

attacked not directly, but circuitously, and the aggressor can thereby remain unidentified and avoid counterattack' (Björkqvist, 1995, p. 183)]. In a similar vein, Crick and Grotpeter [1995] found evidence to suggest that girls use more relational aggression than boys [defined as 'harms others through damage to their peer relationships' (Crick, 1995, p. 313)] whilst boys use more overt aggression than girls. [See Underwood et al., 2001 for a discussion of the similarities and differences between indirect and relational aggression.]

However, studies examining indirect and relational aggression are limited in two main respects; firstly, they tend to be restricted to Finnish and American samples respectively. The few studies that have been carried out in different countries have failed to replicate the results from the Finnish and American studies [Osterman et al., 1994, in Finland, Poland and Chicago; Owens and MacMullin, 1995, in Australia; Tomada and Schneider, 1997, in Italy]. This raises the question of whether these findings generalise across cultures.

Secondly, with one exception [McNeilly-Choque et al., 1996], all these studies have relied on report methods, in particular peer and teacher reports. Whilst these measures are an efficient means of gathering data on children's aggressive behaviours, they are likely to be subject to bias. For example, evidence suggests that sex-role stereotypes influence both attention to and recall of behaviours. In particular, children may have a selective memory for gender-consistent behaviour over gender-inconsistent behaviour, and may even distort gender inconsistent information [see Younger et al., 1991]. If this is the case, the lack of sex differences in peer nominations of relational and indirect aggression in younger children [Björkqvist et al., 1992; Crick et al., 1997, McNeilly-Choque et al., 1996] may result from a lack of awareness of sex-role stereotypes as they relate to relational and indirect forms of aggression. Likewise, the differences found with older children [Crick and Grotpeter, 1995; Lagerspetz and Björkqvist, 1994] may to a certain extent reflect these children's increasing awareness of sex-role stereotypes. Such an interpretation receives some support from Crick et al. [1996] who found that girls' normative beliefs about girls' angry behaviour changed significantly between the ages of 9 and 12, with older girls considering relational aggression to be more normative than younger girls.

Teacher reports may be subject to similar influences. A bias in teachers' reporting of children's behaviours is supported by studies that suggest a 'halo' effect operates in teachers' ratings of girls [i.e. they are rated higher than boys on a large number of desirable traits (see Terman and Tyler, 1954)]. This would suggest that teacher ratings are not free from bias with regard to sex differences. Teacher ratings may also be influenced by sex-role stereotypes and this may account for the higher teacher ratings of relational aggression in girls as well as the lower ratings of girls' overt aggression. This interpretation is partially supported by McNeilly-Choque et al. [1996] who found significant correlations between peer nominations and teacher reports of 4 to 5 year old boys' overt and relational aggression but non-significant correlations between peer reports and teacher reports of girls' overt and relational aggression. They also found significant correlations between teacher reports and observations of overt aggression for boys but not for girls.

In addition, peer and teacher nominations provide little information about the extent of the differences between girls and boys. Nominations relate only to those children at the extreme ends of the scale, i.e. to those children who display high levels of aggression; for the majority of children there may be little difference in the extent to which they employ direct/overt versus indirect/relational forms of aggression. It may also be the case that within-gender variation is much higher for each form of aggression than between-gender variation [e.g. see Hyde, 1984, 1990].

For these reasons, the first aim of the present study was to use not only self reports and peer reports to examine sex differences in physical, verbal, and indirect aggression, but also to employ an observational measure for this purpose. Although the use of an observational measure results in a relatively small sample size, it avoids the bias that may be associated with report methods. The measures in the present study were taken with two age groups; year 3 children (aged 7 to 8 years) and year 6 children (aged 10 to 11 years). The research was undertaken at schools within the UK and was therefore also able to assess the extent to which previous findings generalised to British school children.

Previous research employing self and peer reports and observational measures have found higher levels of physical aggression amongst boys than girls. One would, therefore, also expect this to be the case in the present study [e.g. Archer et al., 1988, observational measures with 6 to 11 year olds; Osterman et al., 1994, self reports with 8 to year olds].

Previous research examining direct verbal aggression has been more ambiguous. Both Björkqvist and Crick combined direct verbal aggression with direct physical aggression (labelling the categories as 'direct' and 'overt' respectively) and found higher levels amongst boys compared to girls [Björkqvist et al., 1992, peer ratings with 8 to 9 year olds; Crick et al., 1997, teacher ratings with 3 to 5 year olds; Lagerspetz and Björkqvist, 1994, peer ratings with 11 to 12 year olds]. However, other studies examining direct verbal aggression separately from physical aggression have found either higher levels amongst boys [e.g. Owens and MacMullin, 1995, peer ratings with 7 to 8 to and 11 to 12 year olds], no sex difference [e.g. Pelham et al., 1989, teacher ratings with 8 to 10 year olds] or even higher levels amongst girls [e.g. Archer et al., 1988, classroom-based observational measures with 6 to 11 year olds]. It is therefore difficult to make predictions regarding sex differences in levels of direct verbal aggression in the present study.

The present study also examines levels of indirect aggression. [Although data on relational aggression is not reported here, there is considerable overlap between the two categories, see Underwood et al., 2001.] According to research by Lagerspetz and Björkqvist [1994] girls display significantly higher levels of indirect aggression than boys at approximately 11 years of age. However, Lagerspetz and Björkqvist also claimed that girls often fail to recognise their own indirect aggression, and therefore these differences may not show up in the self report measure. Björkqvist et al., [1992] also found no significant sex difference in peer nominations of indirect aggression at 8 to 9 years and suggested that differences only emerge later, peaking at approximately 11 years. If this is the case, the present study should find significantly higher levels of peer reported and observed indirect aggression amongst girls in year 6, but no sex differences in year 3.

The reason for any sex differences in aggressive behaviour also remains controversial. Whilst some authors suggest they may have a biological basis [e.g. Campbell, 1999; Maccoby and Jacklin, 1975], others place more emphasis on cultural influences [e.g. Eagly, 1987; Eagly and Wood, 1999]. However, any full account of sex differences in aggression requires a mechanism by which biological pre-dispositions and/or cultural influences are translated into behaviour. One such possible mechanism is differing beliefs about aggression.

Campbell et al. [1992] claimed that in general women view aggression as 'expressive' whilst men see it as 'instrumental.' Briefly, these can be related to a loss of self-control and the exercise of control over others, respectively. Since then, a number of studies have found evidence for this sex difference in both adults [Archer and Haigh, 1997a; Campbell and Muncer, 1994; Campbell et al., 1993, 1995] and children [Archer and Parker, 1994; Tapper and Boulton, 2000] and in direct and indirect forms of aggression.

These differing beliefs about aggression have also been put forward as a possible causal influence on levels of aggression [Archer and Haigh, 1997a; Campbell et al., 1993, 1997]. Campbell et al. [1993] employed a modified version of the Conflict Tactics Scale (CTS) [Straus and Gelles, 1990, as cited in Campbell et al., 1993] to measure levels of aggression scored on two subscales of violence and verbal aggression. Although no sex difference was found in the scores for either of the subscales or the total score, a significant correlation ($-.23$) was found between EXPAGG (the questionnaire used to measure an individual's adherence to instrumental and expressive beliefs about aggression) and the total score for the CTS (i.e. the combined scores for violence and verbal aggression), indicating that those who held more instrumental beliefs about aggression reported themselves to be more aggressive as measured by the modified CTS. They concluded that instrumental beliefs about aggression seemed to be 'implicated in an overall willingness to employ diverse forms of aggression as a means of conflict resolution' [p. 131].

Archer and Haigh [1997a] also predicted a link between beliefs about aggression and levels of aggression. Referring to expectancy value theories [e.g., Fishbein and Ajzen, 1975 cited in Archer and Haigh, 1997a] and cognitive social learning theory [e.g., Bandura, 1973] they suggested that the anticipated consequences of aggression might influence behaviour. According to Archer and Haigh the instrumental scale from their modified version of EXPAGG would be associated with positive anticipated outcomes of aggression whereas the expressive scale would be associated with more negative anticipated outcomes. They therefore predicted that instrumental beliefs would show a positive correlation with aggression, and expressive beliefs a negative correlation. Since the items on their scales tended to be concerned with physical aggression they also predicted that these correlations would be higher for physical than for verbal aggression.

Using these scales to examine instrumental and expressive beliefs, Archer and Haigh [1997a] examined the relationship between beliefs about aggression and self reported aggression in university students. They used Buss and Perry's [1992] Aggression Questionnaire, which contains four subscales of physical aggression, verbal aggression, hostility and anger, as their measure of aggression. As predicted, results showed significant correlations between scores on the physical aggression subscale and the instrumental scale for both men (.53) and women (.50), and lower, but still significant correlations between scores on the verbal aggression subscale and the instrumental scale (.31 overall, separate correlations for men and women were not reported). These results are consistent with their suggestion that outcome expectancies influence level of aggression. However, although physical aggression also showed a significant, but lower, negative correlation with the expressive scale for males ($-.31$) there was almost no correlation for females (.04). There was also no overall significant correlation between scores on the verbal aggression subscale and the expressive scale ($-.10$). Archer and Haigh suggested that the low association between the expressive scale and the Aggression Questionnaire may have been due to the fact that the items on this scale were more concerned with feelings whereas those on the instrumental scale tended to be concerned with beliefs about the efficacy of aggression. They suggested that the latter may form expectancies which are causal agents in aggressive behaviour whereas the former, beliefs about emotions associated with aggression, are not as causally relevant.

Archer and Haigh [1997b] also studied the relationship between beliefs about aggression and self-reported levels of aggression amongst male and female prisoners. Again, instrumental but not expressive beliefs were found to be highly correlated with self-reported levels of aggression. In addition, those convicted for violent offences scored lower on the scale measuring expressive beliefs.

However, an alternative account of beliefs about aggression is that they are causally independent from behaviour. For example, it is feasible that there is a sex difference in beliefs about aggression because males tend to be reinforced by others (or observe others being reinforced) for talking about aggression in an instrumental manner. Conversely, girls may be reinforced (or observe others being reinforced) for talking about aggression in a manner consistent with an expressive representation. Any associations with levels of aggression may result from a third variable of social reinforcement, i.e. peers who are likely to reinforce an individual for talking about aggression in an instrumental manner may also be more likely to reinforce aggressive behaviour. Likewise, those who reinforce an expressive belief may be more likely to punish aggressive behaviour.

Such an account is more in line with Campbell's [1999] more recent view that instrumental and expressive beliefs about aggression are 'post hoc rhetorical devices employed by socially situated individuals to explain their actions' (p.213). Campbell suggests that they are a function of the degree of stigma attached to the act rather than of the sex of the aggressor. She supports this claim with reference to research showing variation in instrumental and expressive beliefs according to the sex of the victim [Archer and Haigh, 1999]. However, these latter findings do not rule out the possibility that such variations in beliefs are also causally related to differences in actual levels of aggressive behaviour.

The second aim of the present study was therefore to examine the relationship between beliefs about aggression and levels of aggression. The cross-sectional design of our study meant that we could not address directly the causal linkages between levels of aggression and beliefs about aggression. Nevertheless, any evidence for/against concurrent associations would have implications for the causal hypothesis. For instance, lack of concurrent associations would be difficult to reconcile with the causal hypothesis, whereas evidence for such associations would not. Moreover, the latter would provide a rationale for future studies to examine longitudinal linkages.

The present study differs from previous research in this area in three main ways. Firstly, the correlations between beliefs and levels of aggression obtained by Campbell et al. [1993] may have occurred due to underlying associations with sex. In other words, beliefs may have correlated with levels of aggression only because sex correlated with both beliefs and levels of aggression. Thus in the present study hierarchical regression analysis was used to partial out any variance associated with sex and age. Secondly, in contrast to previous research [Archer and Haigh, 1997a, b; Campbell et al., 1993], the present study employs peer reports and observations of aggression as well as self reports. As Archer [1995] noted, studies should ideally incorporate different methods of research in order to provide cross-validation. And thirdly, also in contrast to previous research [Archer and Haigh, 1997a, b; Campbell et al., 1993], the present study was conducted with primary school children rather than adults. This is also important since if beliefs about aggression are always causally linked to levels of aggression, the relationship should be evident in children as well as adults.

METHOD

Participants

The participants were 74 children in years 3 and 6 (ages 7 to 8 and 10 to 11) in two British primary schools. Fifteen males and 19 females were in year 3 whilst 19 males and 21 females were in year 6. Active parental consent was obtained for all children.

Observations of Aggression: Wireless Microphone and Hidden Video Camera Equipment

A video camera and wireless microphone were used to record each child's behaviour throughout the morning and lunchtime breaks. The transmitter was placed inside a sealed black box which was then placed in a small waist bag. The target child (see procedure) wore the waist bag around his or her waist and the microphone was clipped to his or her clothing. Five other waist bags with microphones and black boxes were also used for the purposes of habituation (see procedure). The video recorder and receiver were placed in a rucksack and the camera fitted into a badge stating the name and institution of the researcher. This was attached to the left strap of the rucksack and the wires were hidden inside the strap. The rucksack was either worn by the researcher or placed in a convenient position with the badge facing toward the target child. See Tapper and Boulton [2002] for a more detailed description of the equipment.

Habituation. The children were told that they would be recorded some of the time that they were wearing a microphone, but that most of the time they would not be recorded. They were also asked to act normally whilst wearing a microphone and were told that it would not matter what they said since only the researcher, and other researchers from the university, would listen to the recordings. It was emphasised that neither their teachers or parents would be told about anything they said whilst being recorded and that they would not get into trouble of any kind.

Each child wore one of the waist bags and microphones for between three and four hours a day for a minimum of four days before they were recorded. The first four or five days at each school served as both a pilot period for the researcher and an habituation period for the children to both the microphones and the researcher's presence. After this time, up to five children were habituated to the dummy microphones whilst another child wore the real microphone and served as the target. Due to absences it was necessary to always have at least two children fully habituated at one time, thus if one of these children was away on the day he or she was to serve as the target the other child could serve as the target in his or her place. As a result participants did not always wear microphones on consecutive days and there were not always five other children wearing microphones. See Tapper and Boulton [2002] for further discussion of issues relating to habituation.

Data collection. The audio transmitter was switched on, and the box re-sealed before the microphone and waist bag were given to the target child. A stop watch was started simultaneously to enable field notes to be synchronised with the video tape. Throughout the recording the researcher made field notes recording the time on the stopwatch, whether or not the subject was in range, who the subject was grouped or interacting with, and any additional relevant information that might not have been recorded on the video (e.g. speech or gestures from someone at a distance). Microphones were collected at the end of the lunch hour and equipment turned off in the staff room or researcher's car. See Tapper and Boulton [2002] for a more detailed description of the procedures.

Duration of observations. Each child was observed for a minimum of 20 minutes in the playground and 40 minutes throughout the whole of the morning and lunchtime breaks. These latter periods included observations taken, for example, in the dinner hall, the queue for the dinner hall, and the classroom during wet playtimes. The video recording was used to calculate observation times for each target child. If these times were not met in a single day the child was asked to wear the microphone again. In most of these cases, where only a

relatively short period of time was required, the microphone was given to different children at different times on the same day. The mean amount of observational material collected during break when the target child was in range for both the video and audio recording was 58 minutes for year 3 girls (ranging from 41 to 97 minutes), 62 minutes for year 3 boys (ranging from 40 to 105 minutes), 60 minutes for year 6 girls (ranging from 48 to 77 minutes) and 64 minutes for year 6 boys (ranging from 45 to 86 minutes).

Coding of aggression. A preliminary examination of the video recordings, together with previous taxonomies of aggression, were used to devise a coding scheme. This was tested in conjunction with the recordings and modified a number of times. Aggression was classified as either direct physical, direct verbal, or indirect (see Appendix A for definitions).

Inter-observer reliability. Inter-observer reliability for the aggression types was assessed between the first author and the second author, and between the first author and a male graduate student with no other involvement in the project.

Kappa's coefficient of concordance was used to assess inter-observer reliability. Seventy-eight acts of aggression were independently coded by the first and second authors. These produced an overall kappa coefficient of 1.00. One-hundred and fifty-nine acts of aggression were independently coded by the first author and the graduate student. These resulted in an overall kappa coefficient of 0.97¹. Therefore, overall, excellent inter-observer reliability was achieved.

Self and Peer Ratings of Aggression

The categories of aggression employed in the self and peer ratings of aggression were physical aggression, direct verbal aggression, and indirect aggression. The definitions provided to children can be found in Appendix B. These categories were based on pilot studies with year 3 children (7 to 8 years), details of which can be found elsewhere [Tapper, 1998].

Self and peer ratings were collected via standardised interviews conducted individually with each child. In three of the four classes interviews took place after all children in the class who were involved in the observational study had been observed. Due to time constraints, in the year 6 class of the second school, interviews were started whilst three children were still being observed. Interviews with these particular children did not, however, take place until after they had been observed. All interviews in each class were completed within a four-day period.

At the start of the interview the child was informed that he or she would be asked some questions about him- or herself and about the children in his or her class. It was emphasised that the task was not a test and that answers would not be shared with other pupils or teachers.

Peer ratings of aggression. The child was shown the three categories of aggression and told that these were some of the ways children sometimes tried to hurt each other. The categories and definitions were read out to each child and each child was asked whether or not he or she understood each one. The researcher expanded on the categories and/or gave examples where necessary.

Each child was then re-read one of the categories and was asked to rate each of his or her classmates on the five point scale according to how often, in general, they displayed the

¹There were just three instances in which the raters' codes differed from one another. In two of these instances one rater coded the act as direct verbal aggression whilst the other coded it as indirect aggression. In the third instance the disagreement occurred between the subcategories of 'indirect verbal' and 'expression of dislike' within the category of indirect aggression (see Appendix A).

aggressive behaviour ('never', 'only ever once', 'a few times', 'some of the time', 'a lot of the time', scored one to five). In most cases the classmates' names were read out to the children, except for those children of higher reading ability who were given the option of reading the names for themselves. This was then repeated with the other two categories. The order in which the categories were used was counterbalanced. Each child was asked to either state or point to the rating he or she chose and all responses were recorded by the researcher on prepared data sheets.

Self ratings of aggression. The child was reminded of the categories of aggression and the fact that all answers were confidential. One of the categories was re-read to the child and he/she was asked to rate on the five point scale (see above) how often in general he/she displayed this form of aggression. This was then repeated for the other two categories. Again the order of the categories were counterbalanced and the child was asked to either state or point to the rating he or she chose. All responses were recorded by the researcher on prepared data sheets.

Test-retest reliability. Test-retest reliability was assessed for the physical category for both the peer and self ratings with ten females and ten males (five females and five males in each year). The second of these interviews took place between three and six days after the first. For the peer ratings the mean rating received for each child in the class was calculated for the five males and five females at time one and time two. These produced a Pearson's correlation of .78 ($p < .001$). The self ratings for the five males and five females produced a moderate Pearson's correlation of .47 ($p < .03$).

Beliefs About Aggression

Three questionnaires were used in this study to assess beliefs about aggression, each a modified version of the original EXPAGG questionnaire used by Campbell et al. [1992]. Each questionnaire focused specifically on either 'hitting and fighting', 'saying nasty things to people and having rows' or 'saying nasty things behind someone's back.' These behaviours were chosen as typical examples of direct physical, direct verbal, and indirect aggression respectively, and the questionnaires were labelled 'physical expagg', 'verbal expagg,' and 'indirect expagg'. Full details of these questionnaires can be found in Tapper and Boulton [2000].

The questionnaires were administered individually or in groups of two to six, the younger children and those with a lower reading ability completing the questionnaires individually or in the smaller groups. The groups were selected according to what was most convenient for the class teacher and researcher. During group administration, the children were seated and instructed to ensure that others could not see their responses. The children were instructed to ask if they did not know the meaning of any terms in the questionnaires.

Standardised instructions and a practice item were read aloud before the questionnaires were completed. As well as stating what the questionnaire was about, and how it should be filled in, the instructions informed the children that their answers would be confidential and asked them not to talk or let anyone else see their answers, and to ask if there was anything they did not understand. In most cases the questionnaires were then read through with the children, with the exception of those children of higher reading ability, who were given the option of reading them by themselves.

The children returned a second and third time to complete the remaining two questionnaires. The order in which the questionnaires were completed was counterbalanced.

Test re-test reliability. Test re-test reliability for the direct physical questionnaire was examined. The second of these was completed between two and five days after the first by 10 year 3 children (5 males and 5 females) and eleven of the year 6 children (4 males and 7 females). The correlation between the two questionnaires was $r = .80$ ($p < 0.01$).

RESULTS

Sex and age differences in levels of aggression: observational data, peer ratings and self ratings

The number of acts per hour for each of the three types of aggression were calculated for every child. Table I shows the mean rates for year 3 and year 6 boys and girls, together with effect sizes for the sex differences. Table I shows that overall, boys displayed higher mean rates of physical and direct verbal aggression than girls. In contrast, girls showed higher levels than boys of indirect aggression. The effect sizes were 0.63 for physical aggression, -0.36 for indirect aggression but only 0.06 for direct verbal aggression. In addition, year 6 children showed higher levels of all three forms of aggression compared to year 3 children.

For every child, a mean peer rating for each of the three types of aggression was also calculated from the ratings provided by his or her classmates. The overall mean peer and self ratings for physical, direct verbal, and indirect aggression for year 3 and year 6 boys and girls, together with effect sizes for the sex differences, are displayed in Table II.

Table II shows that peer ratings for physical aggression were higher for boys than for girls. In contrast, ratings for direct verbal and indirect aggression were slightly higher for girls. The effect sizes were 0.42 for physical aggression but only -0.11 and -0.12 for direct verbal and indirect aggression respectively. Boys' self ratings of physical and direct verbal aggression were slightly higher than girls' self ratings, whereas again the reverse was true for indirect aggression. In this case the effect sizes were 0.26 for physical aggression -0.40 for indirect aggression but just 0.01 for direct verbal aggression. In addition, in all instances, year 6 children showed higher mean peer ratings and self ratings than year 3 children.

A two-way independent manova was used to analyse the data. The independent variables were sex and year and the dependent variables were the observed, peer rated, and self rated levels of the three forms of aggression. The results revealed significant main effects of sex, $F(9, 62) = 3.73$, $p < .001$, and year, $F(9, 62) = 5.33$, $p < .001$, but no significant interaction between sex and year, $F(9,62) = 0.82$, $p > .05$. Follow-up univariate tests showed a significant effect of sex for observed levels of physical aggression, $F(1, 70) = 5.45$, $p < .05$. The means displayed in Table I indicate a significantly higher rate of observed physical aggression amongst boys than girls. Peer ratings of physical aggression and self ratings of indirect aggression (Table II) also showed borderline significance ($p < .09$ in both instances). Further univariate tests revealed significant age effects for observed levels of verbal aggression, $F(1, 70) = 10.52$, $p < .005$, peer rated levels of physical aggression, $F(1, 70) = 4.48$, $p < .05$, peer rated levels of verbal aggression, $F(1, 70) = 19.43$, $p < .001$, peer rated levels of indirect aggression, $F(1, 70) = 10.88$, $p < .005$, self rated levels of physical aggression, $F(1, 70) = 5.79$, $p < .05$, self rated levels of verbal aggression, $F(1, 70) = 16.42$, $p < .001$, and self rated levels of indirect aggression, $F(1, 70) = 4.67$, $p < .05$. Observed levels of indirect aggression also

Table I. Mean Rates per Hour, Standard Deviations (in Parenthesis) and Effect Sizes for Observed Aggression Displayed by Girls and Boys in Years 3 and 6

	Type of aggression		
	Physical	Direct verbal	Indirect
Girls (n = 40)	0.37 (0.64)	2.50 (4.75)	1.89 (2.47)
Year 3 (n = 19)	0.32 (0.64)	0.40 (0.90)	0.99 (1.84)
Year 6 (n = 21)	0.42 (0.66)	4.40 (5.95)	2.71 (2.71)
Boys (n = 34)	1.15 (1.85)	2.72 (2.88)	1.16 (1.60)
Year 3 (n = 15)	0.67 (1.30)	1.77 (1.25)	1.20 (1.39)
Year 6 (n = 19)	1.51 (2.15)	3.45 (3.56)	1.14 (1.78)
Effect size for sex (d)	0.63	0.06	-0.36*
Year 3 overall (n = 34)	0.47 (0.98)	1.01 (1.26)	1.08 (1.64)
Year 6 overall (n = 40)	0.94 (1.63)	3.95 (4.92)	1.96 (2.42)

* Effect sizes for sex differences in indirect aggression were 0.13 amongst year 3 children and -0.82 amongst year 6 children.

Table II. Mean Peer and Self Ratings, Standard Deviations (in Parenthesis) and Effect Sizes for Year 3 and 6 Boys' and Girls' Levels of Physical, Verbal and Indirect Aggression

	Mean peer ratings			Mean self ratings		
	Physical	Direct verbal	Indirect	Physical	Direct verbal	Indirect
Girls (n = 40)	1.92 (0.66)	2.21 (0.72)	2.15 (0.59)	1.83 (1.11)	2.05 (1.08)	2.13 (1.22)
Year 3 (n = 19)	1.72 (0.50)	1.85 (0.50)	1.92 (0.48)	1.42 (1.02)	1.58 (0.90)	1.79 (1.36)
Year 6 (n = 21)	2.09 (0.74)	2.54 (0.73)	2.36 (0.62)	2.19 (1.08)	2.48 (1.08)	2.43 (1.03)
Boys (n = 34)	2.22 (0.78)	2.13 (0.74)	2.07 (0.75)	2.12 (1.12)	2.06 (1.18)	1.71 (0.87)
Year 3 (n = 15)	2.03 (0.79)	1.76 (0.54)	1.77 (0.67)	1.87 (0.92)	1.47 (0.74)	1.47 (0.83)
Year 6 (n = 19)	2.36 (0.77)	2.42 (0.76)	2.31 (0.74)	2.32 (1.25)	2.53 (1.26)	1.89 (0.88)
Effect size for sex (d)	0.42	-0.11	-0.12*	0.26	0.01	-0.40**
Year 3 overall (n = 34)	1.86 (0.65)	1.81 (0.51)	1.86 (0.57)	1.62 (0.99)	1.53 (0.83)	1.65 (1.15)
Year 6 overall (n = 40)	2.22 (0.75)	2.48 (0.74)	2.34 (0.67)	2.25 (1.15)	2.50 (1.15)	2.18 (0.98)

Note. Ratings are on a scale of 1 (low) to 5 (high)

* Effect sizes for sex differences in peer reported indirect aggression were -0.26 amongst year 3 children and -0.07 amongst year 6 children.

** Effect sizes for sex differences in self reported indirect aggression were -0.29 amongst year 3 children and -0.57 amongst year 6 children.

showed borderline significance ($p < .09$). The means displayed in Tables I and II indicate that in each of these cases the observed or reported levels of aggression were higher amongst year 6 children compared to year 3 children.

Correlations between observations, peer ratings, and self ratings

Inter correlations (Pearson's) between self ratings and peer ratings, self ratings and observed rates of aggression, and peer ratings and observed rates of aggression were computed for each of the three different forms of aggression. Correlations between the self and peer ratings were significantly positive in all instances; 0.39 ($p < .001$) for physical aggression, 0.56 ($p < .001$) for verbal aggression and 0.33 ($p < .005$) for indirect

aggression. Correlations between peer ratings and observed levels of aggression were also significantly positive in all instances; 0.33 ($p < .005$) for physical aggression, 0.33 ($p < .005$) for verbal aggression and 0.26 ($p < .05$) for indirect aggression. However, correlations between self ratings and observed levels of aggression showed a significant positive correlation for indirect aggression only (0.26, $p < .05$) with those for physical and verbal aggression showing non-significant positive correlations (0.17 and 0.22 respectively).

Regression analysis: Beliefs about aggression as predictors of observed and reported levels of aggression

Mean scores for each of the three expagg questionnaires were calculated for each respondent. A low score indicated a more instrumental response and a high score a more expressive response². In order to determine whether scores on these questionnaires predicted self reported, peer reported, and observed levels of aggression, correlation coefficients were calculated followed by hierarchical multiple regression analyses.

The coefficients showed that, with the exception of observed indirect aggression, there were significant negative correlations between all measures of aggression and their corresponding questionnaire score. For self reported aggression coefficients were -0.27 ($p < .01$), -0.19 ($p < .05$) and -0.25 ($p < .05$) for physical, direct verbal, and indirect aggression respectively, for peer reported aggression they were -0.24 ($p < .05$), -0.29 ($p < .005$) and -0.36 ($p < .001$) respectively and for observed aggression they were -0.25 ($p < .05$), -0.36 ($p < .001$) and -0.13 (NS) respectively. These results suggest that high levels of reported and observed aggression were associated with more instrumental beliefs about aggression whilst low levels were associated with more expressive beliefs.

However, it is possible that these correlations occurred due to underlying associations with sex and year. Hierarchical multiple regression analyses were therefore carried out in order to partial out any variance in the measures of aggression associated with sex and age, prior to looking at the associations of these measures of aggression with beliefs about aggression.

In each regression the independent variables were sex, year, and belief about aggression (either physical, direct verbal, or indirect) whilst the dependent variables were self reported level of aggression (either physical, direct verbal, or indirect), peer reported level of aggression (either physical, direct verbal, or indirect), and observed level of aggression (either physical, direct verbal, or indirect). Analyses were only carried out between corresponding levels and beliefs of one type of aggression (e.g. between beliefs about physical aggression and self reported levels of physical aggression, but not between beliefs about physical aggression and self reported levels of direct verbal aggression). Sex and year were entered together at step one whilst belief about aggression was entered at step two. Table III shows the results of these regression analyses. Since sex and year are included as a control measure only, the table simply reports the R² change and F change for their combined effect and these results will not be interpreted.

The R² change values in Table III indicate that in some cases, noteworthy proportions of the variance in reported and observed levels of aggression were accounted for by

²Previous analysis of the questionnaire data showed significant sex differences for all three types of aggression. In each case girls held more expressive beliefs than boys whilst boys held more instrumental beliefs than girls. These findings are reported in full in Tapper and Boulton (2000).

Table III. Results of Hierarchical Regression Analysis Predicting Levels of Observed and Reported Physical, Direct Verbal and Indirect Aggression From Sex, Year and Beliefs About Aggression

Dependent variable Predictor variables	Beta	R2 change	F change
Self reported physical aggression			
Sex and year		0.09	3.78*
Beliefs about physical aggression	-0.20	0.04	3.20~
Self reported direct verbal aggression			
Sex and year		0.19	8.74****
Beliefs about direct verbal aggression	-0.05	0.00	0.16
Self reported indirect aggression			
Sex and year		0.12	5.20**
Beliefs about indirect aggression	-0.26	0.06	5.53*
Peer reported physical aggression			
Sex and year		0.09	3.90*
Beliefs about physical aggression	-0.19	0.04	3.16~
Peer reported direct verbal aggression			
Sex and year		0.19	9.53****
Beliefs about direct verbal aggression	-0.19	0.03	3.14~
Peer reported indirect aggression			
Sex and year		0.13	5.83***
Beliefs about indirect aggression	-0.30	0.08	7.92**
Observed physical aggression			
Sex and year		0.09	3.77*
Beliefs about physical aggression	-0.20	0.04	3.24~
Observed direct verbal aggression			
Sex and year		0.13	5.39**
Beliefs about direct verbal aggression	-0.28	0.06	5.50*
Observed indirect aggression			
Sex and year		0.07	2.76
Beliefs about indirect aggression	-0.13	0.01	1.08

~ denotes borderline significance at the 0.10 level

*denotes significance at the 0.05 level

**denotes significance at the 0.01 level

***denotes significance at the 0.005 level

****denotes significance at the 0.001 level

beliefs about aggression. In three of the regression models, beliefs significantly predicted level of aggression, even after the effects of sex and age had been partialled out. These were for self reported indirect aggression ($p < 0.05$), peer reported indirect aggression ($p < 0.01$), and observed direct verbal aggression ($p < 0.05$). The negative beta coefficients in Table III indicate that in each case, a more instrumental belief predicted a higher level of aggression, whilst a more expressive belief predicted a lower level of aggression. Additionally, in four other regression models, the beliefs measures approached significance.

Further regression analyses were carried out in order to determine if interactions between beliefs about aggression and sex, and separately, between beliefs about aggression and age, were also significant predictors of aggression. Sex, year, and beliefs were entered at step one whilst the interaction between beliefs and sex or the interaction between beliefs and year were entered at step two. Again, since the variables entered at step one were included as

Table IV. Results of Hierarchical Regression Analysis Predicting Levels of Observed and Reported Physical, Direct Verbal and Indirect Aggression From Sex, Year and Interaction Between Sex and Beliefs About Aggression

Dependent variable Predictor variables	Beta	R2 change	F change
Self reported physical aggression			
Sex and year and beliefs about physical		0.12	3.66*
Beliefs about physical aggression x sex	0.07	0.00	0.07
Self reported direct verbal aggression			
Sex and year and beliefs about direct verbal		0.19	5.81***
Beliefs about direct verbal aggression x sex	0.10	0.00	0.17
Self reported indirect aggression			
Sex and year and beliefs about indirect		0.19	5.53***
Beliefs about indirect aggression x sex	0.43	0.03	2.83~
Peer reported physical aggression			
Sex and year and beliefs about physical		0.12	3.72*
Beliefs about physical aggression x sex	-0.07	0.00	0.09
Peer reported direct verbal aggression			
Sex and year and beliefs about direct verbal		0.23	7.57****
Beliefs about direct verbal aggression x sex	0.14	0.00	0.40
Peer reported indirect aggression			
Sex and year and beliefs about indirect		0.21	6.88****
Beliefs about indirect aggression x sex	-0.14	0.00	0.34
Observed physical aggression			
Sex and year and beliefs about direct physical		0.13	3.67*
Beliefs about physical aggression x sex	-0.63	0.07	6.47*
Observed direct verbal aggression			
Sex and year and beliefs about direct verbal		0.20	5.66***
Beliefs about direct verbal aggression x sex	0.38	0.03	2.37
Observed indirect aggression			
Sex and year and beliefs about indirect		0.09	2.20
Beliefs about indirect aggression x sex	0.48	0.04	2.96~

~denotes borderline significance at the 0.10 level

*denotes significance at the 0.05 level

**denotes significance at the 0.01 level

***denotes significance at the 0.005 level

****denotes significance at the 0.001 level

control measures only, the table simply reports the R2 change and F change for their combined effect and the results will not be interpreted. The results of these analysis are shown in Tables IV and V.

The results in Table IV show that there was only one significant interaction between beliefs and sex, and this was for observed levels of physical aggression ($p < 0.05$). The nature of this interaction was tested by calculating separate correlations between observed physical aggression for girls and boys. This showed a significant negative correlation with beliefs about physical aggression for boys ($-0.36, p < 0.05$) but not for girls (0.03, NS). There was also borderline significance for self reported indirect aggression and observed indirect aggression. The correlation coefficients for self reported level of indirect aggression showed a significant negative correlation with beliefs about indirect aggression for girls ($-0.44, p < 0.005$) but not for boys ($-0.08, NS$), whilst those for observed

Table V. Results of Hierarchical Regression Analysis Predicting Levels of Observed and Reported Physical, Direct Verbal and Indirect Aggression From Sex, Year and Interaction Between Year and Beliefs About Aggression

Dependent variable Predictor variables	Beta	R2 change	F change
Self reported physical aggression			
Sex and year and beliefs about physical		0.12	3.66*
Beliefs about physical aggression x year	-0.28	0.01	1.19
Self reported direct verbal aggression			
Sex and year and beliefs about direct verbal		0.19	5.81***
Beliefs about direct verbal aggression x year	-0.26	0.01	0.94
Self reported indirect aggression			
Sex and year and beliefs about indirect		0.19	5.53***
Beliefs about indirect aggression x year	-0.43	0.03	2.81~
Peer reported physical aggression			
Sex and year and beliefs about physical		0.12	3.72*
Beliefs about physical aggression x year	-0.06	0.00	0.05
Peer reported direct verbal aggression			
Sex and year and beliefs about direct verbal		0.23	7.57****
Beliefs about direct verbal aggression x year	-0.01	0.00	0.02
Peer reported indirect aggression			
Sex and year and beliefs about indirect		0.21	6.89****
Beliefs about indirect aggression x year	0.06	0.00	0.06
Observed physical aggression			
Sex and year and beliefs about physical		0.13	3.67*
Beliefs about physical aggression x year	-0.21	0.01	0.63
Observed direct verbal aggression			
Sex and year and beliefs about direct verbal		0.20	5.66***
Beliefs about direct verbal aggression x year	-0.57	0.05	4.71*
Observed indirect aggression			
Sex and year and beliefs about indirect		0.09	2.20
Beliefs about indirect aggression x year	0.54	0.05	3.76~

~denotes borderline significance at the 0.10 level

*denotes significance at the 0.05 level

**denotes significance at the 0.01 level

***denotes significance at the 0.005 level

****denotes significance at the 0.001 level

indirect aggression also showed a significant correlation for girls (-0.30 , $p < 0.05$) but not for boys (0.11 , NS).

Table V shows that again there was only one interaction between beliefs about aggression and year significant at the 5% level. This was for observed direct verbal aggression ($p < 0.05$). Further calculation of correlation coefficients showed that there were significant negative correlations for both year 3 and year 6 children but that the correlation was higher for year 6 children (-0.37 , $p < 0.01$ compared to -0.30 , $p < 0.05$). There was also borderline significance for self reported indirect aggression and observed indirect aggression. The correlations coefficients here show that there was a significant correlation between beliefs and self reported indirect aggression for year 6 children (-0.42 , $p < 0.005$) but not for year 3 children (0.00 , NS) whereas there was a significant correlation between beliefs and observed indirect aggression for year 3 children (-0.40 , $p < 0.01$) but not for year 6 children (0.10 , $p < 0.05$).

DISCUSSION

Sex Differences In Aggression

The observational data showed that boys engaged in significantly more physical aggression than girls. The effect size for this difference was 0.63, which provides support for previous studies that have shown higher levels of observed physical aggression amongst primary school boys compared to girls [e.g. Archer et al., 1988; Boulton, 1993]. In contrast, the peer and self report data did not show significant sex differences in physical aggression. However, given that the effect sizes for these measures were 0.42 and 0.26 respectively, the differences may have reached significance with a larger sample.

None of the measures showed a significant sex difference for direct verbal aggression. There were also no significant sex differences for indirect aggression nor any significant interactions between sex and age for indirect aggression, and these findings are inconsistent with those of previous studies [Björkqvist et al., 1992; Lagerspetz and Björkqvist, 1994]. However, the lack of significant effects for indirect aggression may again have been due to the relatively small sample size. In general, the means were all in the predicted direction and effect sizes of -0.36 and -0.40 were obtained for the observational and self report data respectively. Indeed, when effect sizes were calculated separately for children in year 6, these were even larger; -0.82 and -0.57 respectively. This is in line with previous authors who have claimed that the sex difference in indirect aggression emerges at around 11 years of age [Björkqvist et al., 1992; Lagerspetz and Björkqvist, 1994]. The much smaller effect size obtained for indirect aggression from the peer report data (-0.12) appeared to be due to uncharacteristically high levels amongst year 6 boys (see Table II). The reason for this is unclear since it contrasts with previous findings [Björkqvist et al., 1992; Lagerspetz and Björkqvist, 1994]. Further studies are needed to determine if this result is robust.

As discussed previously, it may also be the case that sex differences tend to be restricted to the extreme ends of the scale. Again, this would have been easier to test with a larger sample size, but is supported by descriptive data. Of the ten children who displayed the highest levels of physical aggression (approximately 13% of the total sample), seven were male. Of those who displayed the highest levels of direct verbal aggression, five out of ten were male. Of those who displayed the highest levels of indirect aggression, eight out of ten were female.

Inter-Method Agreement

The study found moderate to low significant positive correlations between peer ratings of the three forms of aggression and observed levels of the respective aggression types. The magnitude of these correlations are in line with previous studies with pre-schoolers in North America [see McNeilly-Choque et al., 1996] and provide support for the convergent validity of the data obtained by these two methods. There were also moderate significant positive correlations between the peer and self ratings for all three forms of aggression. In addition, there was a low significant positive correlation between self ratings of indirect aggression and observed levels of indirect aggression, as well as non-significant low positive correlations between these measures for physical aggression and direct verbal aggression.

It is unclear which of these methods provides the most representative reflection of children's actual levels of aggression. Indeed, it may be argued that the different methods

each measure slightly different things. For example, the observational measure of aggression recorded aggression during break only. However, it is likely that children's self and peer ratings were based, not only on aggression during break, but also on aggression displayed elsewhere, such as in the classroom. There is some evidence to suggest that forms and levels of aggression vary depending on the context [Craig et al., 2000; Olweus, 1993; Whitney and Smith, 1993]. This may account for the higher levels of agreement found between the peer and self ratings compared to the ratings and observational data.

The Relationship Between Beliefs About Aggression and Levels of Aggression

In testing for associations between beliefs about aggression and levels of aggression we first controlled for sex and age. As can be seen in Table III, sex and age together accounted for a substantial portion of the variance in all nine measures of aggression (mean = 12.2%, range = 7% to 19%). Allied to the modest sample size employed in the present study, this means that our tests of the beliefs – levels associations can be considered somewhat conservative. Despite this, the results of the regression analyses displayed in Table III indicated that in three cases, children's beliefs about aggression did emerge as significant predictors of levels of aggression even after the effects of sex and age had been partialled out. The fact that only one of these measures of aggression came from the same informants as the beliefs measure (i.e., self-report), whereas the other two came from peer reports and direct observations, means that the associations between beliefs and levels of aggression are not always due to shared method variance. In this regard, the multi-sources of data on levels of aggression can be viewed as a strength of the present study. Additionally, in four other cases, the beliefs measure approached significance as a predictor of levels of aggression, even when age and sex had been controlled. Again, these results were spread across all three sources of informants of levels of aggression, ruling out shared method variance as the most likely explanation for these near-significant associations.

We argue that taken together, these results suggest that Campbell et al's. [1993, 1997] interpretation of a causal link between beliefs and levels of aggression in adults remains viable for children. At the very least, we suggest they provide a rationale for a more detailed longitudinal study that could provide a more sensitive test of the causal hypothesis. For instance, such a study could examine if the temporal association between beliefs and levels of aggression were consistent with the causal hypothesis (i.e., if earlier measures of beliefs predicted changes in levels of aggression but not vice versa).

In the absence of such a study, and recognising that not all of our regression analyses found a significant association between beliefs and levels of aggression (see Table III), we urge against definitive statements to suggest that the former cause the latter. Moreover, research in social psychology attests to the complexity of the attitude-behaviour linkage [e.g. see Lloyd, 1994]. This work has shown that there are a multitude of variables that influence the link [see Petty et al., 1997 for a review]. We suggest that many of these would also apply to the link between instrumental and expressive beliefs about aggression and behaviour. For example, if changes in attitudes, or beliefs, result in a delayed response in behaviour then beliefs and measures of aggression collected at a single point in time will not capture this process.

Moreover, it remains possible that beliefs about aggression and levels of aggression are independent from one another. Any associations, or borderline associations, including those

found in the present study, could be due to similarities in the variables that influence both beliefs and behaviour. As Lloyd [1994] suggests 'verbal behaviour and ... non-verbal behaviour may be viewed as separate classes of responses whose development may or may not be independent' (p. 135).

Support for this interpretation comes from a study by Risley and Hart [1968] which demonstrated the way in which children's verbal reports could be influenced independently of their actual behaviour. Four and 5 year old nursery school children were observed during a half hour free-play period and a snack and juice break one and a half hours later. During the free play period a variety of toys and games were made available including building blocks. During the snack and juice period children were initially reinforced by the teacher (with snacks and praise) for any positive statements they made that included the words 'I' and 'blocks' or 'I' and the verb 'to build.' This phase of the study lasted for twenty-four days in which 80 to 100% of children on each day said they had played with the blocks. However, the number of children who had actually used the blocks during the free-play period remained at the 0 to 33% level that had been observed during a baseline period, thus illustrating the way in which verbal behaviour can be shaped independently of overt behaviour.

The second phase of the study involved 'reinforcement for correspondence' in which the teacher only reinforced those reports of block building that corresponded to the child's use of the blocks during the previous free-play period. The figures showed that the children's use of the blocks subsequently rose to the 80 to 100% level of their reported use, thus illustrating the way in which an association between verbal and overt behaviour may be due to contingencies that reinforce correspondence. These results also suggest that the strength of any association between behaviour and reports may vary between individuals depending on their history of reinforcement for correspondence. These results have been replicated by Israel and O'Leary [1973] and Israel and Brown [1977] and also in a study by Warren and Baer [1976] focusing on sharing and praising behaviours.

Thus, in a similar manner to the first stage of Risley and Hart's [1968] study, children's beliefs about aggression in the present study may have been shaped independently of the extent to which they engaged in aggressive behaviours. This seems especially plausible when one takes into account the fact that the items in the beliefs questionnaires do not include reference to *levels* of aggression which in turn makes it seem unlikely that individuals' should have been reinforced for a correspondence between belief and level of aggression.

However, the present results did show that in some instances beliefs about aggression did significantly predict observed and reported levels of aggression even after the variance associated with sex and age had been partialled out (see Table III). As mentioned above, since the items used in the beliefs questionnaires did not refer to actual levels of aggression, it seems unlikely that children would have been reinforced for a correspondence between beliefs and level of aggression. Instead, the significant associations between beliefs and level may have been a result of similar contingencies between the two. For example, peers or adults who reinforce a child for behaving aggressively may also reinforce him or her for talking about his or her aggression in an instrumental manner. Similarly, peers or adults who punish aggressive behaviour may likewise disapprove of a child justifying his or her aggression (i.e. accounting for it in an instrumental manner) whilst reinforcing him or her for excusing it (i.e. talking about it in an expressive manner). Indeed, since instrumental beliefs about aggression involve justifying aggressive acts whilst expressive beliefs involve excusing them [see Duckett et al., 1997], it is plausible to believe that a parent who

encourages aggressive behaviours would simultaneously justify their use, and it is difficult to see how a parent might encourage aggressive behaviours whilst at the same time excusing them as a 'loss of control'.

Thus any associations, or borderline associations between a child's level of aggression and his or her beliefs about aggression in the present study may have occurred due to a link between the encouragement of aggression and an instrumental belief about aggression on the part of the child's parents and/or peer group. For example, children may show relatively high levels of aggression due to parental encouragement and may also show relatively instrumental beliefs about aggression, either because their parents reinforce these descriptions or because the children model their parents' descriptions.

The fact that the present study showed that observed levels of physical aggression showed a significant association with beliefs about physical aggression for boys but not for girls may also indicate that parental instrumental beliefs about physical aggression are associated with encouragement of aggression in boys but not in girls. The interaction between level of observed indirect aggression and beliefs about indirect aggression that reached borderline significance may, on the other hand, indicate that parental instrumental beliefs about indirect aggression are associated with encouragement of indirect aggression in girls but not in boys.

Research examining associations between parental encouragement of aggression, parental beliefs about aggression, child's beliefs about aggression, and child's levels of aggression would be needed to support these suggestions. Such research would also benefit from employing separate scales measuring instrumental and expressive beliefs, since it may be the case that parental instrumental beliefs are generally associated with encouragement of aggression, but that expressive beliefs are not. If this is the case this may in part explain why the results of the present study showed inconsistent links between beliefs and level of aggression.

Strengths and limitations of the current study also need to be acknowledged. As noted above, the use of multiple sources of data about levels of aggression helps rule out shared method variance. We also provided data to suggest our measures were reliable. The present study is limited by the fact that we did not employ independent scales for measuring expressive and instrumental beliefs about aggression but instead used a forced choice format. Archer and Haigh [1997a] did so and found that although there were significant correlations between the instrumental scale and levels of physical and verbal aggression, the expressive scale only correlated with levels of physical aggression for males. Had our measures been independent it is possible that instrumental beliefs would similarly have predicted levels of aggression. Nevertheless, if this was the case one would also have expected higher correlations between beliefs and levels of aggression for boys in the present study since they have been shown to hold more instrumental beliefs compared to girls [Tapper and Boulton, 2000]. Since this was not consistently the case (see Table IV) it casts doubt on the suggestion that a separate scale measuring instrumental beliefs would have predicted levels of aggression. Further studies employing independent measures of aggression and peer reported or observed levels of aggression in children would be needed to confirm this.

In conclusion, the present study adds to our knowledge of sex differences in aggression. It suggests that the finding of more physical aggression among boys than girls reported in the literature is robust. Additionally, our study adds to the relatively slim body of research linking children's beliefs and levels of aggression. Our findings of significant and near

significant concurrent associations provides an impetus for longitudinal studies that can more directly address causal hypotheses.

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Appendix A

Definitions of the three forms of aggression employed for the observational data.

General Definition and Coding of Aggression

Analyses are based on discrete 'acts' of aggression. An act is defined as: 'Any aggressive behaviour or behaviours of the same type carried out by one individual that occur within 10 seconds of each other and are not separated by a response from the victim or an onlooker (hereafter referred to as a 'peer').' OR 'Any aggressive behaviours of the same type that overlap with the start and finish of a victim or peer response AND there is a gap of less than 3 seconds between the aggressive behaviours shown by the aggressor.'

Where it is not possible to distinguish the type of aggression from the data the incident is excluded.

Direct Physical Aggression

Direct physical aggression is defined as any one, or combination of the following acts [modified from Archer et al., 1988]. These should be performed at a level sufficient to inflict physical pain or discomfort AND be accompanied by signs of annoyance or distress on the part of the victim and/or aggressor.

Hit: The child beats fist or open hand or object on other child.

Kick: The child kicks foot on other child.

Poke: With finger or fingers or a sharp object (e.g. pen, paintbrush), the child pokes or prods the other child.

Pull: The child pulls the other child, or the other child's clothing or hair using one hand or both hands.

Push: Using one or both hands the child exerts pressure on the other child's body and pushes him or her backwards, forwards or to the side. Using his or her body the child forces the other child backwards, forwards or sideways.

Wrestle: Holding arms around another child, the child wrestles, attempting to force the other child to the ground or to another position. The child wrestles and rolls around with the other child on the ground.

Throw: The child throws an object forcefully at any part of the other child's body except for his or her open palms.

The category of direct physical aggression excludes incidents of accidental physical harm.

Accidental physical harm is defined as follows;

The perpetrator has not been looking at the victim

OR The perpetrator slips or trips up

OR The perpetrator is pushed by a third party

OR The perpetrator shows signs of regret or concern (e.g. 'sorry', 'are you okay?', helps a fallen child off the ground).

Direct Verbal Aggression

All instances of direct verbal aggression must meet the following criteria;

The behaviour is directed at the victim by the aggressor AND the victim is within hearing distance

OR The behaviour is directed at a child other than the victim but the victim is within hearing distance (e.g. Sally says to Kim in a loud voice 'Jane smells' whilst Jane is sat next to Kim.)

Direct verbal aggression is defined as an utterance directed at the victim that includes either the naming of the victim as something unpleasant or an unpleasant description of the victim or the victim's family. The term 'unpleasant' may be defined by the meaning of the word or words employed (i.e. words that normally have negative connotations, for example 'bitch', 'idiot', 'wimp'). Where the exact meaning of the word or words is unknown (e.g. 'saddo') or is technically descriptive (e.g. 'gay', 'girl'), the term unpleasant may be defined by the aggressor's use of heavy emphasis on the word.

OR Utterances in an ongoing sequence in which the original victim states that the name he or she has just been called, or the insult he or she has just received, also applies to the original aggressor (e.g. Child A: 'you idiot' Child B: 'what you say is what you are').

The category of direct verbal aggression excludes instances of abuse.

Abuse is defined as any of the following;

An abusive gesture (e.g. sticks up middle finger)

OR An abusive command (e.g. 'piss off')

OR A rude face (e.g. sticks out tongue)

Indirect Aggression

All instances of indirect aggression must meet the following criteria;

The behaviour is directed at a child other than the victim AND the victim is not within hearing distance.

The category of indirect aggression is comprised of the following behaviours:

Indirect verbal. Indirect verbal aggression is defined as an utterance about the victim that includes either the naming of the victim as something unpleasant or an unpleasant description of the victim or the victim's family. (The term 'unpleasant' is defined as above.)

The category of indirect verbal aggression excludes instances of abuse carried out behind the victim's back. (Abuse is defined as above).

Expression of dislike. Expressions of dislike include any of the following;

An utterance about the victim stating dislike for the victim on the part of the aggressor.

OR An utterance stating that the aggressor is not, or is not going to be, the victim's friend. Excludes utterances in which being the victim's friendship is conditional (e.g. 'I won't be her friend if she doesn't give me some of her sweets')

OR An utterance to a third party telling him or her not to be the victim's friend.

OR Any utterances containing words to the effect of;

'I'm not bothered about him/her'

'I don't care if he's/she's not my friend'

'I'm not on his/her side.'

'Don't be on his/her side, be on my side.'

This category excludes responses to questions concerning liking or friendship in which the question necessitates one of the above answers.

Exclusion from activity or group. The aggressor tells or suggests to a child other than the victim that they do not let the victim participate in a specific or non-specific activity or group (e.g. 'Lets not play with Jim').

Exclusion from information. The aggressor tells or suggests to a child other than the victim that he or she not tell the victim something.

Ignore. The aggressor tells or suggests to a child other than the victim that he or she not speak to the victim.

APPENDIX B

Definitions of the three forms of aggression provided to children:

Physical Aggression

'*Hurting someone else's body.* This is where a child hurts someone else's body. It includes things like hitting, kicking, pushing, tripping up and pulling hair.'

Direct Verbal Aggression

'*Saying nasty things to people.* This is where a child hurts someone by saying nasty things to them. It includes things like calling people names and telling people they're stupid or ugly. The things the child says are not meant to be funny they're just nasty.'

Indirect Aggression

'*Doing nasty things but not face to face.* This is where a child hurts someone but doesn't do it directly to their face. It includes things like saying nasty things behind someone's back, ignoring someone, getting someone into trouble, and trying to make someone's friends not like them anymore.'

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