total (n=110 788)	Girls (n=57 938)	Boys (n=52 850)
Cyberbullying			
Someone sent mean instant messages, wall postings, emails and text messages, or created a website that made fun of me			
Not bullied this way	101 905 (92%)	52 080 (90%)	49 825 (94%)
1–2 times in the past 2 months	6658 (6%)	4267 (8%)	2391 (5%)
2–3 times a month	1177 (1%)	818 (2%)	359 (1%)
2–3 times a week	520 (1%)	400 (1%)	120 (<1%)
Several times a week	528 (1%)	373 (1%)	155 (<1%)
Someone took unflattering or inappropriate pictures of me without permission and posted them online			
Not bullied this way	100 598 (91%)	51 103 (88%)	49 495 (94%)
1–2 times in the past 2 months	7786 (7%)	5121 (9%)	2665 (5%)
2–3 times a month	1343 (1%)	991 (2%)	352 (1%)
2–3 times a week	551 (1%)	376 (1%)	175 (<1%)
Several times a week	510 (1%)	347 (1%)	163 (<1%)

Data are raw observed counts (%) reflecting values from valid response data for each individual form of bullying adjusted and weighted by representativeness of participants across England.

Table 1: **Observed prevalence of different forms of traditional bullying and cyberbullying for female and male adolescents**

Results

120 115 eligible adolescents completed questionnaires, of whom 110 788 adolescents completed measures of bullying. Nearly a third (33 363 (adjusted: 30% total, 20 668 girls (36%), 12 695 [24%] boys) reported any form of regular bullying in the past couple of months. 29 302 (27% total, 17 745 [31%] girls, 11 557 [24%] boys) reported physical, verbal, and relational (ie, traditional) bullying only, while 406 (<1% total, 276 [<1%] girls, 130 [<1%] boys) reported only cyberbullying, and 3655 (3% total, 2647 [5%] girls, 1008 [2%] boys) reported both traditional and cyberbullying. Table 1 presents the prevalence of individual forms of bullying at a 0·3 percentage point margin of error at the 95% CI for this population of adolescents and shows that adolescent girls reported significantly higher levels of all forms of victimisation, except for physical bullying. This pattern replicates earlier research suggesting a gender imbalance in prevalence rates of bullying.[26] The most common forms of bullying were relational, including having lies or false rumours spread about a person, and being called mean names, being made fun of, or teased in a hurtful way. As with other studies our data indicated that 3655 (90%) of those adolescents who experienced cyberbullying also reported regular traditional bullying.

Examination of the average mental well-being score among adolescents in our survey indicated that well-being monotonically declined as a function of combination of bullying experienced (figure 2). Those adolescents reporting no bullying reported the highest levels of well-being and those reporting both forms of bullying reported the lowest. Results from zero-order correlation analyses (Kendall's Tau-b) indicate that those reporting both significant traditional (r_T=–0·21, p<0·0001) and cyberbullying (r_T=–0·11, p<0·0001]) experienced lower well-being.

To test the extent to which traditional and cyberbullying independently predicted well-being, a multistep multiple regression model was assessed. In this model, we regressed the outcome measure, mental well-being, onto the control variables in the first step, and the explanatory variable in the second step. Results from regression models adjusting for control factors (table 2) and post-stratification weighting indicate that although both forms of bullying related to well-being, cyberbullying accounted for less than 0·1% of observed variability in well-being compared with 5·0% of variability accounted for by traditional bullying.

To examine whether associations with well-being were practically meaningful, we conducted a multinomial logistic regression to compare how different experiences of bullying predicted being in the bottom 20% of the total well-being distribution holding constant variability linked to the control variables (table 3). Those adolescents who reported no regular bullying of either type (ie, less than 2–3 times per month) were used as the reference category, and those who reported the presence of regular bullying (at least 2–3 times per month) in terms of traditional only, cyberbullying only, or both, were used as dummy-coded predictors. Results from this analysis indicated that, compared with those adolescents reporting no recent bullying, those who reported regularly experiencing cyberbullying only were more likely to be in the bottom 20% of scores for mental well-being (odds ratio 1·83 [95% CI 1·64–2·05]), as were those who reported regularly experiencing traditional bullying (2·62 [2·58–2·66]), and this pattern was most pronounced for those who reported regularly experiencing both forms of bullying (5·14 [4·98–5·31]).

A further supplementary analysis considering a general measure of adolescent life satisfaction was also

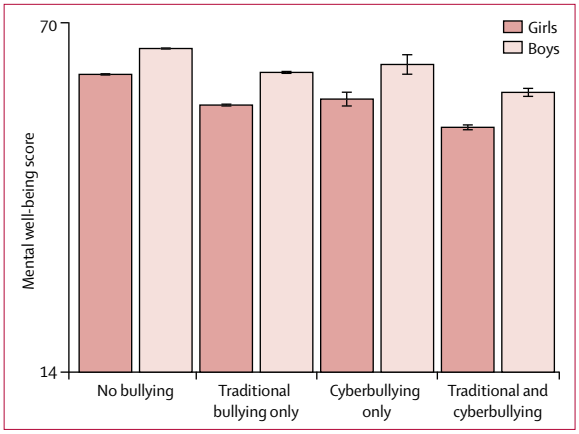

Figure 2: **Observed well-being levels across different experiences of bullying**
Point estimates are adjusted and weighted by representativeness of participants across England. All bullying comparisons were significant at p<0·0001. All male to female comparisons were significant at p<0·0001. Error bars denote the 95% CIs for the observed means.

	b coefficient (SE; 95% CI)	β coefficient	p value
Controls			
Male	5·04 (0·27; 4·98 to 5·09)	0·27	<0·0001
Ethnic minority	0·63 (0·03; 0·56 to 0·69)	0·03	<0·0001
Material deprivation	–0·80 (–0·04; –0·85 to –0·75)	–0·04	<0·0001
Predictors			
Traditional bullying	–1·99 (0·01; –2·02 to –1·97)	–0·25	<0·0001
Cyberbullying	–0·86 (0·06; –0·97 to –0·75)	–0·02	<0·0001

Coefficients reflect values adjusted and weighted by representativeness of participants across England. *b*=unstandardised regression slope coefficients. β=standardised regression slope coefficients. Bullying behaviours reflect the number of traditional or cyberbullying experiences participants reported experiencing at least 2–3 times per month.

Table 2: **Linear regression model examining the effects of bullying on mental well-being**

	b coefficient (SE)	Odds ratio (95% CI for expected odds ratio)	p value
Controls			
Male	–1·04 (0·01)	0·35 (0·35 to 0·36)	<0·0001
Ethnic minority	0·01 (0·01)	1·00 (0·98 to 1·01)	0·915
Material deprivation	0·20 (0·01)	1·22 (1·12 to 1·24)	<0·0001
Predictors†			
Traditional bullying only	0·96 (0·01)	2·62 (2·58 to 2·66)	<0·0001
Cyberbullying only	0·61 (0·06)	1·83 (1·64 to 2·05)	<0·0001
Both traditional and cyberbullying	1·64 (0·02)	5·14 (4·98 to 5·31)	<0·0001

Coefficients reflect values adjusted and weighted by representativeness of participants across England. *b*=unstandardised regression slope coefficients. *The reference category is those in the upper 4 quintiles of mental well-being. †The reference category is individuals who reported neither form of bullying. Bullying behaviours reflect reports of traditional or cyberbullying experienced at least 2–3 times per month.

Table 3: **Multinomial logistic regression model examining effects of bullying on mental well-being***

	b coefficient (SE; 95% CI)	β coefficient	p value
Controls			
Male	0·94 (0·01; 0·93 to 0·95)	0·25	<0·0001
Ethnic minority	–0·04 (0·01; –0·05 to –0·03)	–0·01	<0·0001
Material deprivation	–0·13 (0·01; –0·14 to –0·12)	–0·03	<0·0001
Predictors			
Traditional bullying	–0·51 (0·01; –0·51 to –0·50)	–0·32	<0·0001
Cyberbullying	–0·23 (0·01; –0·25 to –0·20)	–0·03	<0·0001

Coefficients reflect values adjusted and weighted by representativeness of participants across England. *b*=unstandardised regression slope coefficients. β=standardised regression slope coefficients. Bullying behaviours reflect number of traditional or cyberbullying experiences in the past 2 months.

Table 4: **Linear regression model examining the effects of bullying on life satisfaction**

examined. Associations between this four-item scale (α=0·77, M=7·07 [SD 1·91]) indicated that life satisfaction was negatively associated with both traditional (r_T=–0·26, p<0·0001) and cyberbullying (r_T=–0·13, p<0·0001). Results from a regression analysis holding the observed variability in the control variables constant, mirror those found for mental well-being. Traditional bullying accounted for 7·8% of observed variability in life satisfaction whereas cyberbullying accounted for less than 0·1% (table 4).

Discussion

To the best of our knowledge, this is the largest study to date to examine the prevalence of traditional bullying and cyberbullying in adolescents in England. Nearly a third of adolescents studied in England reported experiencing regular bullying in the past couple of months. With the exception of physical bullying, girls reported significantly higher levels of all forms of aggressive behaviour studied. In this large-scale study, we found gender differences in self-reported prevalence rates, supporting previous studies that suggested girls might be more involved in indirect forms of bullying than boys.[13] Gender norms regarding bullying might play a part in self-reporting. Cyberbullying was less common than traditional forms, with one in 20 girls and and one in 50 boys reporting recent regular experience in the past couple of months. Prevalence rates for both types of bullying reported in this study varied from those reported in 2012 by Vazsonyi and colleagues,[10] however, in view of differences in measurement scales used, we cannot comment on whether this indicates a change in rates of bullying. Cyberbullying most commonly occurred alongside traditional bullying; only 406 (<1%) participants reported that they experienced cyberbullying alone, probably because many forms of relational bullying, such as spreading rumours, happen in online and offline contexts. We found that both traditional and cyberbullying were independently associated with lower mental well-being, however, only the relation between traditional bullying and well-being was robust and explained a meaningful share of variance in this large sample. These findings lend support to the position by Wolke and colleagues[11] that cyberbullying is unlikely to provide a source for new victims, but can best be understood as a new avenue for victimisation for those already suffering traditional forms of bullying.[27] Of concern, adolescents who reported having experienced traditional and cyberbullying in the past couple of months were most likely to have low mental well-being scores (ie, scores falling in the lowest 20% of the distribution).

A limitation of our study is that both of our measures of bullying and mental well-being were self-reported. Adolescents with lower levels of mental well-being might also be more likely to perceive or report incidences of victimisation. This could inflate both prevalence rates of bullying and the relation with mental well-being. Although we adopted a well validated measure and cutoff informed by the work of Olweus and colleagues,[22] there is no gold standard measure of bullying, with studies reporting that self-report measures seem to be equally valid compared with parental or teacher methods.[28] Peer nomination methods, although providing high reliability and validity, would not be feasible on a survey as large as ours but future large-scale survey work could build on these findings by using a direct measure of material deprivation (in place of postcode data) and ask about bullying with respect to a longer time frame than a couple of months, in line with the widely used 6 month window.[22,27,28] A second limitation is that the What About Youth Study did not include any measures of mental health problems, nor did

it assess exposure to abuse or neglect, and thus we were unable to adjust for the potential confounding effect of these variables. A third limitation of our study is that it was cross-sectional. Although this is suitable for estimating prevalence, we are unable to estimate direction of effects when examining the relation between bullying and mental well-being. Possibly, adolescents with low mental well-being are more at risk of being bullied by their peers. Findings from other studies suggest that this relation might be reciprocal, leading to a negative cycle of bullying and low mental well-being.[29] Finally, because of the format of our study, only a few control variables could be included and non-white participants were slightly less likely to complete bullying and well-being measures compared with white participants (r_T=–0·08, p<0·0001). With this in mind, a large-scale experience sampling design that tracks a diverse sample of young people over time is needed to determine the extent to which cyberbullying is independently related to mental well-being over time, over and above any links with traditional forms of bullying. Importantly, such a study should examine how personal and background factors might serve to moderate negative youth outcomes.

In our sample, nearly one-in-five adolescents in England aged 15 years reported on their recent experience of bullying. Our findings suggests that nearly a third of these adolescents have experienced regular bullying in the past couple of months, but only one in 25 reported regular cyberbullying. Given that cyberbullying rarely occurred or had observable effects on well-being in isolation, our results suggest that interventions meant to curb the possible negative consequences of cyberbullying will be effective insofar as they also consider and are sensitive to the dynamics of traditional forms of bullying. Our findings support the urgent need for evidence-based interventions that holistically target both forms bullying in adolescence[30] and are in stark contrast to media reports and the popular perceptions that young people are now more likely to be victims of cyberbullying than traditional forms.[31] That understood, as internet connectivity becomes an increasingly intrinsic part of modern childhood, initiatives fostering resilience in online and every day contexts will be needed.

Contributors

AKP conceptualised the project with LB. AKP and LB analysed the data. This paper is the first and only reporting of these data. Both authors made substantial contributions to manuscript write-up.

Declaration of interests

We declare no competing interests.

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