

## EVALUATION OF A UNIVERSAL SOCIAL INFORMATION-PROCESSING GROUP PROGRAM AIMED AT PREVENTING ANGER AND AGGRESSIVE BEHAVIOUR IN PRIMARY SCHOOL CHILDREN

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**Abstract:** According to social information-processing models, aggressive children are prone to over-attribute hostile intentions to peers. The current article describes the development and preliminary evaluation of a 5-session, classroom-based, universal group program that focuses on helping students develop a more positive attributional style. Compared to a test-retest control group ( $n = 34$ ), children receiving group intervention ( $n = 18$ ) were less likely to endorse hostile attributions and more likely to endorse benign attributions in response to a set of ambiguous social situations. Furthermore, peer-directed aggressive behaviour scores reduced more in the experimental group than in the control group. Children who received social information processing group intervention also reported less perceived anger and showed a trend to report more self-control than those in the control group. Finally a regression analysis showed that children who evidenced greater reductions in aggressive behaviour tended to be those who also reported greater decreases in hostile attributional style.

**Key words:** Aggression, Anger, Attributions, Children, Group counseling.

The development of aggression in children and adolescents is the result of a complex interplay of individual, family, social, and environmental factors. Several risk factors in childhood and adolescence are known to lead to aggressive behaviour, including socialization practices, poverty, poor emotional regulation skills, and a cognitive style characterized by the attribution of hostile intent to others (De Castro, Veerman, Koops, Bosch, & Monshouwer, 2002; Schultz & Shaw, 2003; Watson, Fischer, Burdovic Andreas, & Smith, 2004). In addition, a range of protective factors have

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been proposed to buffer young people from the risks of becoming aggressive such as prosocial behaviour (empathy), connectedness to family or peers, involvement in social activities, and having a positive explanatory style (Begue & Muller, 2006; Gardner, 2008; Resnick, Ireland, & Borowsky, 2004; Williford & DePaolis, 2012). Thus, there are reasons to believe that an intervention designed to enhance empathetic understanding, anger management strategies, and a benign attributional style might be effective in reducing aggressive behaviour in children.

### ***Hostile attributions as a risk factor for children's aggressive behaviour***

One prominent theory relevant to aggressive behaviour is the social information-processing model described by Crick and Dodge (1994). It is founded on the premise that social behaviours of children, both prosocial and aggressive, are a function of children's social cognitions. The model identifies six sequential steps of processing: (1) encoding of social cues; (2) interpretation of social cues; (3) goal selection; (4) response generation; (5) response evaluation, and (6) behaviour enactment. Numerous studies have shown that children's aggressive behaviour is associated with atypical *encoding, goal selection, response generation, evaluation, and enactment* (De Castro, 2004; Fontaine, 2008). As far as *interpretation* of social cues is concerned, a meta-analytic review has demonstrated a robust association between children's attribution of hostile intent and aggressive behaviour (De Castro et al., 2002). For example, when asked to imagine being bumped by a peer while walking in the hallway, aggressive children are more likely to state that the bump was "on purpose" than nonaggressive counterparts (Hudley, Britsch, Wakefield, Smith, Demorat, & Cho, 1998). What's more, aggressive children's tendency to over-interpret others' behaviours as hostile appears to be better explained by their pre-existing hostile intent schemata rather than by their failure to attend to non-hostile cues (Horsley, De Castro, & Van der Schoot, 2010).

Several aggression intervention studies have examined the idea that attribution retraining might successfully reduce childhood aggression by decreasing biased judgement of a peer's intent. For example, Hudley and colleagues (1996; 1998) developed the Brain Power program, a 12-session attribution retraining intervention, which focused on the early stages of the social information-processing model. Based upon the postulated causal role of faulty attributions in generating aggressive behaviour, it was designed to help children recognize accidental causes in ambiguous interactions with peers and to "attribute negative outcomes of ambiguous causality to accidental or uncontrollable causes" (Hudley & Friday, 1996, p. 75). Results from the pre- and post-tests revealed that relative to controls, aggressive boys in the attribution training condition achieved and maintained improvements in self-control, as rated by teachers, and

these improvements persisted across time. Further, children in the attributional intervention displayed reductions in judgments of hostile intent, although this effect diminished over time. The results of this selected intervention program suggested that cognitive interventions (targeting social information-processing) might support positive behavioural improvements among children with aggressive behaviour.

Using a different methodology (a cognitive bias modification program for interpretations: CBM-I, see Beard, 2011), Vassilopoulos, Brouzos, and Andreou (in press) appear to have arrived at similar results. CBM-I paradigms are training procedures that encourage individuals to adopt a more positive information processing style by repeatedly combining ambiguous scenarios with sentences that disambiguated them in a benign way. An example by Vassilopoulos, Banerjee, and Prantzalou (2009) is as follows: "During arts education, you ask your fellow student for one of his/her crayons, but he/she refused" followed by a benign (e.g., "S/he needs the crayon to finish his/her painting") or negative interpretation (e.g., "S/he dislikes you"). After the children had indicated which interpretation described how they would think in that situation, they were given feedback on what was the 'correct' (always benign) interpretation. Vassilopoulos et al. (in press) implemented a three-session attribution retraining intervention to induce benign attributional style in children (aged 10-12 years) displaying medium to high levels of aggression. Data showed significant alterations in attributional style and self-reported aggressive behaviour in the experimental training group compared to a group who received no training.

Although CBM-I interventions represent a convenient, flexible, and cost-effective mode of intervention which, among other benefits, does not require repeated contact with a mental health professional, nevertheless there are indeed some caveats associated with this method. First, although effects have been observed on interpretive bias up to 3 days after the delivery of the program (e.g., Vassilopoulos et al., 2009), it is still open to debate whether the changes in cognitive bias observed are maintained over time (Grafton & MacLeod, 2014), especially the single-session ones. Second, cognitive bias modification methods in general have been criticised for artificiality and low ecological validity, particularly if they involve computerized tasks carried out in the lab under strict experimental conditions, detached from natural settings or real-life social situations (Emmelkamp, 2012). Third, no justification for the 'correct' disambiguation of the scenarios is provided by the experimenter, and we have observed that, at least, some of the participants appear puzzled or suspicious regarding the validity of the feedback provided. Fourth, because these paradigms deliver repeated exposure to stimuli in order to train individuals to resolve ambiguous information in a positive manner (100 trials and more per session are not unusual), they are often experienced as boring, monotonous, or meaningless by the participants (Beard, Weisberg, & Primack, 2012; Brosan, Hoppitt, Shelfer, Sillence, & Mackintosh, 2011).

Taking the above-mentioned caveats into consideration, Vassilopoulos and colleagues attempted to optimize the effects of interpretation training techniques by incorporating them into a comprehensive psychoeducational group program for social anxiety and by modifying the procedure such that participants, instead of performing a computerized task alone, are encouraged to work together in small groups to produce and challenge interpretations by critically analyzing information that is presented in a problem scenario. In that way children are not only passive recipients of experimenter-provided feedback but active problem-solvers and the whole procedure becomes more enjoyable, intuitive, and engaging (Vassilopoulos, Brouzos, Damer, Mellou, & Mitropoulou, 2013). The present study represents a similar attempt to incorporate CBM-I techniques and material designed to decrease hostile attributional bias (Vassilopoulos et al., in press) into a universal social information-processing group model aimed at preventing anger and peer-directed aggression in primary school children.

Universal programs are delivered to all children in a classroom or school without any prior screening for individual risk factors or behaviour problems. They present specific benefits when compared to selected or targeted interventions. Universal programs have the advantage of minimizing labelling and stigmatization associated with being identified for intervention (Offord, 2000; Shonkoff & Phillips, 2000). In addition, universal interventions are run in classroom settings to an entire classroom and thus are not only easily delivered by classroom teachers, but also reach more children than the other types of intervention. Many meta-analytic reviews report evidence suggesting that universal programs targeting aggressive behaviour are cost-effective and effective at all school levels and across different populations (e.g., Hahn, Fuqua-Whitley, Holly, Liberman, Crosby, et al, 2007).

To sum up, in this study we evaluated the impact of a universal, classroom-based group model targeting anger and aggressive behaviour in primary school children. Understanding the limitations in school counsellor time but also capitalizing on the fact that shorter universal models appear to be more effective than longer universal models (Wilson & Lipsey, 2005), a five-session psychoeducational group program is presented. This will include an introduction, the three core content area (attribution retraining, empathy, parental anger) sessions, and a termination session. Pre- and post-assessment measures of attributional style were administered, and compared to a second group of children who did not receive any form of intervention. Drawing mainly from the Hudley et al. (1998), and the Vassilopoulos et al. (2013; in press) studies reported above, it was predicted that participating in the program would result in less hostile and more benign attributions in response to ambiguous social situations compared to a test-retest condition. It was also predicted that children trained to make more benign attributions would report less negative emotional reactions to the hypo-

thetical stories, relative to children in the test-retest control condition. The second aim was to assess aggressive behaviour and reported self-control, both before and after participation in the group program, in order to assess any group differences in these behaviours. We predicted that participation in the group would lead to a reduction in aggressive behaviour and to an increase in self-control. Finally, we investigated whether the effects of the program on aggression were mediated by changes in attributional style.

## METHOD

### *Participants*

Participants and controls in this quasi-experimental study were Greek elementary children ( $N = 52$ ) attending three public schools in western Greece. Eighteen child participants were in the experimental group (9 males, 9 females), and 34 control (20 males, 14 females), all of whom were Caucasian. Age ranged from 9 years to 11 years. Of the experimental group, there were 8 participants in the fifth grade and 10 participants in the sixth grade. Of the control group, there were 14 participants in the fifth grade and 20 participants in the sixth grade. Allocation of classrooms to conditions was not randomized. Schools were allocated to the experimental or control group according to their geographic proximity and their activities schedule.

### *Measures*

The *Aggression Scale* (AS; Orpinas & Frankowski, 2001) is an 11-item self-report measure, which is used to assess the degree to which children (aged 11 to 13 years old) engage in overt aggression. Participants are asked to think about their behavior over the past 7 days and rate how many times they actually engaged in certain behaviors (0 times to 6 or more times). The AS has displayed good psychometric characteristics (Orpinas & Frankowski, 2001). For this measure for our sample, Cronbach's alphas were .75 and .87 at pre- and post-assessment respectively. The AS has been successfully used in various Greek studies (e.g., Vassilopoulos et al., in press).

*Self-control.* Children's self-control was measured by the Social Skills Rating System *Child version* (SSRS-C; Gresham & Elliot, 1990). This version is a self-report questionnaire consisting of four subscales with 10 items each: "Cooperation", "Assertion", "Empathy", and "Self-control." In the current study only the "self-control" subscale was used, which includes behaviours that are manifested in conflict sit-

uations, such as responding appropriately to provocation or in situations where there is no conflict but where it is necessary to compromise attitudes. Each item is rated on a three-point frequency scale (0 = never, 1 = sometimes, 2 = many times) based on the respondent's perception of the frequency with which they exhibit each behaviour. This subscale has demonstrated moderate internal consistency in the past (Cronbach's alpha = .68; Gresham & Elliot, 1990). In the current sample, Cronbach's alphas were .57 at pre-assessment and .74 at post-assessment.

An *ambiguous vignette paradigm* (adapted from Vassilopoulos et al., 2008) was used to measure children's attributional bias and emotional reaction estimates. In total there were 18 vignettes. Half of the children (within each group) received vignettes 1-9 at pre-assessment and vignettes 10-18 at post-assessment, whereas this order was reversed for the other half of the children. All vignettes described a negative outcome (e.g., damaged personal property, physical harm, social ridicule) for the student and most of them involved an unnamed peer (or group of peers) in either accidental or ambiguous (i.e., the intent of the interacting person is not clear) social situations. Each description was followed by two thoughts which sometimes occur to people in these situations. One attribution always involved a hostile disambiguation of the situation and the other attribution involved a benign disambiguation of the situation. For example, the interpretations in response to the following situation "You've invited a group of classmates to your birthday party. However, a few have not yet said if they're coming" could be: a) They don't want to come because they don't like me (hostile attribution); and b) They don't know yet if they can come or not (benign attribution). Participants rated the attributions in terms of the extent to which they would be most likely to come to their mind if this event had happened to them, using a five-point Likert scale ranging from 1 (I would not think of it at all) to 5 (I would think of it immediately). Hostile and benign attributions per situation were shown in a fixed random order. Participants also rated how angry they would feel if such an event had *really* happened using a five-point Likert scale ranging from 1 (not at all angry) to 5 (very angry). Cronbach's alphas were .77, .70, .82 (for hostile or benign attributions, and emotional reaction, respectively) at pre-assessment, as well as .91, .90, .90 (for hostile or benign attributions, and emotional reaction, respectively) at post-assessment.

### **Procedures**

Participation in the study was completely voluntary. In the experimental group, the group facilitator administered the questionnaires to class groups by reading all questionnaire items out to the class. However, in the control group the questionnaires were administered by the classroom teacher following the same procedure. Children

completed the AS, the self-control subscale of the SSRS-C, and the ambiguous vignette paradigm over one session the day before the commencement of the program. Post-test scores were delayed for two days after the completion of the program. The two groups were led by the same group facilitator on the same day (but at different times) for 45 minutes per week for five consecutive weeks. All sessions were held at the school within the normal hours of the school day, and they followed roughly the same format from week to week. They began with a brief introduction to the topic of the session and an invitation for group members to check-in. After the check-in, the topic of the day and group exercise were introduced. After completion of the group exercise and discussion, the remaining time was spent in further sharing and discussion followed by a brief check-out (for an overview of the sessions, see Table 1). The

*Table 1. A universal social information-processing group model*

Session 1: Signing the “social contract”	A name game is introduced to help children learn one another’s names and a bit about one another’s lives outside classroom. Next, participants create and agree upon ground rules (group norms).
Session 2: Detecting other people’s intentions	Identification and modification of hostile attributions using various hypothetical vignettes. Children work together in small groups to produce and challenge attributions by critically analyzing information that is presented in a problem scenario (e.g., “you go to your classmate’s home to play together where nobody opens the door for you”).
Session 3: Putting ourselves in other people’s shoes	Participants practice empathy by role playing various social situations written on cards. They take turns playing different roles (e.g., student, teacher or an observer) so they can see both sides of the situation.
Session 4: Why do my parents get angry?	Children identify the major sources/causes of anger in their parents. They also complete a checklist in relation to anger displays exhibited by their parents. They are led to realize that how parents express their emotions often influence the reactions of children. Finally, more constructive ways of handling their anger are discussed (e.g., take a minute/deep breath before reacting at all).
Session 5: Towards the end of the journey	Using “automatic writing” participants share thoughts and feelings regarding the group. Finally, they are prepared for future, real-life interpersonal provocations by discussing alternative ways of dealing with them.

school district hosting the intervention groups was suburban whereas the two additional sites that collected control group data only were both urban. Control group participants received no intervention during the course of this study. Pretest and posttest data from the control group were collected at the same 5 week interval as in the intervention group.

Group leader was one male masters's student from the Counseling program in the Department of Primary Education at the University of Ioannina. He had attended a post-graduate level group counseling course and was a school teacher by profession with 5 years teaching experience in elementary schools. Leading a psychoeducational group represented partial fulfilment of his requirements for the degree of Master of Science in School Counseling. Supervision, which was provided by the first author on a weekly basis, helped to ensure that the leader was appropriately following the protocol.

## RESULTS

### *Attributional bias*

Means and standard deviations for attributional bias for each group are presented in Table 2. We predicted that children in the experimental group would be less likely to endorse hostile attributions and/or more likely to endorse benign attributions than would those in the control group. This hypothesis was tested using mixed ANOVAs with Group (experimental versus control) as the between-subjects factor and Time (pre- versus post-intervention) as the within-subjects factor. In the ANOVA on hostile attributions, a simple effect of time,  $F(1, 50) = 168.80, p < .001$ , partial  $\eta^2 = .77$ , was qualified by a significant interaction of time and group,  $F(1, 50) = 151.69, p < .001$ , partial  $\eta^2 = .75$ . Post hoc comparisons showed that both groups reduced their hostile attribution ratings at post-assessment ( $p < .001$  and  $p = .04$  for the experimental and control group, respectively). Furthermore, although at pre-assessment children in the experimental condition were more likely to endorse hostile attributions, compared to children in the control group,  $F(1, 50) = 13.29, p = .001$ , partial  $\eta^2 = .21$ , nevertheless, at post-assessment this pattern was reversed and significant too,  $F(1, 50) = 24.25, p < .001$ , partial  $\eta^2 = .33$ .

The analysis of benign attribution scores also showed a significant interaction effect of time with group,  $F(1, 50) = 69.72, p < .001$ , partial  $\eta^2 = .58$ . Post hoc comparisons showed a significant increase in benign attributions ratings after intervention,  $p < .001$ , whereas the control group did not significantly change in their benign attribution scores,  $p > .10$ . Simple effects tests also revealed that although there was

no significant difference between groups at pre-intervention,  $F < 1$ , participants in the experimental condition were more likely to endorse benign attributions compared to participants in the control condition at post-training,  $F(1, 50) = 51.10, p < .001$ , partial  $\eta^2 = .51$  (see Table 2).

### *Perceived anger*

Changes in emotional reaction estimates were examined using a similar ANOVA to that described above. As with the hostile attribution ratings, there was a significant main effect of time,  $F(1, 50) = 34.56, p < .001$ , partial  $\eta^2 = .41$ , qualified by the interaction of time and group,  $F(1, 50) = 31.71, p < .001$ , partial  $\eta^2 = .39$ . Consistent with findings above, post hoc comparisons revealed a significant decrease in ratings of perceived anger after intervention,  $p < .001$ , but no significant reduction in ratings for the control group,  $p > .10$ . In addition, although there was no significant difference between groups at pre-intervention,  $F < 2$ , participants in the experimental condition showed a trend to report less anger compared to participants in the control condition at post-training,  $F(1, 50) = 12.19, p = .001$ , partial  $\eta^2 = .20$  (see Table 2).

### *Aggressive behaviour and self-control*

Changes in aggressive behaviour and self-control were examined using a similar ANOVA to that described above. For self-report aggression, the interaction of time and group was not significant,  $F(1, 50) = .72, p > .10$ , partial  $\eta^2 = .01$ . Because we had clear predictions that children in the experimental condition would show greater reduction in self-reported aggressive behaviour than those in the control condition,

*Table 2. Means (and standard deviations) of the main variables for each group on each occasion of testing*

	Experimental group		Test-retest control group	
	Pre	Post	Pre	Post
Hypothetical social events				
Hostile attributions	3.85 (0.41)	1.77 (.46) <sup>a</sup>	3.08 (.83)	3.02 (1.02)
Benign attributions	2.57 (.62)	4.26 (.42) <sup>a</sup>	2.71 (.77)	2.61 (.92)
Emotional reaction	3.36 (.74)	2.00 (.70) <sup>a</sup>	3.00 (.95)	2.97 (1.06)
Aggressive behaviour (AS)	10.72 (5.51)	5.44 (3.66) <sup>a</sup>	14.73 (10.88)	11.44 (10.78) <sup>b</sup>
Self control (SSRS-C subscale)	12.27 (3.21)	13.88 (3.47)	12.41 (3.16)	12.97 (3.98)

*Note:* SSRS-C: Social Skills Rating System-Child.

<sup>a</sup> Pre- vs. Post-training means differ significantly ( $p < .001$ )

<sup>b</sup> Pre- vs. Post-training means differ significantly ( $p < .05$ )

we carried out post-hoc comparisons. It was found that both groups reported a significant reduction in aggressive behaviour at post-assessment ( $p = .001$  and  $p = .04$ , for the experimental and control group, respectively). However, although there was no significant difference between groups at pre-assessment,  $F(1, 50) = 2.1$ , participants in the experimental condition reported less aggressive behaviour compared to participants in the control condition at post-assessment,  $F(1, 50) = 5.21$ ,  $p = .03$ , partial  $\eta^2 = .09$  (see Table 2).

The analysis of self-control scores (SSRS-C subscale) did not show the predicted interaction effect of time and group,  $F(1, 50) = 1.04$ ,  $p = .31$ , partial  $\eta^2 = .02$ . Post hoc comparisons revealed that participants in the experimental group reported a trend-level increase in self-control,  $p = .08$ , whereas participants in the control situation did not significantly change their self-control ratings,  $p = .35$ . Finally, there was no significant difference between the two groups regarding self-control ratings, either at pre-assessment or at post-assessment, ( $F_s < 1$ )(see Table 2).

### *Regression analysis*

The data were then examined to determine whether changes in hostile attributional style predicted changes in aggression scores. Hierarchical linear regression analysis was used to examine predictors of change in aggression score from pre- to postassessment, entering gender and age as control variables in step 1, postassessment AS score at step 2, experimental group at session 3, and change in hostile attributions at step 4. Gender, age, and experimental condition did not significantly predict change in AS scores. However, initial AS was a significant predictor ( $\beta = .44$ ,  $t = 3.35$ ,  $p = .002$ ,  $\Delta R^2 = .19$ ) as was change in hostile attributions ( $\beta = .57$ ,  $t = 2.10$ ,  $p = .04$ ,  $\Delta R^2 = .07$ ).

In sum, the regression analysis suggests that students who reported greater reductions in self-reported aggressive behaviour tended to be those who reported higher initial aggression scores and reported greater decreases in hostile attributional style.

## **DISCUSSION**

The primary goal of this study was to evaluate the effectiveness of implementing a universal social information-processing group program aimed at preventing anger and aggressive behaviour in primary school children. These early data hold promise. First, they suggested that the group program was successful in reducing hostile attributions in children. That is, primary school children who participated in a universal group designed to influence attributional biases in a less hostile and more positive direction,

showed more change than did non-participating controls on a measure of attributional bias and perceived anger in response to new hypothetical scenarios. Second, our data showed that the group program significantly reduced self-reported aggressive behaviour, a change that was only marginally significant for children in the comparison test-retest group. Note that only a trend level effect of program on a measure of self-control was observed. Finally a regression analysis showed that children who evidenced greater reductions in self-reported aggressive behaviour tended to be those who also reported greater decreases in hostile attributional style. These results add to a growing body of evidence suggesting that participation in a universal school-based social information-processing program can improve the behaviour of children of primary school age (Wilson & Lipsey, 2006).

The present study also represents the first attempt to incorporate adapted CBM-I techniques and material designed to decrease hostile attributional bias (Vassilopoulos et al., in press) into a universal group model. The large effect size found in the current study regarding attributional change is impressive and compares favourably to effect sizes for interpretation training studies designed to alter hostile attributional bias in both aggressive children and adults (Hawkins & Cogle, 2013; Vassilopoulos et al., in press). Although it is unclear which components of the group contributed to its efficacy and in what capacity these components impacted the results, we speculate that the use of a problem-focused group intervention was a critical factor that affected the success of the program. Thus, giving participants the opportunity to work actively in small groups on several hypothetical social scenarios and try to evaluate alternative (negative and more benign) interpretations by examining the evidence for and against each of them and/or generate their own explanations might have enhanced the effects of reattribution training. This possibility is further supported by research in the context of anxiety-related interpretation bias which demonstrates that an active method of interpretation training, in which participants had to generate and/or select threatening meanings of ambiguous event descriptions, enhances training-congruent effects (Hoppitt, Mathews, & Yiend, 2010). Problem-focused group interventions are also considered to be one of the most effective group counseling strategies with children and adolescents (Gerrity & DeLucia-Waack, 2007; Hall, Rushing, & Khurshid, 2011; Vassilopoulos et al., 2013).

Interestingly, there was some evidence to suggest that reductions in hostile attribution of intent were associated with reductions in self-reported aggressive behaviour. Students who reported greater reductions in peer aggression tended to be those who reported greater reductions in hostile attributions from preassessment to postassessment. Although no definite conclusions can be drawn about the direction of causality, these results are in line with social information theories which suggest that cogni-

tive biases may be causally linked to aggressive responses by influencing how real-life ambiguous events are processed (Crick & Dodge, 1994).

While large effect sizes are rarely found in universal prevention studies (because no participant selection process takes place), even in those based on small samples, the effect sizes found in the current study regarding attributional change suggest that the cognitive skills emphasized by the program were easy to master. The brevity of the intervention and the size of the effect could make the group model attractive to school counselors and teachers wishing to implement psychoeducational programs within their regular curricula. In fact, the contribution of the school staff in implementing the program principles and skills on an on-going basis and by taking advantage of unique local environments and resources cannot be underestimated, and certainly requires further investigation.

Albeit promising, these results are preliminary and must be interpreted with caution. First and foremost, the sample size was rather low, which limits the generalization of the results. Also, because we did not use individual random assignment to place participants in experimental and control groups, there might be differences between two groups in characteristics not measured in this study. The quasi-experimental nature of this study makes it difficult to convincingly demonstrate a causal link between the experimental condition and group outcomes, as differences between groups on any of the outcome measures could be due to chance, rather than to a systematic factor related to the content and implementation of the group program. In addition, only pre- and post-program measures were used and in order to show that the program has long-lasting effects a minimum of three waves of data are required. Further, the study relied exclusively on children's self-report and future studies should employ multi-informant methods such as teacher and parent reports and diagnostic interviews. Finally, future research could compare the current universal program to an alternative prevention program to control for any nonspecific therapeutic factors.

The results suggest that a brief universal school-based group model can bring about changes in aggressive behaviour and reduce hostile attributions, although it is not clear whether these gains can be maintained long term. In view of the complexity of peer directed aggression, it may prove over-optimistic to expect a brief universal group program to bring about marked and lasting effects on children's social behaviour. Future studies might further refine the current program by investigating feasibility, viability, and long-term success of both universal and selective approaches to intervention and by incorporating booster or maintenance sessions in their design. Reducing overall risk for aggression is only likely to be achieved through the application of theory driven interventions within an environment that is already part of all young peoples' lives. The challenge remains for researchers to combine a theoretical

understanding of human behaviour with the best methods of enhancing and maintaining behaviour change as well as integrate them into the core curriculum practices for schools.

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