

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

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

METHODS: We analysed data from a nationally representative cross sectional study of 120,115 English adolescents aged 15, who completed surveys between September 2014 and January 2015. Mental well-being was assessed using the Warwick-Edinburgh Mental Well-being Scale.

OUTCOMES: Of the 110,788 adolescents who completed measures of bullying, 33,363 (adjusted: 30.3% total, 36.4% females, 24.4% males) reported any form of significant bullying in the past couple of months. A total of 29,302 (26.6% total, 31.1% females, 24.2% males) reported physical, verbal and relational (i.e. traditional) bullying only, whilst 406 (0.4% total, 0.5% females, 0.2% males) reported only cyber-victimization, and 3,655 (3.4% total, 4.8% females, 2.0% males) reported both traditional and cyberbullying. Both kinds of victimization were related to poorer mental well-being (adjusted analyses, traditional: $b = -1.99$, $SE = 0.01$; cyber: $b = -0.86$, $SE = 0.06$). Cyber-victimization accounted for less than 0.1% of observed variability in mental well-being compared to 5.0% of variability accounted for by traditional victimization.

INTERPRETATION: Traditional bullying is eight times more common among English adolescents than cyberbullying. Whilst 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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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 may be attributable to bullying if this is a causal relationship (1,2). Given children's use of the Internet has doubled in the past decade (3), much research has focused on the phenomena of 'cyberbullying' – repeated, intentional aggression that takes place in an electronic context (e.g., e-mail, blogs, instant messages, text messages) and is targeted at a person who cannot easily defend him- 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). There remains much debate over whether cyberbullying may be more or less strongly associated with harmful outcomes than traditional bullying (4–9).

Prevalence rates of cyberbullying vary, in part due to the lack of a standardized definition, and validated cut-offs, as well as non-nationally representative samples. A study by Vazsonyi and colleagues (10) published in 2012 sampled 1,032 UK students as part of a larger study of 9-16 year olds from 25 European countries (*EU Kids Online II Project*) and found that 8% self-reported having been cyber bullied compared to 21% reporting any form of traditional bullying. In a more recent study of 2,745 11-16 year olds in five secondary schools in the Midlands, UK, 29% reported having been bullied in the past six 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 victimization (4). This is in keeping with studies of traditional bullying involvement (9,11,12). Typically, boys have been found to be at increased risk of

involvement in direct forms of bullying both as victims and perpetrators, whilst girls are more likely to both experience and engage in indirect forms of bullying (13). Given the rise in 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 120,115 adolescents aged 15 years across the England, and estimate its impact on an important and widely studied aspect of child and adolescent health, mental well-being.

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 may be protective for a range health outcomes, as well as higher 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 is of particular relevance to the UK, which was recently ranked 20th of 27 EU countries on the mental well-being index (18). The impact of bullying on adolescents' mental well-being has been largely overlooked, with research focusing primarily on bullying as a risk factor for psychiatric morbidity (1,19,20). It is not known whether cyberbullying is related to mental well-being independent of involvement in traditional bullying. The promotion of well-being is now one of the key UN Sustainable Development Goals, and an analysis of the relationship between bullying and adolescent well-being is timely.

The aims of the present research are threefold. First, we report an up to date estimate of the prevalence of both traditional and cyberbullying among a large-scale, nationally representative sample of English 15 year olds. 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 impact of more traditional forms of bullying has been accounted for.

Method

Participants

Data were collected as part of the *What about Youth Study* conducted by the Health and Social Care Information Centre (now NHS Digital) between 22nd September 2014 and 9th January 2015. Participants were identified using the United Kingdom's Department for Education National Pupil Database. Fieldwork covered a total of 150 local authorities across England with the aim of making sufficient observations to attain a $\pm 0.3\%$ margin of error at a 95% confidence interval for English youths aged 15 years across the country. A pre-notification letter was sent to parents or carers of participants giving them the opportunity to opt their child out of the survey. As indicated in Figure 1, a total of 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, magnitude, and significance of the results for each mode 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 gender, with adjusted response rates of 35 per cent for boys and 49 per cent for girls (21). Response rates also varied across LAs, with the lowest adjusted rates recorded in the London Boroughs of Kensington and Chelsea and Hammersmith and Fulham (both 27.8%). The highest response rates were recorded in Devon (49.6%), Wiltshire (49.7%), Poole (49.7%) and Somerset (50.1%). In order 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. These were ethnicity, free school meals eligibility and indices of multiple deprivation (IMD)

quintile. Further details of the weighting procedure used can be found in the What About Youth Technical Report (22).

Ethics and Open Science Practices

Ethical review was conducted by the United Kingdom's National Children's Bureau and review for data analysis was conducted by the research ethics committee at University of Oxford (C1A16015). All data, materials, and code are available for download using the Open Science Framework (osf.io/6xkdv/).

Outcome variable – Mental well-being

The Warwick-Edinburgh Mental Well-being Scale, a unidimensional 14-item self-report instrument validated for use in general population samples of those aged 13 years and above, was used to measure psychosocial health, well-being, and functioning. Participants used a five point scale that ranged from 0 “None of the time” to 5 “All of the time”. A total of 117,842 participants (98.1%) completed this measure which showed robust internal consistency ($\alpha = .90$) and individual scores were computed for each participant by summing items ($M = 47.63$, $SD = 9.45$).

Explanatory variable – Traditional and Cyberbullying.

Participants completed a brief 8-item checklist derived from the revised Olweus Bully/Victim Questionnaire (23) 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), e.g. “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, e.g. “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 = “Two or three times a month,” to 4 = “Several times a week.” A total of 110,788 adolescents (92.2%) completed the assessment and Table 1 presents the reported frequencies of each form of bullying. A cut-off “2 or 3 times a month” was selected to represent significant bullying in line with existing research (23) to distinguish between young people who were meaningfully involved in bullying and those who were not. Using this well-validated cut-off, 30.0% of participants (adjusted) reported significant traditional bullying and 3.8% participants reported significant cyberbullying. In order 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”.

Control Variables

Participant gender, 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 may be associated with differences in prevalence of bullying or its correlates (24–26). Participants who self-identified as male were coded 1 (females coded 0). In line with the approach taken by the United Kingdom Department of National Statistics postcode data was used to determine material deprivation; if participants lived in a relatively deprived local authority district, 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 Analyses

In line with the primary aims of the present research three kinds of statistical analyses were performed. First, descriptive statistics estimating the period prevalence of both forms traditional and cyberbullying were computed. Second, non-parametric (i.e. Kendall's Tau-b) correlation analyses estimating the strength, direction, and significance of the relations between reporting significant recent 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 participant endorsed at greater than "2 or 3 times a month". These primary analyses were supplemented with three sensitivity tests. The first two 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 reported scores that fell in the bottom 20% of the psychological well-being distribution.

Results

Bullying Prevalence

Nearly one third (30.3%) of the 110,788 adolescents completing the bullying measures in our sample reported experiencing some form of bullying at least two or three times in the past two months, 29,302 (26.6%) reported only traditional bullying, 406 (0.4%) reported only cyberbullying, and 3,655 (3.4%) 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% confidence interval for this population of adolescents and shows

that adolescent girls reported significantly higher levels of all forms of victimisation, excepting physical bullying. This pattern replicates earlier research suggesting a gender imbalance in prevalence rates of bullying (27). 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 90.0% of those who experienced cyberbullying also reported significant traditional bullying.

Bullying and Mental Well-Being

Examination of the average mental well-being score among adolescents in our survey presented in Figure 2 indicated well-being monotonically declined as a function of combination of bullying experienced. Those reporting no bullying reporting the highest levels of well-being and those reporting both forms of bullying the lowest. Results from zero-order correlation analyses (Kendall's Tau-b) indicate that those reporting any significant traditional ($r_T = -.21, p < .001$) and cyberbullying ($r_T = -.11, p < .001$) experienced lower well-being.

To test the extent to which traditional and cyberbullying independently predicted well-being a multi-step multiple regression models was evaluated. 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 to 5.0% of variability accounted for by traditional bullying.

Sensitivity Analyses

To examine whether associations with well-being were practically meaningful, we performed a multinomial logistic regression to compare how different experiences of bullying

predicted being in the bottom 20% of the total well-being distribution (Table 3) holding constant variability linked to the control variables. Those who reported no regular bullying of either type (i.e. less than 2-3 times per month) were used as the reference category, and those who reported the presence of bullying (at least 2-3 times per month) in terms of traditional only, online only, and both were used as dummy-coded predictors. Results from this analysis indicated that, compared to those reporting no recent bullying, those who reported regularly experiencing online bullying only were more likely to be in the bottom 20% of scores for mental well-being (Odds Ratio = 1.83; 95% CI: 1.64 to 2.05), as were those who reported regularly experiencing traditional bullying (Odds Ratio = 2.62; 95% CI: 2.58 to 2.66), and this pattern was most pronounced for those who reported regularly experiencing both forms of bullying (Odds Ratio = 5.14; 95% CI: 4.98 to 5.31).

A further supplementary analysis considering a general measure of adolescent life satisfaction was also examined. Correlations between this four-item scale ($\alpha = .77$, $M = 7.07$, $SD = 1.91$) indicated life satisfaction was negatively correlated with both traditional ($r_T = -.26$, $p < .001$) and cyberbullying ($r_T = -.13$, $p < .001$). Results 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 and cyberbullying less than 0.1% (Table 4).

Discussion

This is the largest study to date to examine prevalence of traditional and cyberbullying in British adolescents. Nearly one third of English adolescents studied reported experiencing significant 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 may be more involved in indirect forms

of bullying than boys (13). It remains possible that gender norms regarding bullying may play a role in self-reporting. Cyberbullying was less common than traditional forms, with one-in-twenty girls and boys reporting recent significant experience in the last 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 given 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 0.4% of participants reported that they experienced cyberbullying alone as 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 relationship 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 (28). Of concern, adolescents who reported having experienced traditional and cyberbullying in the last couple of months were most likely to have low mental well-being scores (i.e. scores falling in the lowest 20% of the distribution).

A limitation of our study is that both our measures of bullying and mental well-being were self-reported. Adolescents with lower levels of mental well-being may also be more likely to perceive or report incidences of victimisation. This may inflate both prevalence rates of bullying and the relationship with mental well-being. Although we adopted a well-validated measure and cut-off informed by the work of Olweus and colleagues (23), there is no 'gold standard' measure of bullying, with studies reporting that self-report measures appear to be equally valid compared to parental or teacher methods (29). Peer nomination

methods, though 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 widely used six month window (23,28,29). 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. Whilst this is suitable for estimating prevalence, we are unable to estimate direction of effects when examining the relationship between bullying and mental well-being. It remains possible that adolescents with low mental well-being are more at risk of being bullied by their peers. Findings from other studies suggest that this relationship might be reciprocal, leading to a negative cycle of bullying and low mental well-being (30). Finally, because of the format of our study only a limited number of control variables could be included and only 92.2% of participants completed the bullying measures and analyses indicated that non-white participants were slightly less likely to complete the measure ($r_T = -0.08$). 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.

Conclusions

In our sample, just under one-in-five of English adolescents aged 15 years reported on their recent experience of bullying. Our findings suggests that nearly one third of these adolescents have experienced regular bullying in the past couple of months but only one in twenty-five

reporting significant cyberbullying. Given that cyberbullying rarely occurred or had observable effects on well-being in isolation, the present results suggest interventions meant to curb the possible negative consequences of cyberbullying will be effective insofar as they 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 (31) 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 (32). That understood, as Internet connectivity become an increasing intrinsic part of modern childhood initiatives fostering resilience in online and every day contexts will be needed.

Research in Context

Evidence before this study

We searched PsycINFO and Medline to identify potential literature published before May 19th 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 on prevalence. Prevalence rates for cyberbullying were generally reported to be lower than for traditional bullying, though it has been suggested that cyberbullying may 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 may 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 English adolescents is the largest study to date that examines the prevalence rates of traditional and cyberbullying in the. We found that prevalence rates of cyberbullying (3.7%) are lower than that of offline bullying (29.7%). Cyberbullying was independently associated with poor well-being over and above effects of traditional bullying, though explained less variance.

Implications of all the available evidence

Our results and previous literature support an association between bullying (cyber- 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.

Authors contributions

Dr. Andrew K. Przybylski (PhD, University of Oxford) conceptualized the project with Dr. Bowes (PhD, University of Oxford). Drs. Przybylski and Bowes conducted data analyses, both authors have had full access to the data, and take responsibility for its integrity and the accuracy of the data analysis. This paper is the first and only reporting of these data. Both authors made substantial contributions to manuscript write-up.

Declaration of Interests

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Table 1. Observed Prevalence of Different Forms of Traditional Bullying and Cyberbullying for Female and Male Adolescents.

Type	Frequency	Total		Females		Males	
Traditional bullying							
I was called mean names, was made fun of, or teased in a hurtful way. %	Not bullied this way	67·0	(74,866)	64·5	(3,7880)	69·5	(36,986)
	1-2 times	21·1	(23,182)	22·7	(12,969)	19·6	(10,213)
	2-3 times a month	4·8	(5,110)	5·5	(3,020)	4·1	(2,090)
	2-3 times a week	3·8	(4,159)	4·1	(2,296)	3·6	(1,863)
	Several times a week	3·3	(3,471)	3·2	(1,773)	3·3	(1,698)
Other people left me out of things on purpose, excluded me from their group of friends, or completely ignored me. %	Not bullied this way	72·0	(79,882)	64·6	(37,934)	79·2	(41,948)
	1-2 times	18·6	(20,676)	23·0	(13,107)	14·3	(7,569)
	2-3 times a month	4·4	(4,778)	5·7	(3,231)	3·0	(1,547)
	2-3 times a week	2·7	(2,905)	3·5	(1,953)	1·9	(952)
	Several times a week	2·4	(2,547)	3·2	(1,713)	1·7	(834)
I was hit, kicked, pushed, shoved around, or locked indoors. %	Not bullied this way	91·0	(101,358)	92·9	(54,019)	89·2	(47,339)
	1-2 times	6·3	(6,758)	5·1	(2,865)	7·5	(3,893)
	2-3 times a month	1·2	(1,262)	1·0	(521)	1·5	(741)
	2-3 times a week	0·8	(815)	0·6	(308)	1·0	(507)
	Several times a week	0·6	(595)	0·4	(225)	0·8	(370)
Other people told lies or spread false rumours about me and tried to make others dislike me. %	Not bullied this way	70·4	(78,291)	64·3	(37,720)	76·4	(40,571)
	1-2 times	20·0	(22,192)	23·6	(13,542)	16·5	(8,650)
	2-3 times a month	4·9	(5,356)	6·1	(3,465)	3·7	(1,891)
	2-3 times a week	2·3	(2,424)	2·8	(1,547)	1·7	(877)
	Several times a week	2·4	(2,525)	3·1	(1,664)	1·7	(861)
Other people made fun of me because of my body weight. %	Not bullied this way	83·0	(92,182)	79·4	(46,311)	86·6	(45,871)
	1-2 times	10·8	(11,899)	13·0	(7,406)	8·6	(4,493)
	2-3 times a month	2·7	(3,014)	3·5	(1,981)	2·0	(1,033)
	2-3 times a week	1·7	(1,861)	2·0	(1,143)	1·4	(718)
	Several times a week	1·7	(1,832)	2·1	(1,097)	1·4	(735)
Other people made sexual jokes, comments, or gestures to me. %	Not bullied this way	80·3	(89,081)	89·6	(44,119)	94·1	(44,962)
	1-2 times	11·7	(13,027)	7·5	(8,199)	4·6	(4,828)
	2-3 times a month	3·3	(3,638)	1·5	(2,447)	0·7	(1,191)
	2-3 times a week	2·5	(2,707)	0·8	(1,803)	0·2	(904)
	Several times a week	2·2	(2,335)	0·7	(1,370)	0·3	(965)
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	91·9	(101,905)	89·6	(52,080)	94·1	(49,825)
	1-2 times	6·0	(6,658)	7·5	(4,267)	4·6	(2,391)
	2-3 times a month	1·1	(1,177)	1·5	(818)	0·7	(359)
	2-3 times a week	0·5	(520)	0·8	(400)	0·2	(120)
	Several times a week	0·5	(528)	0·7	(373)	0·3	(155)
Someone took unflattering or inappropriate pictures of me without permission and posted them online. %	Not bullied this way	90·9	(100,598)	88·1	(51,103)	93·7	(49,495)
	1-2 times	6·9	(7,786)	8·9	(5,121)	5·0	(2,665)
	2-3 times a month	1·2	(1,343)	1·7	(991)	0·7	(352)
	2-3 times a week	0·5	(551)	0·7	(376)	0·3	(175)
	Several times a week	0·5	(510)	0·6	(347)	0·3	(163)

Notes. The percentages reflect values from valid response data adjusted and weighted by representativeness of participants across England. Actual numbers, in parentheses, reflect raw observed counts out of a total of $n = 110,788$ participants, of which $n = 57,938$ were females, $n = 52,850$ were males.

Table 2. Linear Regression Model Examining the Effects of Bullying on Mental Well-Being.

	<i>b</i>	Std· Error	95% CI			β	<i>p</i>
Controls							
Male	5·04	0·27	4·98	to	5·09	0·27	< ·0001
Ethnic Minority	0·63	0·03	0·56	to	0·69	0·03	< ·0001
Material Deprivation	-0·80	-0·04	-0·85	to	-0·75	-0·04	< ·0001
Predictors							
Traditional Bullying	-1·99	0·01	-2·02	to	-1·97	-0·25	< ·0001
Cyberbullying	-0·86	0·06	-0·97	to	-0·75	-0·02	< ·0001

Notes. Coefficients reflect values adjusted and weighted by representativeness of participants across the England. B, unstandardized regression slope coefficients, CI, Confidence Interval, β , standardized regression slope coefficients. Note bullying behaviours reflect the number of traditional or cyberbullying experiences participants reported experiencing at least 2-3 times per month.

Table 3. Multinomial Logistic Regression Model Examining Effects of Bullying on Mental Well-Being.*

	<i>b</i>	Std· Error	Odds Ratio	95% CI for Expected Odds Ratio			<i>p</i>
Controls							
Male	-1·04	0·01	0·35	0·35	to	0·36	< ·0001
Ethnic Minority	0·01	0·01	1·00	0·98	to	1·01	·915
Material Deprivation	0·20	0·01	1·22	1·12	to	1·24	< ·0001
Predictors**							
Traditional Bullying Only	0·96	0·01	2·62	2·58	to	2·66	< ·0001
Cyberbullying Only	0·61	0·06	1·83	1·64	to	2·05	< ·0001
Both Traditional and Cyberbullying	1·64	0·02	5·14	4·98	to	5·31	< ·0001

Notes. Coefficients reflect values adjusted and weighted by representativeness of participants across England. B, unstandardized regression slope coefficients; CI, Confidence Interval for the odds ratio β , standardized regression slope coefficients. *The reference category is those in the upper 4 quintiles of Mental Well-being. **The reference category are those who reported neither form of bullying. Note bullying behaviours reflect reports of traditional or cyberbullying experiencing at least 2-3 times per month.

Table 4. Linear Regression Model Examining the Effects of Bullying on Life Satisfaction.

	<i>b</i>	Std· Error	95% CI			β	<i>p</i>
Controls							
Male	0·94	0·01	0·93	to	0·95	0·25	< ·0001
Ethnic Minority	-0·04	0·01	-0·05	to	-0·03	-0·01	< ·0001
Material Deprivation	-0·13	0·01	-0·14	to	-0·12	-0·03	< ·0001
Predictors							
Traditional Bullying	-0·51	0·01	-0·51	to	-0·50	-0·32	< ·0001
Cyberbullying	-0·23	0·01	-0·25	to	-0·20	-0·03	< ·0001

Notes. Coefficients reflect values adjusted and weighted by representativeness of participants across the United Kingdom. B, unstandardized regression slope coefficients. Note bullying behaviours reflect number of traditional or cyberbullying experiences in the past two months.

Figure 1. Flow chart of What About Youth study participants.

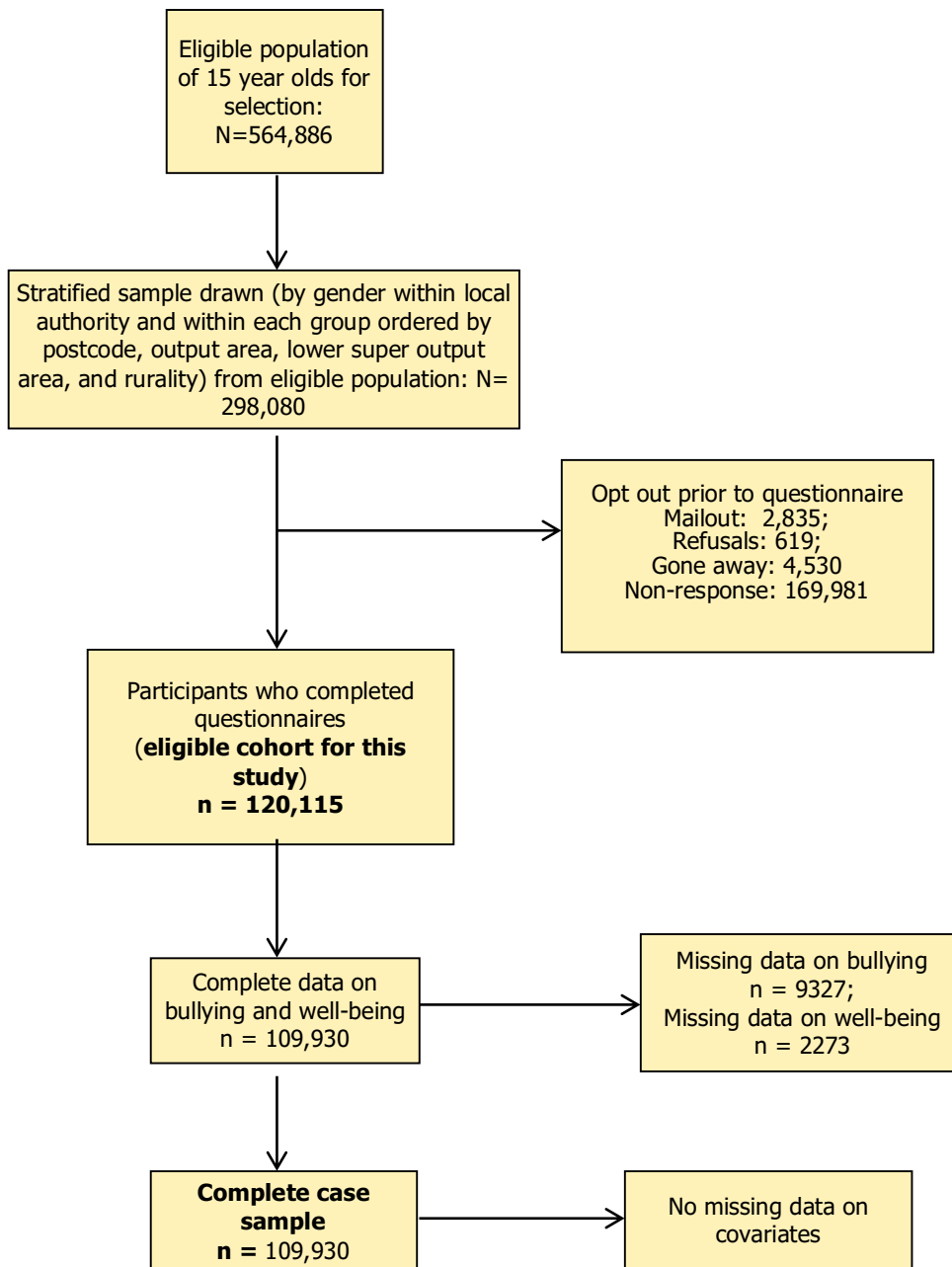
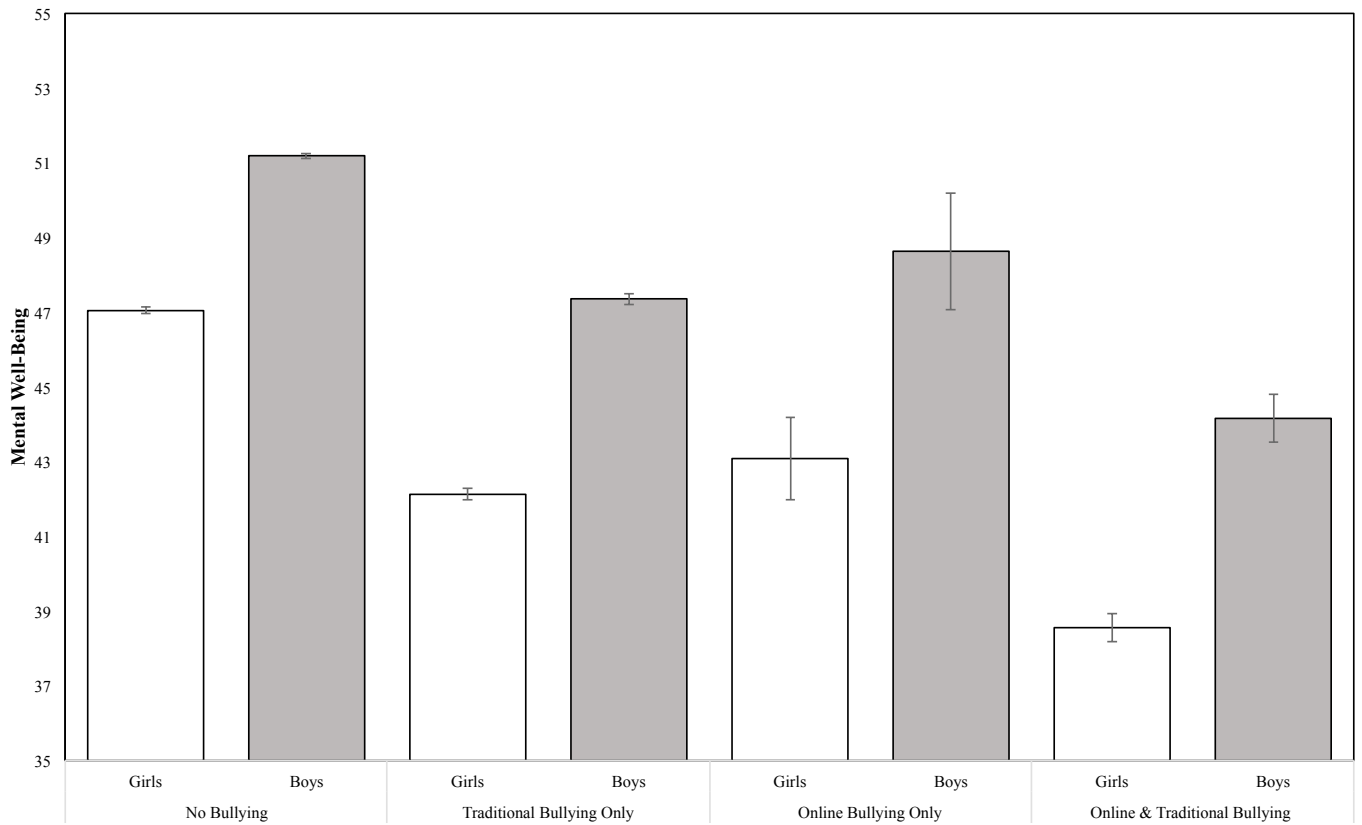


Figure 2. Observed well-being levels across different experiences of bullying.



Notes. Point estimates are adjusted and weighted by representativeness of participants across England. All bullying comparisons were statistically significant. All male to female comparisons were statistically significant at the $p < 0.001$ level. Error bars denote the 95% confidence interval for the observed means.