

A pilot study of the Incredible Years Teacher Training programme and a curriculum unit on social and emotional skills in community pre-schools in Jamaica

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Abstract

Background School-based interventions involving teacher and/or child training have been shown to benefit teacher practices and to prevent conduct problems and improve children's social and emotional competence in developed countries; however, we are aware of no reports from a developing country. We conducted a pilot study of the Incredible Years Teacher Training programme and a curriculum unit on social and emotional skills based on concepts and activities drawn from the Incredible Years Dina Dinosaur Classroom Curriculum to determine if this approach is appropriate for use with Jamaican pre-school teachers and children.

Methods Five pre-schools in Kingston, Jamaica were randomly assigned to an intervention (3 pre-schools with 15 classrooms) or control (2 pre-schools with 12 classrooms) condition. Intervention involved seven whole-day teacher workshops using the Incredible Years Teacher Training programme supplemented by 14 child lessons in each class. The project was evaluated through structured observations of four categories of teacher behaviour and four observer ratings: two rating scales of child behaviour and two rating scales of classroom atmosphere.

Results Significant intervention benefits were found to teachers' behaviour with increased positive behaviour [$b = 7.9$; 95% confidence interval (CI): 3.5, 12.3], reduced negative behaviour ($b = -3.5$; 95% CI: -6.6, -0.2) and increases in the extent to which teachers promoted children's social and emotional skills ($b = 46.4$; 95% CI: 11.0, 81.7). The number of teacher commands was not significantly reduced ($b = -2.71$; 95% CI: -6.01, 0.59). Significant intervention benefits were found to ratings of child behaviour with an increase in children's appropriate behaviour ($b = 5.7$, 95% CI: 1.0, 10.8) and in children's interest and enthusiasm ($b = 7.2$, 95% CI: 0.9, 13.5). Intervention also benefited classroom atmosphere with increases in opportunities provided for children to share and help each other ($b = 1.3$, 95% CI: 0.5, 2.1) and in teacher warmth ($b = 1.3$, 95% CI: 0.9, 1.8).

Conclusion This is a promising approach for improving the emotional climate of Jamaican pre-school classrooms and for improving child behaviour and participation.

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Introduction

Children entering school with poor social skills and/or behaviour problems are at risk for continuing poor behavioural adjustment and for low levels of classroom participation leading to poor achievement (Raver & Knitze 2002). The emotional climate of the early childhood classroom and the quality of teacher–child relationships have been shown to play a critical role in reducing problem behaviours among children at risk (Hamre & Pianta 2001, 2005; Howes *et al.* 2008). Clear classroom rules and expectations have also been shown to reduce disruptive behaviour and aggression (Arnold *et al.* 1998; Henry *et al.* 2000). Training teachers to provide a supportive classroom environment and in effective strategies for reducing behaviour problems has been shown to improve the emotional climate of the classroom (Conduct Problems Prevention Research Group 1999; Webster-Stratton *et al.* 2004, 2008; Raver *et al.* 2008), to reduce child conduct problems (Dolan *et al.* 1993; Ialongo *et al.* 1999) and to improve children's social-emotional competence (Flannery *et al.* 2003). Implementing a classwide social and emotional curriculum has also been shown to benefit the behaviour of young children (Grossman *et al.* 1997; Domitrovich *et al.* 2007; Webster-Stratton *et al.* 2008).

Although these school-based interventions involving teacher and/or child training have been shown to be effective in developed countries, there is an urgent need for evaluations of appropriate, feasible interventions in developing countries where access to preventative and treatment services for child mental health is limited.

Jamaica has a high prevalence of violent crime and there is concern about the increasing numbers of aggressive and violent incidents among school-aged children. Over 98% of Jamaican children attend pre-school institutions and these institutions are a logical public health setting for implementing interventions to prevent aggression. Approximately 70% of children attend community pre-schools which are provided through a partnership between government and community organizations. Parents pay a small school fee in addition to supplying basic school resources, for example, books, pencils and crayons. Most community pre-schools are staffed by para-professionals and many have poor physical facilities and inadequate provision of teaching and learning materials. Currently, initiatives aimed at improving the quality of early childhood provision in Jamaica include setting minimum standards, revising the curriculum and providing in-service training for teachers.

This study involved piloting an intervention involving professional development for teachers and a curriculum unit on

social-emotional competence through a cluster randomized controlled design in community pre-schools in Kingston, Jamaica. We chose to use the Incredible Years (IY) Series as these programmes have been validated for use across different settings and with persons from diverse cultural backgrounds (Barrera *et al.* 2002; Reid *et al.* 2002). The specific objectives were: (1) to evaluate the effect of the intervention on the emotional climate of the classrooms, measured through structured observations and ratings of teacher behaviour; (2) to evaluate the effect of intervention on ratings of children's behaviour; (3) to determine the acceptability of the programme to teachers.

Methods

Study design and sample

Five community pre-schools were selected to participate in the study. Schools were chosen to represent different types of community pre-schools. Two schools served a wide catchment area, included children from lower and lower middle class families and each classroom was self-contained. The other three schools were situated in inner-city communities, served children from predominantly low socio-economic backgrounds and the classrooms were divided by chalkboards. Two of these schools were small (one class per grade) and were situated near each other and for the purpose of randomization they were classified as one school. The schools were matched by type and the names placed in sealed numbered envelopes by a person not involved in the study. One school from each pair was then randomly allocated to intervention or control condition. Three schools (15 classrooms) were allocated to the intervention and two schools (12 classrooms) were allocated to the control condition. Two teachers, one from each group, left the school before the final evaluation (7.4% loss).

All classrooms except one were staffed by only one teacher and the average class size was 21 children. The majority of teachers (81%) had completed secondary education and only three were trained teachers (Table 1). There was no difference between the intervention and control groups in number of years teaching, level of teacher education or class size.

Ethical approval for the study was given by the University of the West Indies Ethics Committee. Written informed consent was obtained from all teachers. As observations of children's behaviour involved observations of the whole class, rather than individual children, the ethics committee did not require us to obtain parental consent.

Table 1. Teacher and classroom characteristics at baseline by study group

	Control <i>n</i> = 12	Intervention <i>n</i> = 15	<i>P</i> -value
Class size: mean (SD)*	24 (6.4)	22 (4.2)	0.21
Number of years teaching: mean (SD)*	12 (7.3)	14 (7.6)	0.19
Completed high school: <i>n</i> (%)†	11 (92)	11 (73)	0.22
Trained teacher: <i>n</i> (%)†	2 (17)	1 (7)	0.44

**t*-tests used to test for group differences.

†Mann-Whitney *U*-tests used to test for group differences.

Measurements

Structured observations of teacher behaviour

Structured observations were conducted in all classes at baseline (mid-September through October 2006) and follow-up evaluation (May through mid-June 2007). The observation schedule was based on categories from the Dyadic Parent Child Interaction Schedule (Robinson & Eyberg 1981) and the Teacher – Pupil Observation Tool (Martin 2005). An observation manual was devised after extensive observations in pre-school classrooms and provided definitions of each category and specific examples of the behaviours to be coded.

Observations were conducted over four 15-min periods (two teaching periods and two child activity periods) and event recording was used to record (1) positive teacher behaviours (use of praise, incentives, describing what children are doing and physical positive); (2) negative teacher behaviours (critical comments, negative commands, warnings and physical negative); (3) teacher commands (direct and indirect commands combined); (4) promoting children's social and emotional competence (talking about feelings and promoting friendship skills).

The results for the four 15-min periods were summed to give the total number of each category of behaviours that occurred during 1 h of observation. All observations were conducted by a single female researcher who was unaware of the study design, hypothesis and group allocation. Inter-observer reliabilities between the trainer and the observer were conducted in 16 classrooms not involved in the study and the intra-class correlation coefficients were >0.90 for all categories.

Rating scales of child behaviour and the classroom atmosphere

Two ratings of the behaviour of the children in the class as a whole – level of appropriate behaviour (e.g. no fighting or other aggressive behaviours, children are not disrupting other stu-

dents), and level of interest and enthusiasm displayed by children (e.g. children are enjoying classroom activities) and two ratings of teacher behaviour: teacher provides opportunities for children to share and help each other (e.g. children encouraged to share and/or work together), and teacher warmth (e.g. teacher is warm and loving) – were developed based on scales used by the Conduct Problems Prevention Research Group (1999). Ratings were completed at the end of each 15-min observation period using 5-point scales (0–4, where 0 is low and 4 is high). The average rating over the four observation periods was calculated. The inter-observer reliabilities (intra-class correlation coefficients) between the trainer and the observer were >0.90 for all ratings except for 'level of interest and enthusiasm' which was 0.77.

Teacher satisfaction with the intervention

At the end of the study period, teachers in the intervention group completed a questionnaire and rated the behaviour of the children in their class, in general and the behaviour of children they perceived to be more difficult, on a 5-point scale ranging from 'got a lot worse' to 'improved a lot'. Teachers were also asked if they would recommend the training programme to others on a 5-point scale from 'would not recommend it at all' to 'would strongly recommend it'.

The intervention

The intervention was based on the IY Teacher Training programme and modules from the IY Dina Dinosaur Classroom Curriculum (Webster-Stratton 2000) and was conducted by the first author with the assistance of a female psychology graduate.

The IY Teacher Training programme includes modules on partnering with parents, developing positive relationships with children, preventing and reducing inappropriate behaviour and teaching social and emotional skills. The programme uses videotape modelling, role plays and discussions and follows a collaborative model of training which emphasizes participants applying skills and concepts to their own situations. Teachers are set assignments, such as developing individual behaviour plans, using specific labelled praise to promote a targeted behaviour and setting clear classroom rules and routines. The curriculum was delivered to all teachers in the intervention schools over 7 days of training, once a month from October to April. Five days were allocated to in-service training days and teachers voluntarily attended two training days during the school holidays. A monthly classroom consultation was conducted with each teacher for approximately 1 h. During this session, teachers

were encouraged to discuss any challenges they encountered using the new strategies and to come up with potential solutions. Detailed notes were kept on the training workshops and consultations and these were used to tailor the intervention for the Jamaican context. For example, additional practical exercises and role plays were used to reinforce material that the teachers found difficult and more time was taken to deliver the content. The language used in some handouts was simplified and items relevant in the Jamaican setting were added to the functional behaviour checklist which teachers use to identify the cause of a particular child's disruptive behaviour (e.g. the following item was added: 'The child has no clear task to do.').

The IY teacher module on how to promote children's social and emotional competence was expanded by conducting lessons in each class in collaboration with the teacher. Fourteen lessons were conducted from January to May and were based on concepts and activities taken from the IY Dina Dinosaur Classroom Curriculum. The IY Classroom Curriculum consists of seven units to be delivered over a whole school year: (i) learning school rules; (ii) learning how to do your best in school; (iii) understanding and detecting feelings; (iv) problem-solving skills; (v) anger management; (vi) learning how to be friendly; and (vii) learning how to talk with friends. In this study, child lessons were conducted during one school term only and concepts drawn from four of these units were covered: (1) learning the school rules; (2) understanding and detecting feelings; (3) anger management; (4) learning how to be friendly. Each lesson lasted approximately 30–40 min and consisted of a circle time discussion followed by a group activity. The lessons involved stories, songs, discussions and role plays of situations faced by young children in their daily lives. Children were active participants in identifying and solving problems and helping each other learn new skills. Activities included cooperative art projects, group games and structured play sessions to practice friendship skills. The teachers were asked to review the concepts taught throughout the week and were given suggestions in how to promote children's use of the skills throughout the school day. Each school was provided with a set of materials to conduct the child lessons including a hand puppet and visual aids (e.g. pictures to represent the concepts) in addition to a small amount of additional teaching resources including modelling clay, manipulatives, building blocks and puzzles.

The control schools were provided with the same additional teaching resources as the intervention schools and the teachers were visited bimonthly by a member of the research team. At the end of the study, teachers in the control group received 2 days' training using the IY Teacher Training programme.

Intervention implementation

The first author received training in the IY teacher and child programmes prior to the start of the study. After each training workshop, the trainer completed a training protocol and self-evaluation form and teachers completed workshop evaluations. All of the prescribed content was covered over the course of the workshops and the teachers rated all aspects of the training (content, video vignettes, group leader skills and group discussion) as helpful or very helpful for each of the seven workshops. An IY trainer visited Jamaica for 1 week in February to provide advice on the implementation of the intervention. The teachers attended a median of 6.3 workshops (range 3.5–7). Only two teachers attended less than six workshops.

Analysis

All variables were checked for normality. The scores for teacher positives, teacher negatives and teacher commands were normalized by square root transformation. The ratings of children's appropriate behaviour and children's interest and enthusiasm were normalized by squaring the raw score. For the above variables, the median and range of the untransformed scores are presented in the descriptive table. The ratings of teacher warmth were normally distributed.

The effect of treatment on the above variables was examined on an intention to treat basis using multilevel multiple regression analysis to take into account the hierarchical structure of the study. The dependent variable was the final score and the independent variables were baseline score and treatment group. School was entered as a random variable to account for the variance among schools. For the two teachers lost to follow-up, the baseline scores were used as the final score.

Two of the measures, observations of teachers promoting social and emotional skills and the rating of opportunities to share, were not normally distributed and could not be normalized. For these measures, change scores were computed (final score – initial score) and effect of treatment was examined in a multilevel regression, controlling for school, with the change score as the dependent variable.

Results

At baseline, there were no significant differences between the intervention and control groups on teacher behaviour and ratings of classroom atmosphere (Table 2). Classrooms were characterized by a large number of negative comments (median of >80/h), a smaller number of positive comments (median of

Table 2. Structured observations of teacher behaviour and observer ratings of child behaviour and classroom atmosphere at baseline and follow-up by study group

		Control Median (range) n = 12	Intervention Median (range) n = 15	P-value
Structured observations of teacher behaviour (frequency per h)				
Teacher positive behaviour	Baseline	51 (21–93)	47 (7–126)	0.917
	Follow-up	48 (6–99)	213 (76–431)	<0.0001
Teacher negative behaviour	Baseline	78 (39–151)	93 (48–163)	0.467
	Follow-up	122 (39–177)	43 (3–96)	<0.0001
Teacher commands	Baseline	227 (162–488)	218 (119–523)	0.678
	Follow-up	305 (162–488)	222 (126–489)	0.024
Teacher promotes social and emotional skills	Baseline	0 (0–9)	0 (0–2)	0.119
	Follow-up	0 (0–11)	45 (0–131)	<0.0001
Classroom ratings of child behaviour*				
Level of children's appropriate behaviour	Baseline	2.75 (2.0–3.75)	2.75 (1.0–3.25)	0.694
	Follow-up	2.75 (1.5–3.5)	4.00 (3.0–4.0)	<0.0001
Level of children's interest and enthusiasm	Baseline	2.25 (2.0–3.25)	2.25 (1.0–2.75)	0.221
	Follow-up	2.75 (1.25–3.75)	3.50 (2.0–4.0)	0.003
Rating scales of classroom atmosphere*				
Opportunities to share and help each other	Baseline	1.00 (0.75–2.5)	1.00 (0.75–1.25)	0.473
	Follow-up	1.00 (0.5–1.75)	2.25 (0.5–3.75)	0.001
Teacher warmth†	Baseline	2.48 (0.7)	2.03 (0.7)	0.13
	Follow-up	1.75 (0.5)	3.05 (0.5)	<0.0001

P-values are results of non-parametric Mann–Whitney U-tests.

*Scale for classroom ratings: 0–4, where 0 = low and 4 = high.

†Values are mean (SD) and P-values are results of t-tests.

approximately 50/h), and a very large number of commands (median of approximately 220/h). The large number of commands is largely due to teachers immediately repeating the same command to many individual children rather than stating the command to the class as a whole. Teachers rarely talked about friendship skills or emotions. The ratings of children's behaviour, children's interest and enthusiasm and teacher warmth were between average and moderately high. However, the median for opportunities to share and help was moderately low indicating teachers neither encouraged nor discouraged children to share and help each other.

At follow-up, negative teacher behaviours in the control classrooms increased by over 50%, teacher commands increased by over one-third, while the number of positive behaviours remained the same. Conversely, in intervention classrooms negative teacher behaviours decreased by over 50%, teacher commands remained the same and positive behaviours increased 4.5-fold.

In the multilevel regression analyses, controlling for initial score and school, significant benefits were found for the number of positive teacher behaviours, negative teacher behaviours and how often teachers promoted children's social and emotional skills (Table 3). There was no significant reduction in teacher

Table 3. Multilevel regression analyses of effect of intervention on teacher behaviour and classroom ratings*

	B (95% confidence interval)	P-value
Structured observations of teacher behaviour		
Teacher positive behaviour†	7.91 (3.54, 12.28)	0.0004
Teacher negative behaviour†	–3.48 (–6.61, –0.15)	0.03
Teacher commands†	–2.71 (–6.01, 0.59)	0.11
Promotes social and emotional skills‡	46.37 (11.04, 81.70)	0.01
Classroom ratings of child behaviour		
Level of children's appropriate classroom behaviour (e.g. non-disruptive, non-aggressive)§	5.72 (0.97, 10.47)	0.018
Level of children's interest and enthusiasm§	7.20 (0.88, 13.52)	0.012
Rating scales of classroom atmosphere		
Opportunities to share and help each other‡	1.29 (0.53, 2.05)	0.0009
Teacher warmth	1.34 (0.85, 1.83)	<0.0001

*Controlling for initial score and school.

†Square root of raw score.

‡Change score is dependent variable, analyses controlling for school.

§Square of raw score.

commands. Significant benefits were also found for the ratings of child behaviour and classroom atmosphere. Children in intervention classrooms exhibited more appropriate behaviour and more interest and enthusiasm in class activities than children in control classrooms and teachers in the intervention group provided more opportunities for children to share and help each other and displayed more warmth than teachers in the control group.

Twelve of the 14 intervention teachers followed up reported that the behaviour of the children in their class had shown a big improvement and two reported it had improved a little. Eight teachers reported a big improvement in the behaviour of the more difficult children and six a small improvement. No teachers reported that children's behaviour remained the same or got worse. All 14 teachers would recommend the programme to others and 13 would strongly recommend it.

Discussion

We implemented a universal preventative intervention consisting of professional development for teachers combined with a curriculum unit on social and emotional skills, over one school year in Jamaican community pre-schools. This intervention resulted in large benefits to observed positive and negative teacher behaviours, teacher warmth and the extent to which teachers promoted children's social and emotional skills. Significant benefits were also found to ratings of children's appropriate classroom behaviour and children's interest and enthusiasm in class activities. Attendance at workshops was good and teachers willingly attended workshops during their school holidays. Teachers reported that the children benefited from the intervention and they would recommend the programme to others.

In the absence of intervention, the quality of the classroom environment declined over the school year. This decline has been reported previously (Raver *et al.* 2008) and may be due to teachers being more tolerant of child misbehaviours at the beginning of a new school year when children are settling into the class. The increase in teacher negatives may also be due to escalating cycles of coercive behaviour between teachers and children with conduct problems, similar to those described between parents and children (Patterson *et al.* 1992).

The Teacher Training programme consisted of monthly full-day workshops and individual in-class consultations. We also conducted 14 lessons on social and emotional skills in each class in collaboration with the teacher. The majority of the teachers were untrained and the new concepts and skills were introduced and practiced during the workshops. The in-class consultations

and support were used to help the teacher to apply the skills to her own classroom context and teaching style. Other studies have demonstrated that a combination of teacher workshops on classroom management and in-class consultation can have substantial benefits to teachers' behaviour and classroom climate (Raver *et al.* 2008). However, this is the first study to our knowledge that shows that this approach can benefit teachers with little prior training and in a setting with limited resources. This is important for many developing countries.

The improvements in the children's observed classroom behaviour, representing fewer aggressive and disruptive acts, are likely to be important given the evidence that aggression in pre-school classrooms is contagious (Goldstein *et al.* 2001) and that the benefits of a preventative intervention in first grade on the level of boys' aggression in sixth grade was mediated by a reduction in the overall level of aggressiveness in the classroom (Kellam *et al.* 1998).

Benefits were also found to children's interest and involvement in classroom activities. The child training intervention used many concrete materials and highly interactive teaching methods. It is possible that teachers utilized similar methods in teaching other aspects of the curriculum resulting in increased child engagement. In addition, the increases in teacher praise and attention and decreases in negative comments may have been a motivating factor for the children. Previous studies have reported benefits to children's academic achievement (Ialongo *et al.* 1999; Webster-Stratton *et al.* 2008) and the increase in child engagement reported here may lead to improved school readiness. This would need to be tested in future studies.

It is encouraging that the IY interventions that were developed in the USA can be successfully used in a different cultural and economic context and that the interventions were valued by teachers. The IY interventions follow a collaborative model of training in which participants apply skills and concepts to their own situations and this assists in transporting the interventions across contexts.

The study has numerous strengths, including random allocation of schools with pre and post measures, direct observations of teacher behaviour and classroom atmosphere and use of an analysis that controls for the clustering effect. In addition, this is the first study, to our knowledge, to report the use of an evidence-based programme to prevent conduct problems in a developing country. The study also has several limitations. The study was small-scale involving only five pre-schools in Kingston and St Andrew and hence the results may not generalize to other pre-schools in Jamaica. The schools in the control group did not receive an alternate intervention and it is possible that some benefits were due to the extra attention the intervention

schools received. However, similar resources were provided for intervention and control schools and teachers in the control schools were visited bimonthly during the study. Furthermore, there is evidence that quality of implementation is critical to the success of school-based, violence-prevention programmes (Wilson & Lipsey 2007) and that more general support is insufficient to produce significant change. Larger replications of this study are required to evaluate the effect of the intervention on child behaviour using multiple informants including teacher and parent report and direct observation.

Key messages

- Training teachers in effective classroom management and in strategies to promote children's social-emotional competence has shown benefits to teacher practices and reductions in children's conduct problems in developed countries.
- It is important to determine whether such interventions can be successfully implemented in developing countries where access to child mental health services is limited.
- The Incredible Years Teacher Training programme and concepts and activities drawn from the Incredible Years Dina Dinosaur Classroom Curriculum were piloted with teachers and children from community pre-schools in urban areas of Kingston, Jamaica. Teacher attendance at workshops was good and teachers rated the training highly.
- Significant benefits of intervention were found to structured observations of teacher practices and to observer ratings of classroom atmosphere. Significant benefits were also found to observer ratings of children's appropriate behaviour and children's interest and enthusiasm in classroom activities.

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Conflict of interest

None.

References

- Arnold, D., Williams, L. & Arnold, E. (1998) Teacher discipline and child misbehavior in day care: untangling causality with correlational data. *Developmental Psychology*, *34*, 276–287.
- Barrera, M., Biglan, A., Taylor, T., Gun, B., Smolkowski, K., Black, C., Ary, D. & Fowler, R. (2002) Early elementary school intervention to reduce conduct problems: a randomized trial with Hispanic and non-Hispanic children. *Prevention Science*, *3*, 83–94.
- Conduct Problems Prevention Research Group (1999) Initial impact of the fast track prevention trial for conduct problems II: classroom effects. *Journal of Consulting and Clinical Psychology*, *67*, 648–657.
- Dolan, L., Kellam, S., Brown, C., Wethamar-Larsson, L., Rebok, G., Mayer, L., Laudloff, J., Turkkan, J., Ford, C. & Wheeler, L. (1993) The short term impact of classroom based preventative interventions on aggression and shy behaviors and poor achievement. *Journal of Applied Developmental Psychology*, *14*, 317–345.
- Domitrovich, C., Cortes, R. & Greenberg, M. (2007) Improving young children's social and emotional competence: a randomized trial of the preschool PATHS curriculum. *The Journal of Primary Prevention*, *28*, 67–91.
- Flannery, D., Vazsonyi, A., Liau, A., Guo, S., Powell, K., Atha, H., Versterdal, W. & Embry, D. (2003) Initial behavior outcomes for the peace builders universal school-based violence prevention programme. *Developmental Psychology*, *39*, 292–308.
- Goldstein, N., Arnold, D., Rosenberg, J., Stowe, R. & Ortiz, C. (2001) Contagion of aggression in day care classrooms as a function of peer and teacher responses. *Journal of Educational Psychology*, *93*, 708–719.
- Grossman, D., Neckerman, H., Koepsell, T., Liu, P., Asher, K., Beland, K., Frey, K. & Rivar, F. (1997) Effectiveness of a violence prevention curriculum among children in elementary school. A randomized controlled trial. *The Journal of the American Medical Association*, *277*, 1605–1611.
- Hamre, B. & Pianta, R. (2001) Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development*, *72*, 625–638.
- Hamre, B. & Pianta, R. (2005) Can instructional and emotional support in the first grade classroom make a difference for children at risk for school failure. *Child Development*, *76*, 949–967.
- Henry, D., Guerra, N., Huesmann, R., Tolan, P., VanAcker, R. & Eron, L. (2000) Normative influences on aggression in urban elementary school classrooms. *American Journal of Community Psychology*, *28*, 59–81.

- Howes, C., Burchinal, M., Pianta, R., Bryant, D., Early, D., Clifford, R. & Barbarin, O. (2008) Ready to learn? Children's preacademic achievement in pre-Kindergarten programs. *Early Childhood Research Quarterly*, *23*, 27–50.
- Ialongo, N., Werthamer, L. & Kellam, S. (1999) Proximal impact of two first grade preventative interventions on the early risk behaviors for later substance abuse, depression and anti-social behavior. *American Journal of Community Psychology*, *27*, 599–641.
- Kellam, S., Ling, X., Merisca, R., Brown, C. & Ialongo, N. (1998) The effect of the level of aggression in the first grade on the course and malleability of aggressive behavior into middle school. *Development and Psychopathology*, *10*, 165–185.
- Martin, P. (2005) *The Importance of early school-based intervention, and Testing the T-POT (the Teacher-Pupil Observation Tool): developing and validating a teacher and classroom observation measure designed to evaluate school-based interventions*. Unpublished Thesis, University of Wales, Bangor.
- Patterson, G., Reid, J. & Dishion, T. (1992) *Antisocial Boys: A Social Interactional Approach*. Castalia Publishing, Eugene, OR, USA.
- Raver, C. & Knitze, J. (2002) *Ready to Enter: What Research Tells Policymakers About Strategies to Promote Social and Emotional School Readiness among 3 and 4 Years Olds*. National Center for Children in Poverty, Columbia University, New York, NY, USA.
- Raver, C., Jones, S., LiGrining, C., Metzger, M., Smallwood, K. & Sardin, L. (2008) Improving preschool classroom processes: preliminary findings from a randomized trial implemented in head start settings. *Early Childhood Research Quarterly*, *63*, 253–255.
- Reid, J., Webster-Stratton, C. & Beauchaine, T. (2002) Parent training in Head Start: a comparison of program response among African American, Asian American, Caucasian and Hispanic mothers. *Prevention Science*, *2*, 209–227.
- Robinson, E. & Eyberg, S. (1981) The dyadic parent-child interaction coding system: standardization and validation. *Journal of Consulting and Clinical Psychology*, *49*, 245–250.
- Webster-Stratton, C. (2000) *The Incredible Years Training Series*. Office of Juvenile Justice and Delinquency Prevention, Juvenile Justice Bulletin, Washington, DC, USA.
- Webster-Stratton, C., Reid, J. & Hammond, M. (2004) Treating children with early-onset conduct problems: intervention outcomes for parent, child and teacher training. *Journal of Clinical Child and Adolescent Psychology*, *33*, 105–124.
- Webster-Stratton, C., Reid, J. & Stoolmiller, M. (2008) Preventing conduct problems and improving school readiness: Evaluation of the Incredible Years teacher and child training programs in high-risk schools. *Journal of Child Psychology and Psychiatry*, *49*, 471–488.
- Wilson, S. & Lipsey, M. (2007) School based interventions for aggressive and disruptive behavior. Update of a meta-analysis. *American Journal of Preventative Medicine*, *33*, S130–143.