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Direct and relational bullying among primary school children and academic achievement

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Abstract

The association between bullying behaviour and academic achievement was investigated in 1016 children from primary schools (6–7-year-olds/year 2: 480; 8–9-year-olds/year 4: 536). Children were individually interviewed about their bullying experiences using a standard interview. Key Stage I National Curriculum results (assessed at the end of year 2) were collected from class teachers, and parents completed a behaviour and health questionnaire. Results revealed no relationship between direct bullying behaviour and decrements in academic achievement. Conversely, higher academic achievement at year 2 predicted bullying others relationally (e.g. social exclusion at year 4). Relational victimisation, Special Educational Needs (SEN), being a pupil from a rural school or small classes and low socioeconomic status (SES) predicted low academic achievement for year 2 children. Findings discount the theory that underachievement and frustration at school leads to direct, physical bullying behaviour.
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According to Olweus (1993, 1999), victimisation refers to a student being exposed to negative actions on the part of one or more other students' with the intention to hurt. Bullying must be a repeated action and occur regularly over time (Olweus, 1999) and it usually involves an imbalance in strength, either real or perceived (Craig, 1998; Whitney & Smith, 1993). Bullying can be physical, verbal, or relational (Björkqvist,

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1994; Björkqvist, Lagerspetz, & Kaukianen, 1992), whereby relational victimisation is defined as the purposeful damage and manipulation of peer relationships leading to social exclusion (Crick & Grotpeter, 1995). The first two forms of victimisation have sometimes been labelled as "direct bullying" as they include direct aggressive acts such as hitting, kicking, pinching, taking belongings or money, pushing or shoving, or direct verbal abuse (name calling, cruel teasing, taunting, threatening, etc.). In contrast, relational or "indirect" bullying refers to social exclusion by spreading malicious gossip or withdrawal of friendships (Wolke, Woods, Bloomfield, & Karstadt, 2000). The prevalence of physical and verbal victimisation in primary schools has revealed ranges from 8% to 46% and for bullying others between 3% and 23% across countries worldwide (Smith et al., 1999; Wolke & Stanford, 1999; Wolke, Woods, Schulz, & Stanford, 2001).

Initial research studies into the characteristics of bullying behaviour solely considered those children who were 'pure' bullies or 'pure' victims. However, more recently, research has revealed that a sizeable group of children cannot be simply classified as 'pure' bullies or 'pure' victims but both bully other children and are victimised at other times, and have been termed bully/victims (Kumpulainen et al., 1998; Sutton & Smith, 1999; Wolke & Stanford, 1999; Wolke et al., 2000). Bully/victims have been found to be a distinct group of children in terms of their behavioural characteristics (Schwartz, 2000) and are rated as being the least popular by peers (Forero, McLellan, Rissel, & Bauman, 1999; Wolke & Stanford, 1999), easily provoked, provoke others and are hot tempered (Schwartz, 2000). Furthermore, bully/victims are characterised as having more behaviour problems with hyperactivity, impulsivity, and conduct problems compared to 'pure' victims, 'pure' bullies, or neutral children (Duncan, 1999; Kumpulainen et al., 1998; Wolke et al., 2000).

Less is known about the characteristics of those children involved in relational bullying and an inconsistent profile emerges. Children who are relationally aggressive have been found to be less liked by other children (Crick & Grotpeter, 1995, 1996) and there is also evidence that relational aggression is related to maladjustment in terms of depression, loneliness, anxiety, and social isolation (Björkqvist, 1994; Crick, Casas, & Hyon-Chin, 1999). In contrast, other findings have revealed that those children who are relational 'pure' bullies are physically healthy, enjoy going to school, have few absenteeism's from school, have few behaviour problems in terms of hyperactivity and conduct problems, but are characterised by low prosocial behaviour (Wolke et al., 2000; Wolke, Woods, Bloomfield, & Karstadt, 2001; Wolke, Woods, Schulz, et al., 2001).

Bullying behaviour is a social, group process that is prevalent in the school environment and there are well documented findings regarding the behavioural and health consequences of bullying behaviour at school for both direct and relational bullying profiles (Kumpulainen et al., 1998; Owens, Slee, & Shute, 2000; Williams, Chambers, Logan, & Robinson, 1996; Wolke et al., 2000). However, there is a dearth of research that has considered the association between bullying behaviour per se and academic achievement among primary school children.

Olweus (1978, 1983) first speculated that aggressive behaviour of bullies towards peers could be considered as a reaction to frustrations and failures at school. However, data from a large sample of boys from Greater Stockholm provided no evidence to

suggest that aggressive behaviour was a consequence of poor grades at school. Rather, it was found that both bullies and victims had lower than average marks than neutral children (Olweus, 1978).

In a recent study, Schwartz, Farver, Chang, and Lee-Shin (2002) reported that children who exhibited poor academic performance in school tended to emerge as frequent targets of bullying. However, it was only a subset of victimised children, the aggressive victims (or bully/victims) who were likely to be characterised by poor school performance (Schwartz, 2000). What remains to be established by research studies is whether poor academic achievement leads to bullying involvement or whether being bullied leads to poorer school achievement, possibly mediated by less participation in school.

Research on peer rejection has also considered the relationship to academic achievement and school adjustment. Peer rejection is predominantly assessed by standardised scores that are comparable across classes and school, but does not take into account individual bullying roles within classes. Ladd (1990) considered the academic behaviour and school adjustment of children over the first year of school life and reported that rejected children had less favourable school perceptions, significantly higher levels of school avoidance and significantly lower school performance compared to popular, average, and neglected children. In a similar vein, DeRosier, Kupersmidt, and Patterson (1994) assessed three different cohorts of children over 4 consecutive years and revealed that children who had experienced peer rejection displayed higher levels of absenteeism, and that the youngest cohort of children who were more chronically rejected, performed more poorly on academic tests compared to those children who had never been rejected. However, it was concluded that there was no direct relationship between peer rejection and later academic achievement, and instead an indirect pathway was proposed. Further evidence for this contention was derived from a study by Buhs and Ladd (2001) who found that the effects of peer rejection on children's adjustment were partially mediated through the processes of maltreatment and reduced classroom participation.

Research studies to date have solely considered direct bullying and peer rejection, and no consideration for the possible association between relational bullying status and academic achievement is evident. The profile of relational 'pure' bullies remains controversial, and academic achievement results for these individuals would shed light on the overall characteristic profile for these children. For example, if relational 'pure bullies are found to be characterised by outstanding academic achievement, this would provide further support for the claim by Sutton, Smith, and Swettenham (1999) that 'pure' bullies or ring leaders are socially intelligent and have superior theory of mind skills resulting in enhanced manipulation skills in peer group situations.

To further complicate the picture, academic achievement and school adjustment have been employed interchangeably within research studies, which is potentially problematic as both place different emphasis on aspects of children's academic school life. Academic achievement has been assessed by school records of composite achievement test scores (DeRosier et al., 1994), Task Mastery subscale of the California Preschool Social Competence Scale, (Ladd, 1990), verbal and quantitative subtests of the Metropolitan Readiness Tests (Buhs & Ladd, 2001; Tremlow et al., 2001), and categorical variables rated by teachers as 'this child is excellent', 'this

child is a good student', or 'this child has difficulties with school work' (Schwartz, 2000; Schwartz et al., 2002).

Furthermore, no studies have considered the sole importance of academic achievement and school adjustment in relation to bullying behaviour, but have instead included these factors as much smaller aspects of larger research studies. School adjustment variables have included negative school attitudes, social adjustment at school, school avoidance, child–teacher relationships, cooperative classroom participation, involvement in school activities, and adaptation to the classroom environment (Blankemeyer, Flannery, & Vazsonyi, 2002; Buhs & Ladd, 2001; Ladd & Burgess, 2001).

Measurements that assess academic ability by tests and teacher assessments in the same way across different schools are needed in order to provide consistency. The National Curriculum Standard Assessment Tasks (SATs) employed to assess children's academic achievement in the U.K., combine tests with teacher assessments. Despite scepticism, reliability on the SATs tests have revealed high values (Hurry, 1999; Reeves, Boyle, & Christie, 2001). One strength of SATs assessments is that they sample a broad range of skills compared to other standardised tests. SATs tests also enable researchers to identify subtle and relative changes such as a decline in standards (Hurry, 1999).

In summary, the literature reveals a noticeable gap concerning the possible causal pathways between bullying behaviour and academic performance and the direction of influence, i.e. does being involved in direct or relational bullying behaviour as a bully, victim, or bully/victim contribute to the prediction of academic achievement or alternatively, does poor academic achievement predict involvement in bullying behaviour? Furthermore, previous studies have often concentrated on small sample sizes, on preschool or grade one children, failed to consider relational bullying, and solely focused on peer rejection and sociometric status, rather than bullying behaviour per se.

The current study with primary school children from the U.K. had two major aims: (1) to assess the relationship between direct and relational bullying behaviour, and SATs tests results and teacher assessments; (2) consider variables that predict children's SATs results and teacher assessments and determine whether SATs results and teacher assessment results contribute to the prediction of being involved in direct and/or relational bullying.

Method

Population

Parents of children in 82 classes in 39 primary schools in Hertfordshire and North London in the United Kingdom were approached. Five schools (eight classes) failed to provide Key Stage Level I National Curriculum results (SATs) resulting in an 87.2% return rate and a total of 74 classes from 34 primary schools. Table 1 illustrates the sample data for age, gender, non-consent rates, Special Educational Needs (SEN), and children with full data sets (bullying interview, SDQ behaviour questionnaire, health questionnaire, and SATs results).

Table 1
Sample data

Variable/instrument	Sample size (*n*)
Total available sample (bullying interview, SDQ behaviour questionnaire, health questionnaire)	*N*: 1639 *N*: 722 (44.1%), year 2 *N*: 917 (55.9%), year 4
Total sample with complete data sets (SATs results, bullying interview, SDQ behaviour questionnaire, health questionnaire)	*N*: 1016 (62% of total available sample) *N*: 480 (47.2%), year 2 *N*: 536 (52.8%), year 4
SATs return rate	*N*: 34/39 schools (87.2%) *N*: 74/82 classes
Age	Overall: *x*: 7.52, S.D.: 1.02 year 2: *x*: 6.62 years, S.D.: 0.53 year 4: *x* 8.33 years, S.D.: 0.58
Gender	Males: *n*: 498 (49%) Females: *n*: 518 (51%)
SEN	Yes: *n*: 44 (4.1%) No: *n*: 972 (95.9%)

Procedure

The study received ethical permission from the University of Hertfordshire Ethical Committee and all instruments and information was lodged with the Hertfordshire Education Council. When the head teacher and class teachers consented to participate in the study written information about the study and a non-consent form (parents were asked to sign when they wanted their child not to take part) was passed to all parents via the pupils in sealed envelopes. On prearranged dates all pupils were interviewed individually in a private room in the school by one of four trained interviewers (postgraduate psychologists). The school was asked to provide a copy of the Key Stage 1 National Curriculum and Teacher Assessment results for those children that had participated in the bullying interview.

Instruments

Bullying interview

Children were interviewed individually in a quiet, private room within the school using a standard structured interview that enquired about friendships and peer relationships (previously described in detail, see Wolke et al., 2000; Wolke, Woods, Bloomfield, et al., 2001; Wolke, Woods, Schulz, et al., 2001). The part of the interview that is subject to this report was adapted from the Olweus (1993) Bullying Questionnaire. First, children were asked whether they had experienced any of six behaviours in the last 6 months that had upset them: (1) having been called bad or nasty names, (2) having belongings taken, (3) having lies told about them, (4) having nasty tricks played on them, (5) having been threatened or blackmailed, (6) having been hit or beaten up. If the child answered that s/he had experienced any of the six above behaviours, the child was

asked to give examples and describe how this happened. This was done to ascertain that the behaviours experienced were carried out with intent by the perpetrator(s) to upset the child rather than having occurred by accident or during play fighting, etc. Researchers were also able to ensure that there was an imbalance of power between the perpetrator and victim. Those children who had experienced one or more of these behaviours were asked how frequently these incidents happened in the last 6 months (seldom: one to three times during past 6 months, frequently: four times or more during past 6 months, very frequently: at least once per week). To aid children's reference to approximately 6-month periods, anchors such as ''since last Christmas'', ''since the summer holidays'', etc. were used. The six behaviours were then repeated and the child was asked whether they have used these behaviours to upset other children and how often they had done this over the last 6 months (never or seldom: one to three times during past 6 months, frequently: four times or more during past 6 months, very frequently: at least once per week).

Subsequently, children were asked four questions relating to relational bullying at school: (1) other children saying that they did not want to play with them; (2) other children saying that they would not be the child's friend anymore; (3) other children telling nasty stories that were not true about them; (4) Other children deliberately spoilt their games. If the child responded that they had experienced any of the above behaviours, the child was asked to supply a description with examples. This was carried out to ensure that the behaviours had been deliberate, that there was a perceived imbalance of power, and to ascertain that the perpetrator(s) were children that the child normally played with. Children were then asked to express how frequently the incidents occurred in the last 6 months for each of the four questions.

Children's frequency responses were subsequently coded according to three categories, seldom, frequently, and very frequently (seldom: one to three times during the past 6 months, frequently: four times or more during the past 6 months, very frequently: at least once per week).

The four types of relational bullying were then repeated to the child and they were asked whether they had ever used any of the behaviours to upset other children over the past 6 months (never or seldom: one to three times during the past 6 months, frequently: four times or more during the past 6 months, very frequently: at least once per week).

At no time during the interview was the term 'bullying' used, i.e. only behavioural (operational) descriptions were used.

According to the results of the interview and the frequency of bullying events reported, children were classified using a standardised coding manuscript into the following groups (Whitney & Smith, 1993; Wolke & Stanford, 1999; Wolke et al., 2000) for physical direct bullying and relational bullying, separately: physical bullies [children who were involved in physically bullying others frequently (at least four times during past 6 moths) or very frequently (at least once every week) but are never or only rarely physically victimised], physical victims (children who experienced any of the above described behaviours: being called bad/nasty names, being threatened, having belongings stolen, having lies told about them, being hit/beaten, having nasty tricks played on them, frequently or every week but bully others rarely or never); physical bully/victims (children who both physically bully others and become physical victims of the six described behaviours frequently or every

week), physical neutrals who neither physically bully others nor become physical victims (never or rarely only).

For relational bullying the same classification system was employed to categorise children as: relational bullies, relational victims, relational bully/victims, and relational neutrals.

Each post-graduate psychologist received intensive training in a standard interviewing and coding protocol which required them to carry out pilot supervised bullying interviews and subsequently code them. Any inconsistencies or discrepancies were individually discussed and rectified until there were no problems before the main study commenced. The basis of determining whether behaviour constituted bullying and the bullying classifications was made according to guidelines stipulated in the research coding manual which as a result of a pilot study clearly outlined direct and relational bullying behaviours. Researchers used standardised probing questions to determine the frequency of bullying behaviours and researchers always asked the children to back up statements by describing the behaviour they had made and to ensure consistency in responses. Behaviours were recorded in standard datasheets and any difficulties in decision making discussed in the coder group (consensus rating). Interviews were not audio taped as this would have required a second consent form which was likely, from previous experience to lead to higher and selective drop out (which ideally should be avoided).

The bullying interview has shown high predictive validity for direct and relational victimisation over 2–4 years (Wolke, Woods, & Samara, article in submission). Concurrent validity is evident between bullying classification established from the bullying interview (bully, victim, bully/victim, and neutral) and sociometric status (popular, average, neglected, rejected, and controversial status) (Wolke & Stanford, 1999; Wolke, Woods, Kropp, & Schulz, unpublished manuscript).

Behaviour questionnaire

The Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997) was given to parents to complete after children had been interviewed. The SDQ comprises of 25 SDQ items falling into 5 scales of 5 items each: conduct problems, hyperactivity, emotional symptoms, peer problems, and prosocial behaviour (Goodman, 1997). For each scale, except for prosocial, higher scores indicate more problems. A total difficulties behaviour score is computed by combining all scales except from the prosocial behaviour scale. The current study reports on total difficulties behaviour scores only. The SDQ correlates highly (>.80) with the Child Behaviour Checklist (CBCL) total score and discriminates as well as the Rutter Behaviour Scales (Elander & Rutter, 1996) and the Achenbach (1991) CBCL between children with clinical behaviour problems and no problem behaviour children. Goodman (2001) reported high reliability and validity of the SDQ regarding Cronbach α, cross-informant correlations, and retest stability over 4–6 months.

For categorical analysis, Goodman (1997) suggested the following bandings for the total behaviour problems subscale: 0–80th percentile are normal, between 81 and 90th percentile are borderline, and those >90th percentile are in the clinical range. All children in the study were classified according to the Goodman bandings as either

having normal/borderline behaviour difficulties or behaviour difficulties within the clinical range.

Health questionnaire

Parents of children also completed a health questionnaire (Wolke, Woods, Bloomfield, et al., 2001) that comprised of two sections: (a) seven items about physical health problems (PHP) over the previous 6 months rated on a seven-point scale (none to six or more times) (headache, tummy ache, sore throat/ear ache, cold/cough, feeling sick, breathing problems, skin problems); (b) seven items about emotional health problems (EHP) (previously known as psychosomatic health problems) rated according to a five-point scale (never to most days) (bed wetting, problems going to sleep, nightmares, woken in the night, poor appetite, excessive appetite, worried about going to school). Two variables were constructed to examine the total amount of physical and emotional health problems that children experienced.

Key Stage 1 national curriculum assessments

The Key Stage 1 National Curriculum Assessment (SATs 1) (www.qca.org.uk; www.dffes.gov.uk/ncat) for 7-year-olds (year 2) comprised of five tests: (1) The Writing Task (levels 1–3), (2) Spelling Task, (3) The Reading Comprehension Task (level 2 and level 3), (4) The Reading Task (levels 1 and 2), and (5) Mathematics Task. The Writing Task examines children's ability to plan and write a non-narrative piece of work in a single session. The length, sentence structure, vocabulary, punctuation, spelling, and the structure and organisation of the piece of work are assessed. The Spelling Task consists of 30 words and assesses a range of letter combinations and regular and irregular spelling patterns. The Reading Comprehension Task tests children's literal comprehension in terms of retrieving information from a preset text, ability to make simple inferences, understanding of the text's organisation, and the author's use of language. The Mathematics Test is split according to levels. Level 1 assesses children's ability to identify properties of 3D shapes, money, and working with larger numbers. Level 2–3 examines children's knowledge of number, calculations in terms of addition and subtraction, multiplication and division, problem solving, handling data, and shape, space and measures. The tests are not based on a multiple choice format, but require the child to write their answers on standard examination forms and demonstrate their workings out for questions where appropriate.

Results from each of the tests are individually graded as follows: working towards grade 1(W), grade 1, grade 2C, grade 2B, grade 2A, grade 3, and grade 4. Children who received a 'W' may have special educational needs and were underachieving. Grade 1 is below the national curriculum average, grade 2C is slightly below the level that should be achieved in accordance with national curriculum average, grade 2B is in line with the national curriculum average, and grade 2A is slightly above the national curriculum average. Grades 3 and 4 are substantially above the national curriculum average. The following categories were formed for the analysis of SATs test results (TR): (1) working towards level 1 or below level 1, (2) low level 2 (2C), (3) average level 2 (2B), (4) high level 2 (2A), (5) above level 2 (levels 3 and 4), (6 missing) did not sit SATs tests.

Summative teacher assessment (TA) for Key Stage 1

Teacher assessments for children at Key Stage 1 are carried out at the end of a unit or the school year in order to make judgements about pupils' performance in relation to national set standards. TA initially occurs in the form of formative assessment which happens throughout the year in the classroom and involves the teacher and pupil in a process of continual reflection and review about progress, leading up to the Summative TA at the end of the year. TAs are based on level descriptions and are frequently assigned a numerical value. The following teacher assessments were recorded: (1) an overall English assessment, (2) speaking and listening, (3) reading, (4) writing, (5) spelling, (6) mathematics (included: using and applying mathematics, number, shape, space, and measures), and (7) science (included: experimental and investigative science, life processes and living things, materials and their properties, physical processes).

The following grading system was used to assess each teacher assessment: grade 0 to grade 4. In addition, children were rated according to whether they did not sit the tests due to behavioural problems and whether they were absent on the day of the assessment. (labelled ''disapplication due to absenteeism''). Children who had missed a substantial amount of the curriculum relevant to their year group were exempt from sitting the SATs tests. Level 0 denotes a child who is working towards level one and usually has special educational needs. Level 1 refers to a child who is working below the national average. Level 2 represents the national curriculum average. Levels 3 and 4 are both above the national curriculum average. For quantification purposes derived from guidelines from the QCA (www.qca.org.uk), the following categories were formed for TA statistical analysis: (1) working towards level 1 (W) or below the threshold (X), (2) level 1 or (L) (substantially below curriculum average), (3) below threshold of 2 but reached level 1 (not quite reached curriculum average, e.g. 2C), (4) level 2 (2B or 2A, curriculum average), (5) level 3 or 4 (above curriculum average).

Although National Curriculum SATs TR and TA are universally employed as the standardised measure of assessment in U.K. schools, there are few studies which have considered their reliability and validity. Hurry (1999) reported that the actual tests that make up part of the SATs levels (SATs TR) have face validity according to curriculum. Reliability has been measured using internal consistency and Cronbach's α's of between .77 and .87 have been reported (Cronbach, 1960).

Reeves et al. (2001) argue that the teacher assessment (SATs TA) is an essential part of the National Curriculum assessment arrangements.

> The results of end of year key stage teacher assessment are reported alongside the test results. Both have equal status and provide complementary information about the pupils' attainment. The tests provide a standard 'snapshot' of attainment at the end of the key stage, while teacher assessment, carried out as part of teaching and learning in the classroom, covers the full range and scope of the programmes of study, and take account of evidence of achievement in a range of contexts, including that gained through discussion and observation. (QCA, 1999, p. 7)

Rose (1999) stated that TAs are an under used source of information and better use should be made of them, particularly in the test development phase. An important question concerns the relationship between TR and TA. Teacher expectations and test results are not completely independent of one another and teachers are able to consult TR to assist them with TA. Reeves et al. (2001) explored the relationship between SATs TR and SATs TA for Key Stage 2 results for over 6000 children. Comparison of SATs TR and TA for individual pupils revealed a remarkably high level of consistency across years in all three subjects (Math, English, and Science) ranging from 73% to 77%. Where a difference was found between TR and TA this was nearly always just by one level (e.g. level 2 on English TA and level 3 on English TR). Tymms (1996) reported exact agreement between TR and TA for 74% of pupils and agreement within one level for 99.6% from a study involving over 7000 pupils from schools in Avon, U.K.

The result from the study by Reeves et al. (2001) and Tymms (1996) suggest that a certain level of non-agreement is not only acceptable but desirable, otherwise one measure becomes redundant. The SATs TR and TA appear to be complimentary assessment measures, which usually concur but have variability to justify the application of both. However, what remains unknown is how many teachers consult the SATs TR before making their own TA.

Cronbach α (Cronbach, 1960) for the current sample revealed high internal consistency for SATs TR and SATs TA (Math TR and Math TA: α=.77; English TR and English TA: α=.92).

SEN

Information was recorded for those children who were deemed as having SEN. Guidelines set out by the British Education Act (1996) to identify and assess SEN were adhered to. There are 5 recommended stages for addressing the different levels of children's SEN. Stages 1–3 are school based, with support from specialists from outside the school at Stage 3. Stage 4 involves the Local Education Authority (LEA), which considers whether a multidisciplinary assessment of the child's needs is necessary. Stage 5 involves the LEA issuing and monitoring a statement of SEN. Children at stages 2–5 were considered as having SEN in the current sample, where the decision was made for a child to receive extra support either from within the school or an outside party.

School variables

Data was collected from schools regarding social class distribution (records of free school lunches were noted), school location in terms of urban (inhabitants of community>50,000) or rural (inhabitants of community<50,000), and mean school and class size. School absenteeism for each pupil was also recorded.

Statistical analyses

First, frequency analysis was carried out for the SATs TR and TA. As a result of this, it was decided that spelling TA (*N*: 229), Reading Task (*N*: 960), and Spelling Test (*N*: 711) should be dropped from the final analysis due to substantially reduced sample sizes. Factor

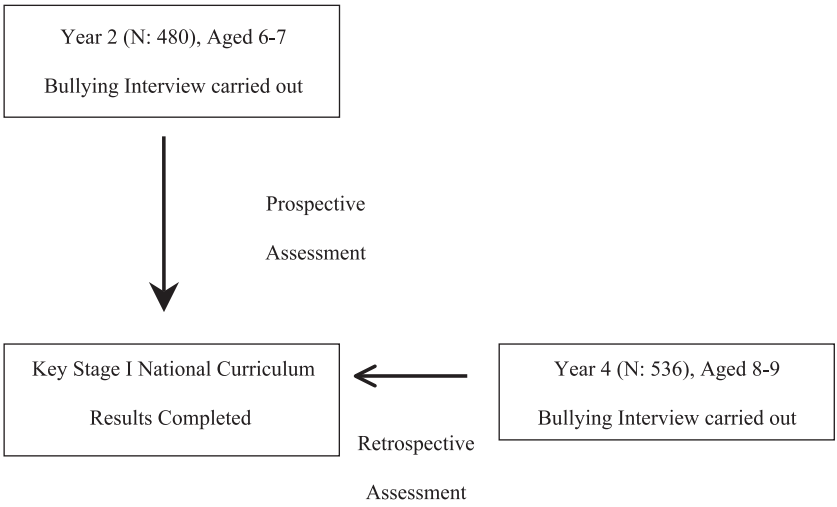

Fig 1. Sample characteristics for statistical analysis.

analysis (extraction method: principal component analysis with varimax rotation) was computed to determine whether TR and TA constituted the same or different factors. Differences in SATs results according to direct and relational bullying status for year 2 and year 4 on standardised scores from the factor analysis were computed using one-way ANOVA. Final data analysis was carried out only for children who had full data sets (*N*: 1016) (bullying interview, SATs TR and TA, SDQ behaviour questionnaire, and health questionnaire).

Prospective analysis was carried out between bullying status assessed before sitting SATs tests (year 2 children) using ANOVA with bullying status as the IV and the SATs result as the DV. Furthermore, logistic regression analyses were computed to determine the best combination of factors predicting SATs TR and SATs TA. For year 4 children, logistic regressions were carried out with SATs results at year 2 as predictors for bullying status at year 4 as the DV (Fig. 1).

Results

SATs TR and TA scales

Factor analysis (principal components analysis) with varimax rotation including nine variables from the SATs results revealed two distinct factors, SATs TA and SATs TR, respectively. Eigenvalues for the solution were 4.7 and 1.7 accounting for 70.7% of the total variance. Factor I accounted for 51.7% of variance and Factor II 19% of variance. All variables loaded onto the primary factors at .59 or greater (Table 2). Factor I had six primary loadings (Table 2), and constituted all SATs TA items and three variables loaded on the second factor (Table 2) identified as SATs TR items.

Table 2
Factor analysis of SATs Teacher Assessment (TA) items and SATs TR items (*N*: 1016)

Item	Factor 1	Factor 2
English TA	.93	.15
Speaking and listening TA	.86	.10
Reading TA	.86	.16
Writing TA	.85	.17
Math TA	.81	.11
Science TA	.78	4.87(E−02)
Reading comprehension TR	8.44(E−02)	.86
Writing task TR	.12	.90
Math TR	.12	.59

Standardised factor scores with a mean of 0 and S.D. of 1 were computed for SATs TR and SATs TA.

SATs results and the relationship with bullying and victimisation behaviour for year 2 and year 4 children

Table 3 illustrates the frequencies for direct and relational bullying classifications.

SATs TR

ANOVA analyses carried out on standardised factor scores for SATs TR revealed no significant differences between bullying status (bully, bully/victim, victim, neutral) for both direct [$F(3,770)=0.33$, $p<.80$] and relational bullying [$F(3,769)=0.52$, $p<.67$] for year 2 children (6–7-year-olds). In contrast, children in year 4 (8–9-year-olds) who were involved in relational bullying had significantly higher SATs TR 2 years previously (in year 2) than those children not involved in relational bullying, $F(3,890)=4.25$, $p=.005$.

A posteriori contrasts (Tukey-HSD test) indicated that those children in year 4 who relationally bullied other children had significantly higher SATs TR previously in year 2 compared to relational victims and neutral children (relational bullies $M=0.60$ vs. relational victims $M=-0.12$ and neutrals $M=-0.05$).

SATs TA results

ANOVA analyses carried out on standardised factor scores for SATs TA revealed no significant differences between year 2 children and SATs TA for direct [$F(3,714)=0.15$, $p=.93$] and relational bullying status [$F(3,713)=0.52$, $p=.67$]. However, significant differ-

Table 3
Physical and relational bullying classifications

	Bully	Victim	Bully/victim	Neutral
Direct bullying (*N*: 1015)	*N*: 35 (3.4%)	*N*: 419 (41.3%)	*N*: 111 (10.9%)	*N*: 450 (44.3%)
Relational bullying (*N*: 1014)	*N*: 11 (1.1%)	*N*: 424 (41.8%)	*N*: 60 (5.9%)	*N*: 60 (5.9%)

ences were uncovered for SATs TA and relational bullying status for year 4 children [$F(3,782)=3.78$, $p=.01$].

The a posteriori contrasts highlighted that year 4 children involved in relationally bullying others had significantly higher SATs TA results 2 years earlier than those children who were relationally victimised or not involved in any relational bullying (neutral) (relational bullies $M=0.63$ vs. relational victims $M=-0.08$ and neutrals $M=-0.05$).

Predictors of children's SATs results

Logistic regression analyses were carried out to determine the best combination of factors predicting the following dependent variables: (1) SATs TR in year 2 and (2) SATs TA in year 2. The independent variables were categorised as follows for year 2 analyses predicting SATs TR and SATs TA: (a) whether the child was involved as a relational victim (yes vs. no); (b) whether the child was involved as a relational bully (yes vs. no); (c) whether the child was involved as a direct victim (yes vs. no); (d) whether the child was involved as a direct bully (yes vs. no); (e) gender (boy vs. girl); (f) behavioural problems (clinical vs. normal/borderline); (g) total number of emotional health problems (no emotional health problems vs. at least one emotional health problem); (h) total number of physical health problems (0–2 physical health problems vs. 3–6 physical health problems); (i) school absenteeism (0–11 vs. 12–21 days); (j) ethnic minority (native English vs. non English native); (k) school location (urban vs. rural); (l) social class (SES) (lower vs. upper/middle); (m) class size (small vs. medium/large); (n) school size (small vs. medium/large); (o) whether the child had a statement of SEN (SEN vs. no SEN).

First a full model was built forcing, all independent variables into the prediction function and then removing those variables (backward stepping), which did not make a significant contribution to the model (no significant change in fit when removing variables).

SATs TR

The final model for predicting SATs TR is shown in Table 4 [$\chi^2(507)=40.17$, $df=6$, $p=.000$]. Factors which had a significant impact on predicting SATs TR were

Table 4
Final logistic regression models for predicting SATs TR (Year 2) (Backward Stepwise Method) (*N*: 507)

Predictor	*B*	S.E.	Wald	*df*	Significance	Exp. (B)	95% C.I. for Exp. (B)	
							Lower	Upper
SEN (yes)	−1.74	0.51	11.86	1	.001	0.18	0.07	0.47
Relational victim (yes)	0.99	0.35	7.93	1	.005	2.71	1.35	5.40
School location (rural)	0.91	0.41	4.94	1	.026	2.49	1.11	5.56
Class size (small)	−0.83	0.37	5.01	1	.025	0.44	0.21	0.90
SES (lower)	−0.77	0.35	4.71	1	.030	0.46	0.23	0.93

in order of importance: SEN (odds ratio: 0.18, CI (95%): 0.65–0.47), relational victimisation (odds ratio: 2.71, CI (95%): 1.35–5.42), school location (odds ratio: 2.49, CI (95%): 1.11–5.56), class size (odds ratio: 0.44, CI (95%): 0.21–0.90), and social class (odds ratio: 0.46, CI (95%): 0.23–0.93). Children were more likely to underachieve on SATs TR if they had SEN compared to no SEN, were relationally victimised compared to not victimised, went to rural schools compared to urban schools, were in small class sizes compared to medium/large class sizes, and went to schools in lower social class areas compared to middle/upper class areas.

SATs TA

The final model for predicting SATs TA was significant [$\chi^2(462)=26.43$, $df=3$, $p=.000$]. Only one factor remained in the final model and had a significant impact in predicting SATs TA, SEN (odds ratio: 0.19, CI (95%): 0.75–0.49). Children were more likely to be low achievers on SATs TA if they had SEN compared to no SEN.

Predictors of children's bullying status

Logistic regression analyses were carried out to determine the best combination of factors predicting the following dependent variables in year 4: (1) direct bullying involvement, (2) direct victimisation, (3) relational bullying involvement, (4) relational victimisation.

The independent variables were the same as for the SATs results, but with the omission of bullying status, and the inclusion of (a) achievement on SATs TR (average/high achievement vs. low achievement), (b) achievement on SATs TA (average/high achievement vs. low achievement).

Direct bullying

The final model for predicting direct bullying involvement in year 4 was significant ($\chi^2(514)=21.67$, $df=2$, $p=.000$]. Two factors had a significant impact in predicting involvement in direct bullying: gender (odds ratio: 0.35, CI (95%): 0.21–0.57) and class size (odds ratio: 0.56, CI (95%): 0.33–0.96). Those children involved in direct bullying were more likely to be boys rather than girls, and from small class sizes compared to medium or large class sizes.

Direct victimisation

The final model for predicting direct victimisation in year 4 was significant [$\chi^2(514)=36.34$, $df=3$, $p=.000$]. Three factors had a significant impact on predicting direct victimisation: behaviour problems in the clinical range (odds ratio: 0.23, CI (95%): 0.12–0.45, school location (odds ratio: 1.74, CI (95%): 1.20–2.52), and gender (odds ratio: 0.62, CI (95%): 0.43–0.89). Direct victims were more likely to be children who had behaviour problems within the clinical range compared to normal/

Table 5
Final logistic regression models for predicting relational bullying (Backward Stepwise Method) (*N*: 514)

Predictor	*B*	S.E.	Wald	*df*	Significance	Exp. (B)	95% C.I. for Exp. (B)	
							Lower	Upper
SATs TR (average/above average)	1.75	1.02	2.91	1	.088	5.74	0.77	42.72
Gender (boys)	−0.87	0.36	5.69	1	.017	0.42	0.21	0.86
Class size (small)	−0.74	0.37	3.93	1	.048	0.48	0.23	0.99
Emotional health problems (at least 1 problem)	−0.70	0.35	3.94	1	.047	0.50	0.25	0.99

borderline, came from rural schools compared to urban schools, and were boys rather than girls.

Relational bullying

A significant model was revealed for predicting involvement in relational bullying [$\chi^2(514)=17.50$, $df=4$, $p=.002$] (Table 5). Those factors that had a significant impact in predicting involvement in relationally bullying others were in order of importance: high achievement on SATs TR (odds ratio: 5.74, CI (95%): 0.77–42.72), gender (odds ratio: 0.42, CI (95%): 0.21–0.86), class size (odds ratio: 0.48, CI (95%): 0.23–0.99), and emotional health problems (odds ratio: 0.50, CI (95%): 0.25–0.99). Children who were involved in relationally bullying others were more likely to have average/above average achievement compared to low achievement on SATs TR, be boys rather than girls, came from schools with small class sizes as opposed to medium/large class sizes and had at least one emotional health problem compared to no emotional health problems.

Relational victimisation

A significant final model for predicting involvement in relational victimisation in year 4 was revealed [$\chi^2(514)=23.44$, $df=4$, $p=.000$]. Factors that had a significant impact in predicting relational victimisation were in order of importance: school absenteeism (odds ratio: 2.18, CI (95%): 1.12–4.25), behaviour problems (odds ratio: 0.52, CI (95%): 0.30–0.93), school size (odds ratio: 0.60, CI (95%): 0.41–0.88), and school location (odds ratio: 1.48, CI (95%): 1.02–2.14). Children involved in relational victimisation were more likely to have had fewer days (0–11) off school (compared to more days (12–21)), had behaviour problems within the clinical range compared to the normal/borderline range, came from small schools compared to medium/large sized schools, and went to a rural school compared to an urban school.

Discussion

The present study investigated the association between direct and relational bullying behaviour, and academic achievement among primary school children in the U.K.

Predictors of academic achievement and being involved in bullying behaviour were also examined. The major findings of the present research study were:

1. There was a higher incidence of direct bullying behaviour among primary school children compared to relational bullying.
2. No association between direct bullying and academic achievement was uncovered at year 2. However, relational 'pure' bullies in year 4 had significantly higher SATs TR and SATs TA at year 2 compared to victims and neutral children.
3. Important predictors of academic achievement for year 2 children were relational victimisation, SEN, rural schools, small classes, and low socioeconomic status (SES).
4. Important predictors of involvement in bullying behaviour in year 4 were small classes, behaviour problems, rural schools, being male, having average/above average achievement, small schools, and emotional health problems.

The finding that primary school children were involved in more direct bullying than relational bullying fits in with a developmental explanation of bullying behaviour. Björkqvist (1994) proposed that young children lack essential verbal skills, which results in aggressive behaviour being predominantly physical in nature. Once verbal skills and more importantly complex social skills develop, children will demonstrate more sophisticated styles of aggression such as relational aggression, usually in secondary school.

This is the first study to report results concerning the relationship between direct and relational bullying behaviour and academic achievement among primary school children in the U.K. No significant associations were revealed for children in years 2 and 4 and direct bullying status for 'pure' bullies, 'pure' victims, bully/victims, and neutral children and academic achievement as assessed by SATs TR and SATs TA. In contrast, children in year 4 who were involved as relational 'pure' bullies had had significantly higher SATs TR and SATs TA results in year 2. Olweus (1993) argued that aggressive direct bullies' behaviour could be explained as a reaction to frustration and failure at school although future research studies were unable to confirm this claim (Tremblay et al., 1992; Olweus, 1994). The current findings provide further substantiation that having lower academic grades does not seem to be related to involvement in direct bullying behaviour. No support was generated for the findings by Schwartz et al. (2002) where children who exhibited poor academic performance in school tended to emerge as frequent targets of bullying.

A number of explanations could account for the lack of association between direct bullying and academic achievement. Direct victims and neutral children did not differ from each other in terms of academic ability. One account previously proposed is that children who are victims of bullying actually turn to school work and related activities as an escape route from the problems they are experiencing with bullying behaviour (Sharp, 1995) therefore increasing their academic capabilities and grades. Research findings from work carried out on peer rejection and school adjustment could provide an alternative explanation. Buhs and Ladd (2001) reported no direct pathway between peer rejection and school adjustment including academic achievement and instead proposed a model of mediation by other factors such as peer maltreatment and reduced classroom

participation. The current study did not consider levels of classroom participation or cooperation and therefore no direct conclusions can be made. The school milieu and ethos in the current study may have contributed to the lack of association between direct bullying and academic achievement. Twemlow et al. (2001) carried out a highly controlled intervention study based on zero tolerance for bullying. A significant increase in academic performance and a reduction in disciplinary referrals was found in the experimental school, but not in the control school. Schools in the current sample may have had a similar ethos towards bullying behaviour.

The relationship uncovered between being a relational bully and obtaining significantly higher academic achievement is new to the literature and proffers several explanations. The current controversy regarding the individual characteristics of bullies and whether they are 'cool' planners of their torment towards others, or are anxious, depressed, insecure individuals with behaviour problems is one account for the current findings. Support is generated for the theory proposed by Sutton and Smith (1999) and Sutton et al. (1999) that bullies, in particular those children who use social manipulation, are socially skilled and intelligent individuals who avoid being caught in the act of bullying other children. Previous findings have also revealed that 'pure' relational bullies enjoy going to school, have few days absent from school and are physically and psychologically healthy (Wolke, Woods, Bloomfield, et al., 2001; Wolke, Woods, Schulz, et al., 2001). The current findings add substance to the profile of 'pure' relational bullies and their strong and successful demeanour in school environments. Conversely, the findings do not support the assertion that bullies lack self-esteem, are anxious and depressed individuals (Farrington, 1993, 1995; Salmon, James, & Smith, 1998, Salmon, James, Cassidy, & Javaloyes). The developmental concept that relational bullying follows on from direct bullying is also supported by the present results in that it was only year 4 children who were classified as relational 'pure' bullies that had significantly higher academic results (Björkqvist, 1994). Children in year 4 (aged 8–9) are more likely to have the developed social skills to use relational bullying as opposed to younger children in year 2. It appears that children with high academic abilities have the social skills available to employ relational manipulation.

Bullying role for both direct and relational bullying, with the exception of relational victimisation, was not an important predictor for children's academic achievement. Children were nearly three times more likely to have under achieved on SATs TR if they were relational victims. Relational victimisation could have more deleterious effects on the child's academic achievement in terms of firstly being more hurtful and long-term than direct physical bullying and secondly, could be more classroom focused compared to direct bullying, therefore distracting the child from concentrating on school tasks. Interestingly, school absenteeism and health problems did not contribute to the prediction of SATs TR or SATs TA.

Previous research has often discounted the association between bullying behaviour and school factors such as school size, class size, school location, and SES. Results reported by Wolke et al. (2001) found more bullying problems in small schools and classes in rural locations compared to large urban schools. In a similar vein, the current study found that small schools, small class sizes, rural locations and schools with lower SES significantly contributed to the prediction of lower SATs TR. Indirect pathways between bullying

behaviour and school characteristics may be having an impact on SATs results. The nature of these pathways is unknown resulting in the need for research studies to determine the underlying factors that characterise these schools in terms of lower school attainment and bullying problems.

A discussion of the limitations of the current study includes the reliance on individual interviewers to classify children as being direct or relational bullies, victims, bully/victims, or neutral. Ideally, reliability analyses based on tape recorded interviews should have been conducted across researchers to ensure that direct and relational bullying classifications were assigned consistently and reliably. However, this was not within the capability of the study for several reasons. Firstly, due to the study taking place within a school setting, teaching staff would not permit the same child to be interviewed about bullying experiences on repeated occasions by different researchers. This was deemed unethical and impractical due to time constraints. Secondly, the research team did consider and approach schools about the possibility of videotaping and audio taping each interview to permit reliability testing. Again, teachers had serious reservations about breaching children's confidence and viewed this practise as unethical. Furthermore, this required a second consent form and thus likely increased selective dropout of pupils. It would be imprudent to assume that the bullying interview methodology is entirely objective as bullying behaviour due to its complex social nature and the fact that 6–9-year-olds took part is bound to reveal some subjective issues. Nonetheless, the bullying interview is highly structured and all researchers received a highly structured comprehensive training schedule. A pilot study revealed 90% agreement across bullying classifications across four interviewers. The procedural manual was adhered to throughout the study, which contained concrete examples of the distinctions between what constitutes bullying behaviour and what does not. Any problems were discussed and consensus coding applied. Interviewer ratings are at least as valid and reliable as would be obtained by questionnaire and the interview method has the advantage to not be influenced by reading age. The age range of children chosen for the current study only allows conclusions about the association between bullying behaviour and academic achievement in primary school. Other studies may want to consider adolescent samples in addition to primary school aged children. Furthermore, the predictive power of bullying behaviour for academic achievement could only be carried out with children in year 2 and the time lag between bullying and SATS assessment was less than 1 year. Future studies may consider prospective investigation of the causal pathways over a longer period of time. Finally, despite the application of national tests with hundred of thousands of children every year, there are few studies on the validity and reliability of SATs TR and TA. However, the ecological validity is high as national markings of schools' and supply of financial resources are dependent on SATS results.

In sum, the current study provides empirical evidence that direct bullying behaviour is not largely associated with decrements in academic achievement in primary school. No support was generated for the theory that under achievement and frustration at school leads to direct physical bullying behaviour in 6–9-year-olds. Conversely, it was ascertained that relational bullies are often average or high achievers. Important factors contributing to the prediction of SATs results were revealed including SEN, behaviour problems and school characteristics such as school size, class size, and school location.

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