

Within the area of aggression, social representations have been used to account for sex differences found in the ways in which men and women talk about aggression. From an analysis of discussions between friends, Campbell and Muncer [1987] concluded that women viewed aggression in a negative light as the result of a loss of self-control whereas men viewed aggression as the exercise of control over others and associated it with positive emotions. They labeled these representations as “expressive” and “instrumental,” respectively. Campbell et al. [1992] then went on to devise a questionnaire (EXPAGG) aimed at measuring an individual’s adherence to an expressive or instrumental representation of aggression. A number of studies that employed EXPAGG have provided further support for Campbell and Muncer’s original conclusion [Archer and Haigh, 1996; Campbell and Muncer, 1994; Campbell et al., 1992, 1993, 1995].

Social representations have also been linked to actual aggressive behavior, with some authors claiming that they have a causal influence on levels of aggression [Archer and Haigh, 1996; Campbell et al., 1993; Campbell et al., 1997]. For example, Archer and Haigh [1996] refer to social learning theory to suggest that social representations influence behavior because they relate to outcome expectancies. Support for this view comes from studies in which a more instrumental representation of aggression has been shown to correlate with higher levels of self-reported aggression and a more expressive representation has been shown to correlate with lower levels [Archer and Haigh, 1996; Campbell et al., 1993, 1997].

There has only been one study [Archer and Parker, 1994] extending this research to children and to different forms of aggression. The EXPAGG questionnaire referred primarily to physical aggression but also contained a small number of items relating to direct verbal aggression. Archer and Parker [1994] modified EXPAGG for use with children between the ages of 8 and 11 years and also devised a second questionnaire aimed at measuring representations of indirect aggression (defined by Archer and Parker as “harm delivered circuitously rather than face-to-face” [p 109]). Previous research has suggested that girls employ higher levels of indirect aggression than do boys [Lagerspetz and Bjorkqvist, 1994] and more “relational” aggression, which often takes indirect forms [Crick and Grotpeter, 1995; Crick et al., 1996]. Sex differences in representations of indirect aggression are therefore theoretically important because they provide us with an indirect means of examining the link between representations and levels of aggression. Archer and Parker reasoned that if an instrumental representation of aggression was associated with higher levels of aggression, the sex difference for representations of indirect aggression should be reversed, with girls showing more instrumental representations than boys and boys showing more expressive representations than girls.

Contrary to Archer and Parker’s [1994] predictions, their results instead showed that girls held significantly more expressive representations than boys for both the direct and indirect forms of aggression. These findings have a number of implications. First, they suggest that sex differences in representations of aggression found among adults can be generalized to children between the ages of 8 and 11 years. Second, they suggest that these sex differences are not restricted to direct aggression but that they also extend to indirect aggression. And third, they suggest that (at least in the case of indirect aggression) levels are independent of representations. Archer and Parker did not go so far as to conclude that all levels of aggression are independent of representations, but instead suggested that indirect aggression is an exception in that girls do not recognize or

admit to themselves that they have carried out an act of (indirect) aggression and therefore do not respond with feelings characteristic of an expressive representation such as guilt and regret. As a result, the likelihood of them repeating such an act in the future is not reduced.

However, the wording of Archer and Parker's [1994] questionnaires may have biased their results. Although the questionnaires were modified for use with children, it is possible that certain words and phrases were still not fully understood by all children (e.g., "losing my self-control," "being out-argued by the other person," "some little thing pushes me over the edge," "gets the anger out of my system" [p 104–105]). Indeed, in a recent study the term "guilty," which was used in both of Archer and Parker's questionnaires, was understood by only a minority of 7- to 8-year-olds [Tapper, 1998]. In addition, we suggest that 15 of the 20 items contained in Archer and Parker's indirect aggression questionnaire were ambiguous in form and could be construed as referring to either direct or indirect aggression. For example, many of these items refer to "getting even with someone," which children could believe may be achieved through direct or indirect means. Although Archer and Parker report that examples of indirect forms of aggression were given to children by the class teacher before completion of the questionnaires, this does not rule out the possibility that participants responded to these items with direct aggression in mind, especially given that they had already completed the EXPAGG questionnaire on direct aggression. These factors may account for why the sex difference in indirect aggression was not reversed but instead showed a similar pattern to direct aggression.

In addition, Archer and Parker [1994] only tested for significant differences between sexes. However, Bjorkqvist et al. [1992] suggest that the use of indirect aggression depends on the existence of social networks that allow harm to be inflicted on a victim via indirect means. They suggest that sex differences in levels of indirect aggression arise due to the smaller friendship groups of girls that they claim facilitate the use of indirect aggression. Thus, it may be the case that boys hold more instrumental representations of indirect aggression than girls but engage in lower levels compared with girls simply because they do not have the opportunity or because indirect aggression is ineffective. So the sex difference in representations of indirect aggression obtained by Archer and Parker is not incompatible with a link between representation of, and engagement in, aggression. Instead, it would predict that girls would hold significantly more instrumental representations of indirect aggression than of direct aggression, a prediction that is in line with the mean figures reported by Archer and Parker.

Thus, it may be the case that social representations are linked to levels of aggression *within* sexes but have a limited impact on differences displayed *between* sexes.

The present study therefore had three main aims. First, it aimed to devise new EXPAGG-type questionnaires suitable for use with children aged 7 to 11 years. Second, it employed three separate questionnaires to examine sex and age differences in children's social representations of physical, verbal, and indirect forms of aggression. We did so because research has shown that all three types of aggression are common in children [Archer et al., 1988; Boulton, 1993; Lagerspetz and Bjorkqvist, 1994]. On the basis of results obtained by Archer and Parker [1994], it was predicted that compared with boys, girls should show more expressive representations of all three forms of aggression, whereas compared with girls, boys should show more instrumental representations. However, should Archer and Parker's results have been biased by the ambiguity

contained in their questionnaire measuring representations of indirect aggression, and if social representations do have a causal influence on levels of aggression, this sex difference may be reversed in the case of indirect aggression. Given that Archer and Parker found no significant age differences in their results, none were predicted in the present study.

And third, the study aimed to examine within-sex differences in social representations. Previous research suggests that boys engage in higher levels of physical aggression than indirect aggression, whereas girls engage in higher levels of indirect aggression than physical aggression [Ahmad and Smith, 1994]. If social representations have a causal influence on levels of aggression within sexes, boys' representations of physical aggression should be significantly more instrumental than their representations of indirect aggression, whereas girls' representations of indirect aggression should be significantly more instrumental than their representations of physical aggression. Because Lagerspetz and Bjorkqvist's [1994] study indicated that levels of indirect aggression in girls peaked at approximately 11 years of age, this latter difference may be restricted to girls aged 10 to 11 years only.

METHODS

Participants

The participants were 130 children from three primary schools in the United Kingdom. Fifty-seven of the participants (29 females and 28 males) were in year 3 (aged 7–8 years) at the time the study commenced and 73 (37 females and 36 males) were in year 6 (aged 10–11 years). Participants were predominantly white and from low- to middle-class socioeconomic backgrounds. Parental and child consent were obtained.

Questionnaires

Three EXPAGG-type questionnaires were used in this study, each a modified version of the original EXPAGG questionnaire used by Campbell et al. [1992]. Each questionnaire contained 21 items that related to one of eight "domains" identified by Campbell et al. [1992]. These domains were as follows: the perceived social value of aggression, its proximate causes, relevant emotions, relevant cognitions, form, aim, situational facilitators, and its management in terms of the aggressor's reputation. Each item in the questionnaires consisted of an incomplete sentence about aggression together with two alternatives. The child was required to put a tick in the box next to the answer that best fit him or her. One answer was designed to indicate an expressive social representation (scored 1) and the other an instrumental social representation (scored 0). For each questionnaire, a total score was calculated. Thus, high total scores indicate an expressive representation and low total scores an instrumental representation.

One questionnaire focused specifically on "hitting and fighting," (called "physical expagg"), another on "saying nasty things to people and having rows" (called "verbal expagg"), and a third on "saying nasty things behind someone's back" (called "indirect expagg"). These behaviors were chosen as typical examples of direct physical, direct verbal, and indirect aggression, respectively.

Although the items were based on those in the original EXPAGG used by Campbell et al. [1992], the wording was changed to make them more appropriate for children.

Seven words and phrases in the revised questionnaires considered by the researcher to be most difficult for children to understand were piloted on 14 children of mixed reading ability aged 7 to 8 years. In doing so, the children were presented with the words/phrases and asked to explain what they meant. The words "quarrel" and "guilty" were frequently misunderstood and were therefore excluded from the questionnaires.

The items used in the physical expagg are shown in Table I. The verbal and indirect expaggs used the same items but with wording modified accordingly.

Full instructions, together with a practice question, were printed on the front of each questionnaire.

Procedure

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.

Standardized instructions and a practice item were read aloud before 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-Retest Reliability

Test-retest reliability for the direct physical expagg was examined. The second of these was completed between 2 and 5 days after the first by 10 year 3 children (5 males and 5 females) and 11 year 6 children (4 males and 7 females). The correlation between the two questionnaires was $r = .80$ ($P < .01$).

RESULTS

Principal-Components Analysis of the Questionnaires

To examine the construct validity of the questionnaires, a principal-components analysis was carried out on each of the three scales. The validity of such an analysis when applied to dichotomous data is controversial. Although some authors state that it cannot be applied to dichotomous data [e.g., Kim and Mueller, 1978], others maintain that it can [e.g., Comrey, 1973; Gorsuch, 1974]. Indeed, this technique has been used with dichotomous data in a number of published studies [e.g., Archer and Parker, 1994; Campbell et al., 1992; Richardson, 1989]. Due to a lack of an equivalent alternative test, factor analysis was employed in the present study despite the fact that the data were dichotomous.

TABLE I. The Physical Expagg*

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1. If I hit someone it would probably be because . . .
 - the other person made me so mad I couldn't help it (E)
 - the other person deserved it (I)
 2. Someone who never fights . . .
 - gets pushed around by people (I)
 - can control their temper (E)
 3. If I was about to hit someone I would be most frightened that . . .
 - the other person would hit me back harder (I)
 - I'd really hurt the other person (E)
 4. If I was having an argument with someone I would be most annoyed with myself if . . .
 - I hit the other person (E)
 - I cried (I)
 5. If someone wanted to have a fight with me . . .
 - I'd feel proud if I refused (E)
 - I'd feel like a coward if I refused (I)
 6. If I was about to hit someone I would probably . . .
 - feel really upset and shaky (E)
 - feel like I was really going to teach them a lesson (I)
 7. I would be more likely to hit someone . . .
 - if I was with the other person in front of my friends (I)
 - if I was alone with the other person (E)
 8. If I had a fight with someone I would probably . . .
 - not know what I was doing (E)
 - know exactly what I was doing (I)
 9. The worst thing about fighting is . . .
 - the other person soon starts being annoying again (I)
 - it hurts the other person (E)
 10. If there were lots of people around . . .
 - I'd be more likely to hit someone (I)
 - I'd be less likely to hit someone (E)
 11. If someone hit me I would be more likely to . . .
 - cry (E)
 - hit them back (I)
 12. I would be more likely to hit someone if . . .
 - the other person was trying to make me look stupid (I)
 - I was worried and some little thing made me lose my temper (I)
 13. The best thing about fighting is . . .
 - it makes the other person do what you want them to (I)
 - it makes you feel better (E)
 14. If I hit someone and hurt them I would probably feel . . .
 - that they were asking for it (I)
 - bad about myself (E)
 15. If I hit someone I would like them to . . .
 - realize how upset they'd made me feel and how unhappy I was (E)
 - make sure they never annoy me again (I)
 16. If I had a fight with someone I would probably tell . . .
 - no one except maybe a close friend (E)
 - lots of friends (I)
 17. If I had a fight with someone, afterwards I would probably . . .
 - remember every move I'd made (I)
 - not remember exactly what had happened (E)
 18. After a fight I would probably feel . . .
 - upset and bad about myself (E)
 - happy or unhappy depending on whether I'd won or lost (I)
-

(continued)

19. If I was to tell my friends about a fight I'd been in I would probably . . .
- try to make them see why I'd got into the fight (E)
 - make it sound more exciting than it was (I)
20. I think that fighting is . . .
- always wrong (E)
 - needed to make people know what I want (I)
21. If I had a fight with someone I would feel . . .
- that I had a right to hurt the other person (I)
 - upset and bad about myself (E)

*(I) indicates an instrumental response; (E), an expressive response. Items 1 and 12 relate to the proximate cause of the aggression; items 2, 5, 7, 10, and 19 to relevant situational factors; items 3, 8, and 17 to relevant cognitions; items 4 and 11 to form; items 6, 14, 18, and 21 to relevant emotions; items 9, 13, and 15 to its aim; item 16 to management; and item 20 to its social value.

The scree method [Cureton and D'Agostino, 1983] indicated that there was just one main factor for each of the three scales. This factor accounted for 24.0% of the variance on the physical expagg, 22.2% on the verbal expagg, and 21.4% on the indirect expagg. Fourteen of the 21 items in the physical expagg loaded highly (over .30) on factor 1. Fourteen items in the verbal expagg also loaded highly on factor 1, as did 12 items in the indirect expagg. Factor loadings are summarized in Table II.

With the exception of two items (11 and 15), the items loading highly on factor 1 were concerned with feelings of control, regret, and the public vs. private nature of aggression (see Table I). Items 11 and 15, which loaded highly on all three questionnaires, seemed to

TABLE II. Individual Item Loadings on Factor 1 for the Physical, Verbal, and Indirect Expaggs*

Item number	Expagg		
	Physical aggression	Verbal aggression	Indirect aggression
1	.53 ^a	.64 ^a	.52 ^a
2	.12	.28	.16
3	.16	.08	-.12
4	-.18	.03	-.20
5	.34 ^a	.09	.20
6	.62 ^a	.67 ^a	.74 ^a
7	.26	.45 ^a	.01
8	.55 ^a	.52 ^a	.65 ^a
9	.18	.26	.21
10	.54 ^a	.44 ^a	.44 ^a
11	.62 ^a	.55 ^a	.54 ^a
12	.05	-.00	-.01
13	-.14	-.10	.01
14	.81 ^a	.71 ^a	.75 ^a
15	.54 ^a	.59 ^a	.61 ^a
16	.42 ^a	.39 ^a	.27
17	.40 ^a	.31 ^a	.36 ^a
18	.78 ^a	.67 ^a	.66 ^a
19	.59 ^a	.47 ^a	.41 ^a
20	.53 ^a	.59 ^a	.56 ^a
21	.75 ^a	.73 ^a	.73 ^a

*See Table I for details of items.

^aLoading is over 0.30.

be more concerned with the respondent's most likely response to aggression and his or her preferred outcome for aggressive behaviors directed against others.

Some items that did not load highly on factor 1 may have been poorly constructed. For example, the instrumental alternative for item 3 (see Table I) can be seen to be incompatible with the feelings of power and control associated with an instrumental representation. Likewise, the data for item 13 reveal that more than 60% of boys and girls were endorsing the expressive response (see Table I). It is likely that this item failed to distinguish between instrumental and expressive representations because the expressive alternative indicates a positive emotional response to aggression, which is characteristic of an instrumental representation.

Examination of other items with low loadings on factor 1 revealed similar problems. For this reason, and despite the controversy associated with using factor analysis on nominal data, it was decided that a more accurate assessment of social representations could be achieved if items with low factor loadings were excluded before analysis. In addition, for the physical and verbal questionnaires, the items that did load highly on the first factor included at least one of each of the eight domains identified by Campbell et al. [1992]. For the indirect questionnaire the items included at least one of each of seven domains identified by Campbell et al. [1992]. The revised questionnaires should therefore tap a wide range of the cognitions, emotions, and behaviors associated with instrumental and expressive representations of aggression.

New total scores for each respondent for each of the three questionnaires were therefore calculated using only those items that loaded highly on factor 1 (see Table II).

Internal Reliability

Cronbach's alpha was calculated to test the internal reliability of the three new scales. This produced high reliability coefficients of .85 for the physical expagg, .84 for the verbal expagg, and .83 for the indirect expagg. In addition, all items produced an item-total correlation of greater than .3, and the deletion of any one item did not result in a higher alpha value.

Sex and Age Differences in the Physical, Verbal, and Indirect Expaggs

To allow for between-scale comparisons, a mean score for each scale was calculated for each respondent (i.e., for each respondent the total score for the physical expagg was divided by 14; the total score for the verbal expagg was divided by 14; and the total score for the indirect expagg was divided by 12). For ease of comparison, each of these means was multiplied by 100. Mean scores, together with standard deviations, were then calculated for each of the three expaggs for boys and girls and for year 3 and year 6 children. These figures are shown in Table III.

Table III shows that girls' scores on each of the three new expaggs were higher than boys' scores, as were the scores of year 3 children compared with year 6 children. This indicates a more expressive response on the part of girls and year 3 children and a more instrumental response on the part of boys and year 6 children. Within-sex comparisons indicate that girls showed a slightly higher score (i.e., a more expressive representation) for indirect aggression compared with physical aggression, and boys scores on these two scales were identical.

A three-way mixed analysis of variance (ANOVA) was carried out on the data to test for significant differences between sex, age, and aggression type. The independent vari-

TABLE III. Mean Scores (and Standard Deviations) for Boys and Girls in Years 3 and 6 on the New Physical, Verbal, and Indirect Expaggs*

	Measure		
	Physical aggression	Verbal aggression	Indirect aggression
Girls (n = 66)	64 (27)	65 (27)	66 (29)
Year 3 girls (n = 29)	75 (22)	75 (24)	77 (23)
Year 6 girls (n = 37)	55 (27)	57 (26)	58 (30)
Boys (n = 64)	53 (27)	54 (25)	53 (25)
Year 3 boys (n = 28)	53 (26)	58 (25)	55 (23)
Year 6 boys (n = 36)	54 (29)	51 (26)	52 (27)
Year 3 (n = 58)	64 (26)	67 (26)	66 (25)
Year 6 (n = 74)	54 (28)	54 (26)	55 (28)

*Possible scores range from 0 to 100. A low score indicates a more instrumental response and a high score indicates a more expressive response.

ables were sex (male and female), age (year 3 and year 6), and aggression type (physical, verbal, and indirect), and the dependent variable was the expagg score.

Results showed a significant main effect of sex, $F(3, 124) = 3.14, P < .03$. Follow-up univariate ANOVAs showed significant effects of sex on representations of all three types of aggression: physical, $F(1, 126) = 6.57, P < .02$; verbal, $F(1, 126) = 6.86, P < .01$; and indirect, $F(1, 126) = 8.58, P < .005$. The means in Table III indicate that in each case girls held more expressive representations than boys, whereas boys held more instrumental representations than girls.

The ANOVA also showed a significant main effect of age on representation of aggression, $F(3, 124) = 2.70, P < .05$. Follow-up ANOVAs revealed significant effects of age on representations of physical aggression, $F(1, 126) = 4.14, P < .05$; verbal aggression, $F(1, 126) = 7.78, P < .01$; and indirect aggression, $F(1, 126) = 5.74, P < .02$. The means in Table III indicate that in all cases year 6 children held more instrumental representations of physical, verbal, and indirect aggression than did year 3 children, who held more expressive representations.

The ANOVA showed no significant effect of aggression type on representation, nor any interaction between aggression type and sex, aggression type and year, or sex and year.

DISCUSSION

The New Expagg Questionnaires

The three new scales that were devised for the present study showed good construct validity, internal reliability, and test–retest reliability, suggesting that they are appropriate for use with children aged 7 to 11 years.

Sex Differences in Social Representations of Aggression

In line with Archer and Parker's [1994] study, the results showed that compared with girls, boys held more instrumental representations of aggression, whereas compared with boys, girls held more expressive representations of aggression. Our results, together with those of Archer and Parker, indicate that sex differences in representations of aggression occur in children as young as 7 to 8 years. Our results also help us rule out the possibility that Archer and Parker's finding of more expressive social representa-

tions of indirect aggression in girls compared with boys was due to methodological artefacts (see the Introduction). Specifically, the use of terms that were unfamiliar to children was not a problem in the present study, and girls still held more expressive social representations of indirect aggression than boys. An important contribution of the present study is that the sex difference generalizes to verbal aggression as well as to physical and indirect aggression. This result is important because all three forms of aggression are exhibited by children and so it behooves researchers to study the social representations associated with them all rather than with just physical aggression.

Campbell et al. [1993] suggest that the sex differences in social representations may have originally arisen as a result of sex role differentiation in which it was adaptive for women, as the primary caretakers of children, to view their aggression as a negative force in need of control. Conversely, the traditional roles of men in industry, business, and the military may have led to an instrumental representation in which aggression is viewed in a more positive light as a means of exercising control over others. Our data, along with those of Archer and Parker [1994], suggest that such beliefs develop relatively early in ontogeny.

Duckett et al. [1997] also note that items used to denote an expressive representation tend to refer to “excuses” (defined as “explanations where one admits that the disruptive act is bad, wrong, or inappropriate but dissociates himself from it” [Duckett et al., 1997 citing Tedeschi and Reiss 1981, p 281]), whereas items used to denote an instrumental representation tend to refer to “justifications” (defined as “explanations in which the actor takes responsibility for the action but denies that it has the negative quality that other might attribute to it” [Duckett et al., 1997, citing Tedeschi and Reiss 1981, p 281]). Duckett et al. refer to literature that shows that excuses are more likely to be used by those of lower status and justifications are more likely to be used by those of a relatively higher status. They suggest that male aggression is more socially acceptable than female aggression and that men tend to occupy higher status positions than women and, as a result, are in a better position to be able to justify their aggression rather than excuse it. Support for this suggestion comes from their study, which showed that when men were asked to imagine aggressing against a female (a form of aggression that is not socially acceptable) they scored significantly higher on EXPAGG (i.e., they showed a more expressive representation). This account of why sex differences occur in representations of aggression is compatible with the original explanation put forward by Campbell et al. [1993] because it is plausible that female aggression became socially unacceptable because of women’s traditional role as caretakers.

Despite the fact that such distinct occupational roles do not exist for children, it is plausible that these representations could be acquired at a relatively early age due to the processes of differential reinforcement/punishment and modeling described by Bandura [1977]. Girls and boys may simply model the expressive or instrumental terms used by other members of their own sex. Or, via direct experience and/or observation, girls may learn that expressive terms are the most effective at lessening disapproval for their aggression whereas boys may learn that by justifying their aggression (i.e., employing an instrumental representation) they avoid punishment and perhaps even receive approval. Some support for this latter suggestion comes from Bandura and Walters [1959], who found that boys’ parents, despite punishing aggression in the home, did in some instances actively encourage aggression outside of the home. Whether this would also be the case for girls is, however, unclear, and further research would need to be carried

out to determine whether boys and girls do actually receive or observe differential reinforcement for employing expressive vs. instrumental representations when accounting for their aggression.

Age Differences in Social Representations of Aggression

The expaggs also showed significant age differences in representations of aggression, with year 6 children holding more instrumental representations of physical, verbal, and indirect aggression compared with year 3 children. These findings are not consistent with those of Archer and Parker [1994], who found no significant age differences in children's representations of direct and indirect aggression. It is conceivable that this discrepancy is due to the reduced number of items that were used in the present study in the revised questionnaires, or due to slight differences in the age range of the children employed (Archer and Parker's study employed children between the ages of 8 and 11, whereas the present study employed children between the ages of 7 and 11 years).

An examination of the individual items that produced significant age differences¹ suggest that these age differences may mainly be due to an increasing tendency to retaliate in response to aggressive attacks and/or to view these retaliations as justified. Such a view is consistent with Piaget's [1932] model of moral development. According to this model, children up to the age of 7 to 8 years believe that what is morally just equates with obedience to adult authority. Conversely, between the ages of 7 to 8 and 11 to 12 years they prioritize equality and retributive justice over authority. The age differences found in the present study may therefore be due to a large number of children in the younger age group (7–8 years) being at the first stage in Piaget's model, whereas the children in the older age group (10–11 years) were at stage two. This explanation may also account for the discrepancy between the present findings and those of Archer and Parker [1994]. As noted previously, Archer and Parker employed children between the ages of 8 and 11 years. Although the youngest children in Archer and Parker's study were just 1 year older than the youngest children in the present study, this gap occurs at the age in which children make the transition from stage one to stage two of Piaget's model, and this relatively small age difference may therefore be critical.

Social Representations of Physical and Indirect Aggression

Girls were found to hold more expressive representations of indirect aggression compared with boys, whereas boys held more instrumental representations compared with girls. These findings support those of Archer and Parker [1994]. In addition, the results of the present study found no within-sex differences for representations of physical and indirect aggression. Given that previous research has shown that (1) girls tend to employ more indirect aggression than boys [Lagerspetz and Bjorkqvist, 1994], (2) girls

¹Chi-squared tests showed significant age differences in the following items: items 11 ($P < .001$), 16 ($P < .05$), and 21 ($P < .001$) on the new physical expagg; items 7 ($P < .01$), 10 ($P < .05$), 11 ($P < .001$), 14 ($P < .005$), and 20 ($P < .05$) on the new verbal expagg; and items 6 ($P < .05$), 8 ($P < .05$), 14 ($P < .05$), 11 ($P < .001$), and 21 ($P < .05$) on the new indirect expagg. Nine of these 13 items can be seen to refer to the view that aggressive retaliation is appropriate or justified (see Table I). In all instances a greater proportion of year 6 children compared with year 3 children endorsed the instrumental alternative, i.e., the view that retaliation is appropriate and/or justified.

employ more indirect than physical aggression [Ahmad and Smith, 1994], and (3) boys employ more physical than indirect aggression [Ahmad and Smith, 1994], these findings have two main implications. They suggest that social representations of indirect aggression cannot account for sex differences in levels of indirect aggression and that within-sex differences in levels of aggression are not linked to within-sex differences in social representations of aggression.

However, the data indicating that girls employ higher levels of indirect aggression than boys come from a Finnish sample [Lagerspetz and Bjorkqvist, 1994] and the representation data obtained in the present study and in the study by Archer and Parker [1994] employed British children. As Boulton and Smith [1994] point out, data concerning childhood aggression from one country cannot always be generalized to another country. It may be the case that British girls do not employ higher levels of indirect aggression than boys. We are currently working on a paper examining this issue.

As discussed previously, Archer and Parker [1994] did not conclude that social representations and behavior are always independent, but instead suggest that indirect aggression may be an exception due to its disguised nature. However, it is also possible to question the data that suggests that representations and behavior are linked. The studies that point to a link have all relied on self-reported levels of aggression. It may be the case that the self-report data obtained by Archer and Haigh [1996] and Campbell et al. [1993, 1997] reflected factors such as the extent to which an individual gave socially desirable responses or their willingness to admit to their own aggression. It is likely that such measures would correlate with representations of aggression given that an instrumental representation indicates that aggression is viewed as something positive and an expressive representation indicates a negative attitude toward aggression. Further studies employing measures of aggression other than self-report would be needed to rule out this interpretation.

It may also be the case that some of the domains included in the representation questionnaires are linked to levels of aggressive behavior and others are not. For example, Bandura's [1973, 1977] social learning theory states that outcome expectations influence behavior. Thus, the extent to which children associate aggression with subsequent guilt or with feelings of satisfaction may exert a stronger influence over the degree to which they engage in aggressive behavior. On the other hand, questions that refer to the perceived proximate cause of the attack may simply relate to post-hoc rationalizations and so be unrelated to actual aggressive behavior. For these reasons we are currently preparing a report of a study that looked at the associations between children's social representations of (different types of) aggression in different domains and measures of aggression obtained with peer reports and self-reports.

Finally, weakness of the present study must be acknowledged. Archer and Haigh [1996] modified EXPAGG to form two separate instrumental and expressive scales. They found a relatively low correlation ($-.35$) between the scores on the two scales, suggesting that instrumental and expressive items do not constitute mutually exclusive alternatives as is assumed in the forced-choice EXPAGG questionnaire and the questionnaires employed in the present study. The present study is therefore limited in this respect, and any future studies employing these questionnaires may benefit from converting them into separate instrumental and expressive scales.

In addition, the present study did not control for the sex of the opponent children had in mind when responding to the questionnaires. Recent research by Archer and Haigh

[1999] suggests that the opponent's sex has a significant impact on representations of physical and verbal aggression in an adult population. Further research is therefore needed to determine whether the opponent's sex also has a significant influence on children's social representations of aggression.

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