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The contribution of callous-unemotional traits and conduct problems to bullying in early adolescence

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Background: Although a lot is known about the association of conduct problems with bullying, less attention has been paid to co-occurring traits, such as callous-unemotional (CU) traits that might additionally contribute to the risk of engaging in bullying. This study investigated the contribution of CU traits to direct and indirect bullying, alongside the contributions made by conduct problems and gender. **Methods:** Seven hundred and four 11–13-year-olds completed self-report measures of callous-emotional traits and psychopathology, including conduct problems. Peer-report measures of direct and indirect bullying were collected from classmates. **Results:** Higher levels of CU traits were associated with higher levels of direct bullying, over and above the association between bullying and conduct problems. Conduct problems and CU traits interacted in the prediction of both direct and indirect bullying. In line with previous research, males were more likely to engage in direct and females in indirect bullying. **Conclusions:** This study highlights the importance of viewing CU traits and conduct problems, not only as related phenomena, but also as distinct entities in mediating the underlying susceptibility of children to bully others directly. Furthermore, a combination of these traits appears to be a particularly potent risk factor for both direct and indirect bullying. Implications for intervention are discussed, in particular the concern that lack of empathy and insensitivity to punishment in those with CU traits may also make them particularly resistant to current forms of bullying intervention. **Keywords:** Bullying, callous-unemotional traits, conduct problems, adolescence. **Abbreviations:** CU: Callous-unemotional; ICU: Inventory of Callous-Unemotional Traits; SDQ: Strengths and Difficulties Questionnaire.

Bullying is a concerning and common problem across schools internationally (Nansel et al., 2004; Smith, Pepler, & Rigby, 2004). Reported prevalence rates for engagement in frequent bullying behaviour in adolescence vary widely across studies, ranging from 9% to 25% of pupils depending on type of bullying, how it is measured and the characteristics of the children, such as age, gender and disability status (Kaukiainen et al., 2002; Salmivalli & Kaukiainen, 2004; Scheithauer, Hayer, Petermann, & Jugert, 2006).

While there is no agreed definition of bullying, there is substantial consensus in characterising it as a subset of aggression comprising three features: intentional harm, repeated over time, in a relationship where there is an imbalance of power (Farrington, 1993; Nansel & Overpeck, 2003; Olweus, 1993; Rigby, 2002). Bullying behaviour may be either direct or indirect. Direct bullying entails face-to-face physical (hitting and kicking) or verbal (name calling) confrontation. Indirect bullying is more subtle, covert and often involves a third party, for example in spreading rumours (e.g., Boulton & Underwood, 1992; Wolke, Woods, Bloomfield, & Karstadt, 2000). Direct bullying, in particular that involving physical aggression, has consistently been found across ages and cultures to be more prevalent among males than females (Archer, 2004; McDermott, 1996). Findings for indirect bullying have been less consistent, with many studies reporting that females use more indirect forms of bullying and aggression than males (Björkqvist, Lagerspetz, & Kaukiainen, 1992; Crick & Grotpeter, 1995; Österman et al., 1998), but a few reporting more use by males (Tomada & Schneider, 1997; Zopito, Dane, Bosacki, & YLC-CURA, 2006) and some reporting no gender differences (Österman et al., 1994; Scheithauer et al., 2006). A meta-analysis conducted by Archer (2004) identified interactions between age, gender, type of bullying and method of assessment. Indirect bullying, based on peer ratings, was more frequent among girls than boys from 11 years of age, whereas direct bullying whether based on self or peer report was more prevalent in boys across age.

Investigations of bullying behaviour typically use either self-report measures or peer assessment procedures, where children identify classmates that fit behavioural descriptions of bullying behaviour (Cornell, Sheras, & Cole, 2006; Pellegrini & Bartini, 2000). Studies that have compared these two strategies suggest that bullies may be more prone to underestimate their bullying behaviour than the peers who rate them (Pakaslahti & Keltikangas-Järvinen, 2000; Österman et al., 1994). It would

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therefore seem desirable for studies that compare direct and indirect bullying to use peer report methods.

Bullying has traditionally been associated with behaviour problems such as aggression (Salmivalli & Nieminen, 2002) and externalising (Andreou, 2001) or arousal-seeking behaviour (Woods & White, 2005). It has also been associated with peer problems and low levels of prosocial behaviours (Arseneault et al., 2006; Wolke et al., 2000). In particular conduct problems have been associated with bullying behaviour in several independent studies (Kumpulainen, Räsänen, & Puura, 2001; Salmon, James, Cassidy, & Javaloyes, 2000; Wolke et al., 2000).

Although a lot is known about the association of conduct problems with bullying, less attention has been paid to potential co-occurring traits, such as callous-unemotional (CU) traits, that might additionally contribute to the risk of engaging in bullying behaviour. CU traits comprise characteristics such as lack of empathy and guilt, as well as shallow emotions, and can be used to subtype the heterogeneous group of children with conduct problems (Frick & Marsee, 2006). This subtyping was introduced in order to provide a downward extension of those characteristics that distinguish adult psychopaths from other offenders with antisocial personality disorder (Frick & Marsee, 2006; Lynam & Gudonis, 2005). On average, boys score higher on CU traits than girls, a finding that is in line with boys typically showing lower empathy and emotionality scores than girls (Essau, Sasagawa, & Frick, 2006; Joliffe & Farrington, 2006).

Much like adults with psychopathy, children who have both conduct problems and CU traits do not feel empathy for their victims, lack remorse for the antisocial acts they commit and can be very manipulative (Frick & Marsee, 2006). They also share a neurocognitive profile with adult psychopaths, showing reduced sensitivity to visual or vocal displays of distress emotions and poor modulation of behaviour in response to punishment (Blair et al., 2006; Dadds et al., 2006). Their profile differs from that of non-CU children with conduct problems, who do not show comparable lack of empathy and punishment insensitivity, and if anything can be hypersensitive to anger and punishment cues (Blair et al., 2006; Dadds et al., 2006).

It might be reasonable to propose that CU traits increase the likelihood of direct bullying, because of the reduced salience of people's distress cues. In line with this proposition, lack of empathy (one CU trait characteristic) has been found to be associated with direct, but not indirect, bullying in previous studies (Kaukiainen, Björkqvist, Lagerspetz, & Osterman, 1999). It could also be proposed that CU traits may increase manipulative bullying as a result of shallow capacity for emotional empathy and lack of guilt. However, this speculation is less strong than that relating CU traits to direct bullying.

To our knowledge no studies to date have looked at the contribution of CU traits to bullying. Based on what is currently known about children with both conduct problems and CU traits we hypothesised that CU traits could be significantly associated with bullying behaviour. However, it is not known whether the assessment of CU could offer a unique contribution in accounting for bullying behaviour over and above the contribution made by conduct problems. This is the main issue the present study was designed to investigate. It was hypothesised that higher levels of CU traits would be associated with higher levels of both direct and indirect bullying, over and above the variance in bullying associated with conduct problems, but that CU traits would be more strongly associated with direct than indirect bullying. It was also hypothesised that an interaction effect would be found, where the relationship between conduct problems and both types of bullying would become stronger in the presence of increasing levels of CU. This hypothesis was in line with previous literature indicating that the combination of conduct problems and CU traits results in a particularly severe profile of behavioural problems (Frick & Marsee, 2006).

In addition to the main focus of this paper on the association between CU traits and bullying, two additional issues were addressed. Firstly, we assessed gender differences in direct and indirect bullying behaviour and also investigated whether the association between each type of bullying and either conduct problems or CU varied as a function of gender. Exploratory correlational analyses were also conducted to index the relationship between direct and indirect bullying, conduct problems, CU traits and ratings of other behaviour problems (hyperactivity, emotional problems, peer problems) and prosocial behaviour. The main aim of this analysis was to provide a construct validity check for the conduct problem and CU trait assessments employed in this study. Based on previous research it was expected that both conduct problems and CU traits would be positively associated with hyperactivity and peer problems and negatively associated with prosocial behaviour (Dadds, Fraser, Frost, & Hawes, 2005; Frick, Bodin, & Barry, 2000). However, it was expected that only conduct problems would be associated with emotional problems (Dadds et al., 2005; Frick et al., 2000).

Method

Participants

Participants were 704 pupils aged 11–13 years, attending four secondary schools in a local authority in South East England. The majority were from White English backgrounds ($n = 554$, 79%), 11% Western European, 1% Caribbean or mixed race and no data were available for 9% of the sample. The

proportion from non-white minority ethnic groups is below the national average for secondary schools (DfES, 2006) but reflects the 2001 UK population census figure of 3% for this local authority area. Gender was relatively equally distributed across the group with 53% being male (n = 319). Eligibility for free school meals was collected as an index of socioeconomic status, and 9% (n = 56) of pupils found to be eligible, while the percentage for secondary schools, nationally is 9.6% (Hansard, 2007).

The representativeness of the sample was also assessed for bullying, conduct problems and CU traits. The proportions of nominations as a direct bully and as an indirect bully were standardised separately within each class and pupils one standard deviation or more above the mean for their class identified as bullies. The percentage of direct bullies identified in this sample (14.1%) corresponds closely with the percentage reported in other studies using similar methods (Nabuzoka & Smith, 1993: 14.5%; Boulton & Smith, 1994: 13%). Prevalence of engagement in indirect bullying has not been reported from studies using similar methods, or peer nomination more generally where, to date, the primary focus has been on differentiating between victims rather than perpetrators of bullying (Kim, Koh, & Leventhal, 2004; Strohmeier & Spiel, 2003). In studies using self-nomination broadly similar percentages of early adolescents have reported engagement in direct and indirect bullying (Scheithauer et al., 2006: direct 13.0%, indirect 13.4%; Zopito et al., 2006: direct 13.7%, indirect 10.3%). In this sample using peer report 16.6% of pupils were identified as indirect bullies, broadly similar to the percentage identified as engaging in direct bullying.

The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) designates self-rated conduct problem scores of five and above as abnormal. Approximately 10% of the population are said to score in the abnormal band. The proportion of the current sample scoring in the abnormal band was 11.4%, largely in line with the SDQ norms. As CU traits are not a diagnosis and assessment of these traits by the Inventory of Callous Unemotional Traits (ICU; Frick, 2003) does not represent a diagnostic screening tool, no official cut-offs for 'affectedness' exist. However, the means and standard deviations in this study (males: 26.26 (8.82); females: 23.23 (8.96)) were comparable to those previously reported by Essau et al. (2006) in a similar community sample (males: 27.12 (7.70); females: 21.64 (6.00)).

Procedure

Approval for the project and all informed consent procedures were obtained from the University College London Ethics committee. Permission for participation was obtained from parents/carers using an opt-out consent method appropriate to group survey data. Parents of all pupils aged 11–13 years were contacted and no parent refused consent for their child's participation in the project. Measures were completed on computers during school periods following information on the purpose of the activities, the voluntary nature of participation and confidentiality. No student declined to participate or subsequently withdrew.

Measures

Inventory of Callous-Unemotional Traits (ICU; Frick, 2003) consists of 24 items characterising poor empathy and flat affect. The instrument has 12 positively and 12 negatively worded items, such as *'I am concerned about the feelings of others', 'I do things to make others feel good.'* Each item is rated on a Likert scale from '0' ('Not at all true') to '3' ('Definitely true'). The self-report version of ICU, which has been most widely used with adolescents (e.g. Essau et al., 2006; Kruh, Frick, & Clements, 2005), was used in the current study. Good internal consistency (Cronbach's alpha of .81), comparable to that from earlier studies (Essau et al., 2006), was obtained in this sample.

The 'Guess Who' measure of bullying (Nabuzoka & Smith, 1993) is an unlimited nomination peer assessment measure. Children were asked to identify anyone in their class who fitted behavioural descriptors 'direct bully' and 'indirect bully'. The description of a direct bully was taken from Nabuzoka and Smith (1993): *'Direct Bully* – this person is a bully and often picks on other people or hits them or teases them or does other nasty things to them for no good reason.' This definition draws on work carried out into the terms used to define bullying by young people aged 13–14 years (Arora, 1996), such as 'picking on someone' and 'for no reason'. It captures the 3 characteristics of bullying: 'intentional harm', 'repeated over time', and 'in a relationship where there is an imbalance of power'. Intentional harm is signalled by the absence of any peer-defined 'legitimate' reason for the nastiness (such as retaliation on being hit, for example) and 'often' is intended to capture the repeated nature of the behaviour. 'Picking on' is intended to capture the power imbalance. 'Bullying is thus a relationship characterized by continued aggression and with a power asymmetry – a *picking on* or *harassment*, which can appear unfair to onlookers and which can have serious effects for those who are victims (Monks & Smith, 2006, p. 802).

The definition for 'Direct Bully' was adapted to produce a closely parallel description of an indirect bully: *'Indirect Bully* – This is a person who often spreads nasty rumours about people, says things behind people's backs to make them lose their friends and leaves people out of things on purpose to be nasty.' In this definition the power imbalance is signalled by the ability to make people lose their

friends and the term 'often' is again used. However, the intention to be nasty is explicitly stated to distinguish intentional exclusion from accidental overlooking. The score for each child was the proportion of classroom peers nominating them for each descriptor.

The Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997) is a widely used and well-validated measure of adjustment and psychopathology. SDQ is routinely administered in UK educational settings to index difficulty of functioning in several areas. The self-report questionnaire for 11- to 16-year-olds consists of 5 scales (of 5 items each): emotional symptoms, conduct problems, hyperactivity, peer relationship problems and prosocial behaviour. Pupils rate items as: *'Not True'*, *'Somewhat true'* or *'Certainly true'* for them. Subscale totals are the sum of the scores for the 5 items (0–10). Internal consistency, using Cronbach's alpha, for each scale was: emotional symptoms .71, conduct problems .64, hyperactivity .74, peer relationship problems .66, and prosocial behaviour .68.

Results

Analysis of gender differences

Descriptive statistics on all variables are presented in Table 1. Checks on data distributions showed the ICU, the SDQ prosocial behaviour scale, and the direct and indirect bullying scores to be significantly skewed. A square root transformation was applied to these variables. A logarithmic transformation was applied to the SDQ peer relationship problems and conduct problems scales. Analyses using the transformed scores are reported throughout.

Two one-way between-group MANOVAs and one one-way between groups ANOVA were performed to investigate gender differences on the study variables (see Table 1). Preliminary assumption testing indicated that the assumption of equality of covariance was violated in each analysis and Pillai's criterion was therefore applied to evaluate multivariate significance, rather than Wilks' lamda (Tabachnick & Fidell, 2001). In the first MANOVA of gender differences in bullying behaviour, the two independent variables were direct and indirect bullying. There was a statistically significant difference between males and females on the combined dependent variables. When the dependent variables were considered separately, using a Bonferroni adjusted alpha level of .025, males were significantly more likely to be seen as direct bullies than females, but no statistically significant differences were found for indirect bullying.

In order to further investigate the characteristics of the current sample, a one-way between-groups MANOVA was performed to investigate sex differences in adjustment and psychopathology on the five scales of the SDQ. There was a statistically significant difference between males and females on the combined dependent variables. When the SDQ scales were considered separately, using a Bonferroni adjusted alpha level of .01, significant gender differences were found on: emotional symptoms, conduct problems and prosocial behaviour. Females reported slightly higher levels of emotional symptoms, fewer conduct problems than males and more prosocial behaviour. No statistically significant differences between genders emerged for self-rated hyperactivity and peer relationship problems.

A one-way between-groups ANOVA was used to investigate gender differences in CU traits. Levene's test of homogeneity of variance showed no significant violation and it was found that males scored significantly higher on CU traits than females.

Table 1 Means and standard deviations for all measures for the total sample and for males and females.

	Whole sample (N = 704)	Males (N = 358)	Females (N = 346)	F	df	p	Partial e^2	M/F
Bullying Behaviour – Multivariate				67.80	2, 701	.001	.16	M ≠ F
Direct Bully (proportion score)[1]	.13 (.15)	.17 (.18)	.09 (.10)	44.10	1, 702	.001	.06	M>F
Indirect Bully (proportion score)[1]	.14 (.12)	.14 (.12)	.15 (.11)	4.36	1, 702	.037*	–	–
SDQ – Multivariate				17.89	5, 661	.001	.12	M ≠ F
SDQ – Emotional Symptoms (score range 0–10)	3.83 (2.53)	3.21 (2.39)	4.48 (2.52)	47.61	1, 665	.001	.07	F>M
SDQ – Conduct Problems (score range 0–10)	2.88 (2.10)	3.12 (2.08)	2.63 (2.09)	9.45	1, 665	.002	.01	M>F
SDQ – Hyperactivity (score range 0–10)	4.86 (2.51)	4.87 (2.42)	4.85 (2.60)	.21	1, 665	.64*	–	–
SDQ – Peer Relationship Problems (score range 0–10)	2.38 (2.06)	2.44 (2.08)	2.32 (2.05)	.14	1, 665	.71*	–	–
SDQ – Prosocial Behaviours (score range 0–10)	7.26 (1.91)	6.90 (1.93)	7.63 (1.81)	23.87	1, 665	.001	.04	F>M
ICU (score range 0–72)	24.72 (9.01)	26.16 (8.82)	23.23 (8.96)	20.14	1, 703	.005	.028	M>F

Note: Standard deviations in brackets. Numbers ranged from 704 to 692 because of missing data.
*Not statistically significant at Bonferroni adjusted alpha level of .025.
[1]Proportion of classmates from whom nominations were received for the descriptors: direct bully and indirect bully.

Table 2 Correlations between peer assessed measures of bullying and self-report measures of psychopathology and adjustment

Dependent variables	Direct bullying	Indirect bullying	CU traits	Conduct problems	Emotional symptoms	Hyper-activity	Peer relationship problems
Indirect bullying	.66						
CU traits	.34	.20					
Conduct problems	.37	.29	.55				
Emotional problems	–.03	.06	.03	.22			
Hyperactivity	.28	.26	.43	.59	.23		
Peer relationship problems	.05	.03	.20	.23	.40	.11	
Prosocial behaviours	–.22	–.11	–.55	–.35	.08	–.29	–.15

Note: All correlations equal to or greater than .11 are significant at a per test significance level of $p < .005$ correcting for familywise error rate.

Analysis of associations between variables

Table 2 shows the Pearson's correlations between the variables. Direct and indirect bullying were moderately correlated and their pattern of correlations with the other variables investigated was generally similar. In each case there were significant positive correlations with CU traits, conduct problems and hyperactivity, a significant negative correlation with prosocial behaviours and no significant association with emotional problems or peer relationship problems. The positive correlations with CU traits and conduct problems and the negative correlation with pro-social behaviours were higher for direct than indirect bullying.

CU traits were significantly correlated with conduct problems. Both CU traits and conduct problems were positively correlated with hyperactivity, more strongly in the case of conduct problems, and were negatively correlated with prosocial behaviour, more strongly in the case of CU traits. CU traits did not significantly correlate with emotional symptoms whereas conduct problems showed a moderate positive correlation.

In considering the size of the correlations between the bullying scores and the other measures, it should be noted that peer reports were used to assess bullying, and self-reports to assess CU traits, conduct problems and other variables. This has the advantage of avoiding problems associated with common method variance, including spuriously inflated associations between variables.

Regression analyses investigating the association between conduct problems, CU traits and gender with bullying

Two hierarchical moderated regression analyses were conducted on the transformed variable scores. The first modelled direct bullying as the dependent variable, with conduct problems, CU traits, and gender as main effects entered sequentially in separate steps, and 'conduct problems * CU traits', 'gender * conduct problems', and 'gender * CU traits' concurrently entered as interaction terms in the final step of the regression (see Table 3). At step 1 of the regression, conduct problems were a significant predictor in the equation ($t = 10.55$, $p < .01$). At step 2 of the regression, CU traits were a significant predictor in the equation ($t = 4.67$, $p < .01$). At step 3 of the regression, gender was a significant predictor in the equation ($t = 5.34$, $p < .01$), with males having higher scores than females.

Table 3 Hierarchical regression analyses of conduct problems, CU traits, gender, gender × conduct problems, gender × CU traits, and conduct problems × CU traits on direct bullying ($N = 704$)

Variable		*B*	*SE B*	*β*
Step 1	Conduct problems	.29	.03	.37***
Step 2	Conduct problems	.21	.03	.27***
	CU	.05	.01	.19***
Step 3	Conduct problems	.20	.03	.26***
	CU	.04	.01	.17***
	Gender	-.08	.02	–.18***
Step 4	Conduct problems × CU	.09	.03	.11**
	Gender × Conduct problems	.13	.05	.08*
	Gender × CU	ns	ns	ns

Note. $R^2 = .14$ for Step 1. $\Delta R^2 = .03$ for Step 2, $p < .001$. $\Delta R^2 = .03$ for Step 3, $p < .001$. $\Delta R^2 = .02$ for Step 4, $p < .01$. For Model 1, $F(1, 702) = 111.35$, $p < .001$. For Model 2, $F(2, 701) = 68.25$, $p < .001$. For Model 3, $F(3, 700) = 56.77$, $p < .001$. For Model 4, $F(6, 697) = 32.22$, $p < .001$. *$p < .05$, **$p < .01$, ***$p < .001$.

At the final step of the regression, to examine the possibility of interactions and compute the relevant simple slopes, we followed the procedures discussed in Jaccard, Turrisi, and Wan (1990; see also Holmbeck, 2002, and, for an application, Petrides, Frederickson, & Furnham, 2004) using macros developed by McKimmie (2004). For significant interactions, the correct standardised betas were derived through the methods outlined in Friedrich (1982) and Aiken and West (1991). The interaction terms for 'conduct problems * CU traits' (see Figure 1a) and 'gender * conduct problems' reached significance levels ($t_{\text{conduct problems*CU}} = 3.23$, $p < .01$; $t_{\text{gender*conduct problems}} = 2.39$, $p < .05$); however, that for 'gender * CU traits' did not ($t = 1.01$, $p = .313$). The interpretation of the interaction effects is as follows: the relationship between conduct problems and direct bullying becomes progressively stronger as CU traits

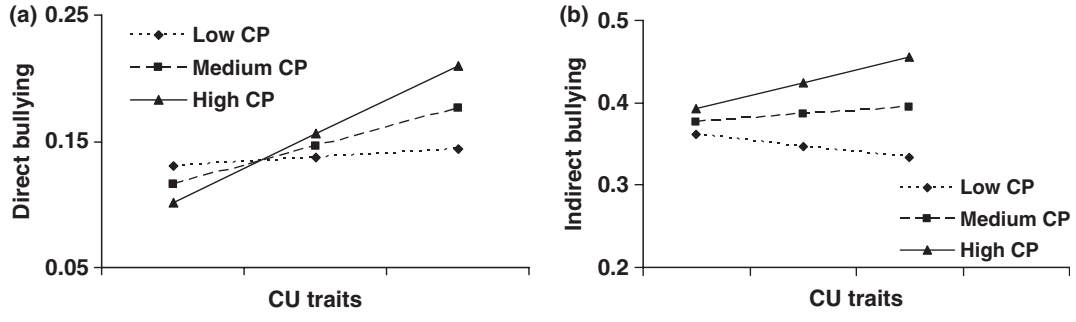

Figure 1 Interaction between CU traits and conduct problems on a) direct bullying and b) indirect bullying

Table 4 Hierarchical regression analyses of conduct problems, CU traits, gender, gender × conduct problems, gender × CU traits, and conduct problems × CU traits on indirect bullying (N = 704)

Variable		*B*	*SE B*	*β*
Step 1	Conduct problems	.19	.02	.29***
Step 2	Conduct problems	.17	.03	.26***
	CU	ns	ns	ns
Step 3	Conduct problems	.17	.03	.27***
	CU	ns	ns	ns
	Gender	.04	.01	.12***
Step 4	Conduct problems × CU	.09	.03	.13***
	Gender × Conduct problems	ns	ns	ns
	Gender × CU	ns	ns	ns

Note. R^2 = .09 for Step 1. Δ R^2 = .00 for Step 2 (ns). Δ R^2 = .02 for Step 3, p = .001. Δ R^2 = .02 for Step 4, p < .01. For Model 1, $F(1, 702) = 65.52$, p < .001. For Model 2, $F(2, 701) = 33.74$, p < .001. For Model 3, $F(3, 700) = 26.73$, p < .001. For Model 4, $F(6, 697) = 16.42$, p < .001. ***p < .001.

increase and conduct problems are somewhat more strongly related to direct bullying in females than in males.

The second regression modelled indirect bullying as the DV, with the same predictors and order of entry as in the analysis reported above (see Table 4). At step 1 of the regression, conduct problems were a significant predictor in the equation (t = 8.09, p < .01). At step 2 of the regression, CU traits did not reach significance levels (t = 3.42, p = .17). At step 3 of the regression, gender was a significant predictor in the equation (t = 3.42, p < .01), with females having higher scores than males. At the final step of the regression, following the same procedures as discussed above, only the 'conduct problems * CU traits' interaction reached significance levels (t = 3.54, p < .01) (see Figure 1b), indicating that the relationship between conduct problems and indirect bullying becomes progressively stronger as CU traits increase. Thus, neither the 'gender * conduct problems' (t = .288, p = .77) nor the 'gender * CU traits' (t = 1.70, p = .09) interaction reached significance levels.[1]

[1] For purposes of completeness, we also tested for three-way interactions between gender, conduct problems, and CU traits (not shown in the tables). These analyses were exploratory. The three-way interaction tests did not reach significance levels in either the regression with direct or indirect bullying.

Discussion

The main aim of this study was to investigate the independent association of CU traits with bullying, over and above the association with conduct problems. Our hypothesis that higher levels of CU traits would be independently associated with higher levels of bullying was supported in relation to direct, but not indirect bullying. There are several reasons why CU traits may be independently associated only with direct forms of bullying. We had hypothesised a stronger effect of CU traits in relation to direct bullying as previous findings had suggested that lack of empathy (one of the defining features of children with CU traits) is associated with direct bullying but not indirect bullying in 12-year-olds (Kaukiainen et al., 1999). The very nature of direct bullying involves physical confrontation with the victim. Such physical confrontations may be made easier if the perpetrator lacks sensitivity to the distress of the victim, as seems to be the case with individuals who have CU traits. Indirect bullies do not usually have direct contact with their victim, but instead use friends and nasty rumours, so they would not have to confront or process the distress they cause to the victim. This may explain why CU traits did not have an independent association with indirect bullying. However, CU traits did increase risk for indirect bullying in combination with conduct problems. We had hypothesised that the relationship between conduct problems and both types of bullying would become stronger as the level of CU traits increased. Our data supported this prediction and are in line with previous literature indicating that the combination of conduct problems and CU traits result in a particularly severe profile of behavioural problems (Frick & Marsee, 2006).

Gender differences in CU traits, conduct problems and bullying behaviour emerged in this sample. Consistent with previous research (Essau et al., 2006), males were significantly more likely to rate themselves as callous and unemotional than females. Males had higher rates of conduct problems than females, a finding that is now well established in several samples (Moffitt, Caspi, Rutter, & Silva, 2001). Similar to previous research, males in this study engaged in higher rates of direct bullying than females (Archer, 2004; McDermott, 1996) and

females engaged in higher rates of indirect bullying than males (Björkqvist, Lagerspetz, & Kaukiainen, 1992; Crick & Grotpeter, 1995; Österman et al., 1998). Although both conduct problems and direct bullying were less common in females than in males, conduct problems were somewhat more strongly related to direct bullying in females than in males. This finding is in line with the notion that conduct problem behaviours are gender atypical for females and index considerable disturbance that clearly includes other behaviours also uncommon for females, e.g. direct bullying.

The associations between CU traits, conduct problems and the other variables investigated are consistent with findings from previous studies, thus providing a check of construct validity to CU trait and conduct problem assessment in this study. As in previous research, CU traits and conduct problems were found to be moderately highly correlated (Frick et al., 2000; Viding, Frick, & Plomin, 2007). Both CU traits and conduct problems were associated with hyperactivity, peer problems and low prosocial behaviours. However, while there was a significant association between emotional symptoms and conduct problems, such an association was not observed between CU traits and emotional problems. The emotional problems scale on the SDQ taps into anxiety and depression. The findings reported here concord with the well-documented relationship between conduct problems and internalising disorders (e.g., Frick et al., 2000). Likewise, the absence of a significant relationship between CU traits and emotional symptoms is consistent with previous findings and the 'unemotional' characterisation of individuals with CU traits (Blair et al., 2006; Frick et al., 2000).

As in other studies (e.g. Crick & Grotpeter, 1995; Kaukiainen et al., 1999), direct and indirect bullying were found to be moderately highly correlated, as would be expected for discriminably different forms of the same underlying behaviour. The pattern of association with the other variables investigated was very similar across both types of bullying. However, the profile of direct bullying was consistently more indicative of psychopathology, being more strongly associated with conduct problems, CU traits and low levels of prosocial behaviours.

It is well established that bullies are more likely to have behaviour problems, in particular conduct problems (e.g. Kumpulainen et al., 2001; Salmon et al., 2000; Wolke et al., 2000). Recent research has suggested that it may be important to sub-type children with conduct problems to those with and without CU traits (Frick & Marsee, 2006). This study supports the potential value of such a development in providing better differentiated assessment and additional information on risk factors for bullying behaviour, at least among early adolescents.

Some limitations of the present study should also be mentioned. The participants in this study represented a narrow age range and further investigation of other age groups is needed to determine the generalisability of these findings. The definition of direct bullying has been previously used in peer report studies of bullying and draws on research with young people of this age in phrasing the definition to present the three key characteristics of bullying in terms likely to be readily understood. However, it must be acknowledged that the definition is considerably briefer and less explicit than that commonly used in self-report studies of bullying (Olweus, 1993). In addition, while the definition of indirect bullying was designed to parallel that of direct bullying, one obvious difference was the explicit focus on nasty intent in the definition of indirect bullying, which contrasted with the implicit suggestion in the definition of direct bullying that the nasty things done could not be excused by any reason that would be regarded as legitimate by the peer group. The extent to which such definitional differences may have influenced the results of the study is unclear.

While bullying was assessed by peer report, with data being collected from all classmates, behaviour problems and prosocial behaviour were assessed by self-report alone and there is sometimes concern about underreporting of behaviour problems when self-reports are used. These concerns apply in particular to young people with significant externalising problems as findings from clinic samples indicate lower self-reporting of externalising problems by young people (10–16 years) than by their parents, while in community samples young people report higher externalising and internalising problems than do their parents (Sawyer, Baghurst, & Mathias, 1992). The self-report measure used in this study, the SDQ, is well validated for use in research of this kind (Goodman, Meltzer, & Bailey, 1998) and has been found to be as good as the parent-rated version at predicting a psychiatric diagnosis when ratings from a single source are used (Becker, Hagenberg, Roessner, Woerner, & Rothenberger, 2004). However, Becker et al. (2004) also report that improved prediction is obtained with ratings from multiple sources and so the use of a single data source should be acknowledged as a limitation.

A further point to consider in relation to the data collection methods is the use of computer administration. In a review of computer-assisted clinical assessments, Berger (2006) argues that issues of equivalence between computer and original versions should be a matter for empirical demonstration and should not simply be assumed. The limited research that has so far been carried out comparing the computer version of the SDQ self-report scale with the paper and pencil version concluded that the computer version is to be preferred, reporting trends towards better test–retest reliability and inter-rater reliability, as well as significantly higher user

satisfaction (Truman et al., 2002). It must be acknowledged that issues of equivalence concerning the other measures cannot currently be addressed. Finally, the effect sizes reported in this study are relatively modest. This is perhaps not surprising as most behaviours/traits that psychologists are interested in are multifactorial. Thus, conduct problems, CU traits and gender are no doubt only a subset of factors contributing to bullying behaviour.

The findings of this study have implications for interventions with children who bully. Given the natural reinforcers for bullying, such as control of resources and social power, it is easy to see why the behaviour is resistant to change (Smith, Pepler, & Rigby, 2004). However, the most commonly recommended interventions for persistent bullying fall into two categories, neither of which is likely to be successful with children who have strong CU tendencies. The first type of approach, which can be characterised as 'educative', for example the Method of Shared Concern (Pikas, 2002; Rigby, 2005), seeks to make pupils who bully aware of and care about the distress their behaviour causes in developing their motivation to change. The reliance placed by these approaches on engaging empathy for the victim makes them unlikely to succeed with children high on CU traits who have great difficulties with empathy (Blair et al., 2006). Difficulties with empathy were clearly evidenced in the present study by the strong negative correlation between the CU measure and the Prosocial SDQ scale which contains several empathy-based items.

The second type of intervention approach identified by Smith et al. (2004) is essentially punitive and is exemplified by 'zero-tolerance' policies involving exclusion from school and other high-level disciplinary sanctions. It is doubtful if such an approach will be effective with children high on CU traits who show reduced responsivity to punishments in learning new behavioural strategies (Blair et al., 2006). Further research is needed to establish which intervention approaches work best with different subgroups of children who bully. Our hypothesis would be that children high on CU traits may be helped most by a combination of close supervision by adults or peer mentors to prevent any bullying behaviour being rewarded and the establishment of a system of rewards for behaviour incompatible with bullying.

In conclusion, the present study highlights the importance of viewing CU traits and conduct problems, not only as related phenomena, but also as distinct entities in mediating the underlying susceptibility of children to bully others. In particular, children high on CU traits may have a cognitive predisposition, such as problems in emotion processing or managing behaviour in the presence of punishment, that act as a mediator for direct bullying behaviour. Looking at whether CU traits in children moderate current bullying intervention outcomes may help further develop more precise understandings of the mechanisms that may underpin different types of bullying behaviour.

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Key points:

- The association of conduct problems and bullying is well known.
- This study demonstrated an independent association of callous-unemotional traits with direct bullying, over and above the association with conduct problems.
- Although not independently associated with indirect bullying, callous-unemotional traits interacted with conduct problems in predicting both indirect and direct bullying.
- A combination of conduct problems and callous-unemotional traits appears to represent an increased risk for bullying behaviour in early adolescence.
- Bullies high on callous-unemotional traits are likely to be particularly resistant to commonly employed bullying interventions.

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