

Socio-emotional Health in School Children: An Emotion-focused Intervention

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Abstract

Objective: The aim of this study was to test the efficacy of an intervention (Pyramid Club) focusing on the reduction or elimination of internalising symptoms in 226 7-8 year old and 294 10-11 year old children.

Methods: A 3 × 2 mixed-model design was used: group (intervention group vs. waiting list control) × 3 time points (baseline vs. post-intervention vs. 12 weeks follow up). Children were screened for socio-emotional difficulties using the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) before being allocated to either a Pyramid Club intervention, or a waiting list control.

Results: SDQ emotional and peer problem scores were reduced significantly, and prosocial and emotional intelligence scores were increased significantly compared to waiting list controls post intervention and at follow up.

Conclusions: The Pyramid Club intervention improves the socio-emotional health of vulnerable children through promoting positive outcomes as well as reducing socio-emotional deficits.

Keywords: Internalizing; Emotional intelligence; Intervention; Socio-emotional competence

Introduction

The global burden of Mental health problems is substantial and growing, with predictions that by 2030 they will constitute the highest ranking disease in terms of burden in affluent countries [1]. Manifestation of mental health problems during childhood come under the rubric of externalising (behavioural) and internalising (emotional) problems [2]. The early symptoms and risk factors for these problems are identifiable in school age children and some even in the preschool years.

Because externalising problems are more observable and disruptive, interventions in schools have tend to focus on them despite the fact that internalising disorders in childhood are clearly linked to depression and anxiety in adulthood. Internalising children are often described as shy and sensitive [3] and often escape the attention of teachers and even parents [4]. Shyness and sensitivity is linked to lower self-esteem [5] and shy and sensitive children are more likely to experience difficulties in peer interactions and relationships [3,6,7] and to develop psychological problems such as loneliness and depression [7]. Such problems in childhood have been found to predict a range of difficulties in later life, including rejection by peers, failure in school, delinquency, job instability, substance abuse and problems in marital relationships [8-10] and mental health problems in adolescence and young adulthood [2,11,12].

There is an extensive research literature which has identified a range of risk factors for internalizing problems including, childhood sexual abuse [13], parenting style [14,15] family relationships and adversity [16], bullying and victimisation [17] socioeconomic disadvantage [18],

and lower maternal education [19]. More recently there is a growing literature focusing on factors which protect children from internalizing problems. These latter include individual factors such as, being female [20,21], having a positive temperament [22], sociability [23,24], effective emotional regulation or emotional intelligence [23], having higher general intelligence [25], effective problem-solving and coping skills [24,26,27], internal locus of control [28], optimism [26,29], self-determination [26], sense of humour [30], self-efficacy, and having a positive attitude towards school [31]. There is evidence that around two-thirds of children with internalising problems have stable symptoms from 2 to 11 years. The benefits of preventive intervention cannot be underestimated for these children.

Identifying protective factors allows the focus to shift from strategies based upon treatment of problems towards a more preventive and resilience building approach aimed at promoting the acquisition of health, well-being, and socio-emotional competencies. There have been several programmes developed such as the FRIENDS for Life Programme [32], and the I Can Problem Solve (ICPS) programme, originally the Interpersonal Cognitive Problem-solving programme. These programmes have been shown to be effective but have tended to follow the traditional treatment models of Cognitive Behaviour Therapy with a focus on reducing negative problems rather than on building positive emotions. An alternative perspective is provided by focusing on emotions with a resource building approach as exemplified by Fredrickson Broaden and Build theory (2005). In simple terms the theory states that positive emotions broaden an individual's momentary thought-action repertoire and lead to the development of the creativity and flexibility that underpins resilience [33]. A substantial research literature over 25 years supports the theory and its application [34].

The Pyramid Club model [35] provides a school-based intervention aimed at improving the socio-emotional skills of children who present as withdrawn, socially isolated, and emotionally vulnerable [36]. The Pyramid intervention combines ideas from the broaden and build theory of Fredrickson (2005), the “I Can Problem Solve” interpersonal cognitive problem solving programme [37,38], with evidence on the centrality of friendship to children’s social and emotional development [39,40]. The Pyramid ethos is based upon strengthening friendship skills, building emotional resilience, and social skills [41,42].

A principal aim of the current study was to test the impact of the Pyramid Club intervention on children’s scores in the individual SDQ domains and on emotional intelligence.

Method

Design

A mixed-model design was used; group (intervention group vs. waiting list control) ×3 time points (pre- vs. 10 week post-intervention vs. 12 week follow up) with repeated measures on the time factor. The Pyramid Club is a manualised intervention with a training programme for club leaders. The volunteer training programme has been accredited by the Council for Awards in Children’s Care and Education (www.cache.org.uk) and is regularly updated to reflect current policy and best practice. It comprises the first module in the CACHE Level 3 Certificate in Promoting Children’s Social and Emotional Development and is delivered over three days. Implementation fidelity was monitored by on-going supervision provided by a Pyramid Club Co-ordinator who provided training for the club leaders and visited each Club at least twice during the 10-week period to ensure that leaders were running the Clubs in adherence with the Pyramid intervention manual.

Participants and procedure

Two cohorts of primary school pupils were involved, year 4 (ages 7-8 years), and Year 7 (age 11 years) attending 13 participating schools.

All year 4 children were in their 7th year of age at the start of data collection and there were a total of 226 (101 boys and 125 girls) identified as suitable for club participation. Of these 141 (75 girls and 66 boys) took part in clubs, while 85 (50 girls and 35 boys) were allocated to a waiting list and constituted the control group.

All year 7 children were in their 11th year at the start of data collection and there were a total of 294 (122 boys and 172 girls) identified as suitable for club participation. Of these 162 (100 girls and 62 boys) took part in clubs, and 132 (72 girls and 60 boys) were allocated to a waiting list and constituted the control group. See Figure 1 for participant recruitment.

Parents and children were provided with information sheets and informed consent was obtained from parents, and assent from children.

The structure of the intervention is shown in Figure 2. The measures below were completed by the class teacher at 3 time points, prior to the intervention, at the end of the intervention (10th week) and 12 weeks post intervention as a follow-up.

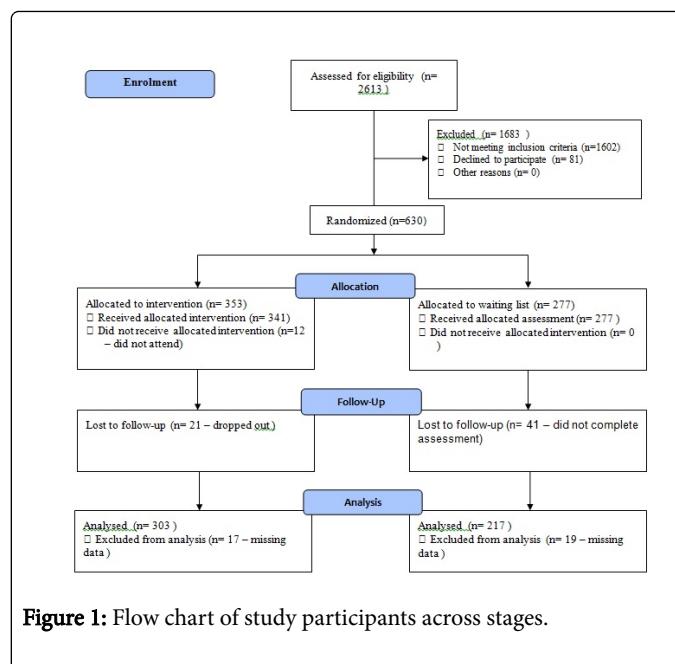


Figure 1: Flow chart of study participants across stages.

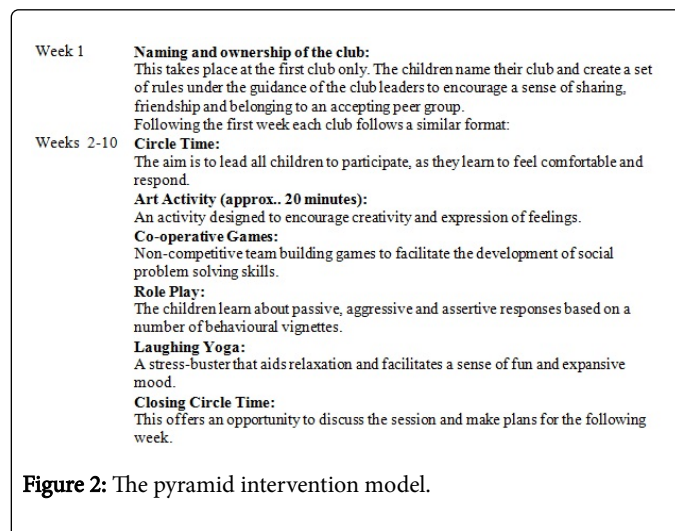


Figure 2: The pyramid intervention model.

Intervention

The Pyramid Club intervention is a therapeutic school-based intervention that is implemented as a Club during the school day over ten weekly sessions of 90 minutes each. It is aimed at children who are quiet, shy, and behaviourally more likely to internalize, and those who appear to find peer and adult interaction difficult [36,41].

The pyramid intervention comprises a three-stage model

Measures

Stage one: Screening of the whole year group by the class teacher to assess socio-emotional health status using the SDQ [42]. Teachers initially identify children who may be suitable for Pyramid Clubs based on the children’s scores on the internalising symptoms scales along with their knowledge of children who they considered to have socio-emotional problems. As the focus of the intervention is on

internalising problems, children who score above cut off on externalising dimensions are excluded. These children would be referred for other programmes.

Stage two: A multi-agency meeting takes place attended by the Special Educational Needs Co-ordinator, the year-group teachers, the local Pyramid Co-ordinator and any other agencies involved in care of the children. At this meeting, the SDQ scores are reviewed in relation to the SDQ banding criteria (www.sdqinfo.com/ScoreSheets/e2.pdf) and this information is then used to identify children to the Pyramid intervention with onward referral of other children to appropriate agencies where necessary. Children identified for Pyramid are then randomly allocated either to a club or to a waiting list based on the number of available club spaces. This does mean that group numbers may not be equal.

Stage three: Children are allocated ID numbers so that they can be assessed again at the end of the club and at follow up. Pyramid Clubs are then run for the selected children.

The Pyramid intervention combines ideas from the broaden and build theory of Fredrickson [33], the “I Can Problem Solve” interpersonal cognitive problem solving programme [37,38], with evidence on the centrality of friendship to children’s social and emotional development [39,40]. The first week of the club focuses on group formation, based on established principles of allowing a sense of group identity to evolve [43,44]. The focus is on supporting and enabling children form friendships and a sense of shared identity, and this theme of building friendship [39,40] and trust continues throughout the succeeding weeks. Throughout each week the focus is on positive emotions [33], which come to the fore in the art activity and non-competitive team building games. This leads into the role play based on developing positive assertive problem-solving skills [37,38] through vignettes of real life problems that children may face. The sessions finish with a focus on positive emotions using laughing yoga. Club leaders focus on creating a safe, relaxed and supportive environment, through rewarding positive behaviour, giving proximal praise, and acting as positive role models. Pyramid Clubs focus on, “... building confidence and an improved sense of wellbeing, encouraging friendship skills and allowing the children to feel, perhaps for the first time in their lives, that they truly belong” (Figure 2).

The strengths and difficulties questionnaire (SDQ) [25]

The SDQ was used to measure the socio-emotional status of the participants, pre- intervention (baseline), post-intervention, and at 12 weeks post-intervention follow-up. The SDQ is a brief behavioural screening questionnaire that takes a few minutes to complete by parents, carers, or in this case, teachers of children aged 7-8 years. It has separate versions for different age groups including a self-rating version for 11-16 year olds. For year 4 participants the teacher rating version was used. For year 7 participants both the teacher rating version and the self-rating versions were used. The SDQ is widely used internationally and in the UK National Health Service and UK schools. It comprises 25 items divided into five sub- scales; four of which measure potential ‘difficulties’ being emotional symptoms, conduct problems, hyperactivity, and peer relationship problems. The fifth sub-scale measures prosocial behaviour and is treated as a ‘strength’. Each sub-scale score can range from 0 to 10. A higher score indicates more problems/symptoms except for the prosocial behaviour sub-scale where a lower score indicates more problems. A total difficulties (TD) score is calculated by summing the the four negative sub-scale scores. The measure can be used to define ‘caseness’ using combinations of the

four negative sub-scale scores. The informant-rated version of the SDQ has been shown to function, in terms of reliability, validity, and sensitivity, as well as the long-established Rutter questionnaires.

The trait emotional intelligence questionnaire child – Teacher rating version (TEIQue-360S) [41]

The TEIQue-360S measures the 15 facets of emotional intelligence identified in other versions of this measure and was used to assess both year 4 and year 7 participants [45]. These are Emotion expression, Empathy, Self-motivation, Emotion regulation, Happiness, Social awareness, Low impulsiveness, Emotion perception, Self-esteem, Assertiveness, Emotion management, Optimism, Relationships, Adaptability, and Stress management. Each of the 15 facets is listed with a statement e.g. Emotion Expression ...is able to express her feelings to others. The rater then rates the child on the facet. In the original measure the rating is given out of 100. However as our participants found this difficult we provided a 5 point Likert scale from Disagree completely to Agree completely and scored 1 to 5. The Cronbach Alpha for the 15 items was 0.95 in the current study.

The trait emotional intelligence questionnaire child short form (TEIQue-CSF) [41]

The TEIQue-CF measures 9 of the 15 adult facets and has been shown to display acceptable levels of internal consistency [45] in two separate samples and also displayed temporal stability ($r=0.79$) similar to that found in adult samples. It has a self-rating and teacher rating version suitable for use in children as young as eight years old.

Ethical approval

Ethical approval for the study was granted by the University’s Ethics Committee.

Results

Analysis was carried out separately for the two cohorts starting with the year 4 children.

Year 4 children

Means and standard deviations for the 4 difficulties dimensions of the SDQ (emotional, conduct, hyperactivity, and peer problems), the pro-social dimension, and the total difficulties score, were calculated and appear in Table 1. The first analysis utilised a one-way analysis of variance (Anova) to test for differences between the groups at baseline (time 1) and this shows that no significant main effects were observed supporting the utility of the waiting list as a control group.

Group	Intervention Group			Waiting List Control		
	T1	T2	T3	T1	T2	T3
	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)
Emotional	6.9(0.9)	4.2(1.4)	4.1(1.4)	6.9(1.2)	6.9(1.1)	6.8(1.1)
Conduct	2.5(0.7)	2.2(0.9)	2.2(0.9)	2.5(0.8)	2.4(0.8)	2.3(0.5)
Hyperactivity	3.1(1.5)	3.4(1.8)	3.4(1.5)	3.1(1.6)	3.1(2.1)	3.1(2.1)
Peer	6.2(1.3)	3.2(1.1)	3.2(1.1)	6.1(1.4)	6.4(1.5)	6.3(1.5)

Pro-social	2.7(0.9)	7.2(1.5)	7.1(1.7)	2.7(0.8)	2.8(0.9)	2.8(1.1)
Total difficulties	18.5(2.9)	12.9(3.4)	12.8(2.9)	18.6(3.2)	18.9(3.5)	18.6(4.2)
Emotional IQ	3.2(0.4)	4.2(0.8)	4.0(0.7)	3.1(0.4)	3.2(0.5)	3.0(0.9)
Sex						
	Boys			Girls		
	T1	T2	T3	T1	T2	T3
	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)
Emotional	7.0(1.0)	4.9(1.9)	4.9(1.6)	6.9(1.0)	5.5(1.8)	5.4(1.9)
Conduct	2.4(0.8)	2.3(0.9)	2.4(0.8)	2.5(0.7)	2.3(0.9)	2.1(0.7)
Hyperactivity	3.5(1.5)	3.8(2.0)	3.8(1.8)	2.7(1.4)	2.9(1.7)	2.8(1.7)
Peer	5.7(1.0)	4.5(2.3)	4.2(1.8)	6.5(1.5)	4.4(1.8)	4.5(2.0)
Pro-social	2.7(0.8)	5.8(2.7)	5.6(2.6)	2.7(0.9)	5.4(2.4)	5.4(2.5)
Total difficulties	18.5(2.7)	15.5(5.1)	15.3(4.5)	18.6(3.3)	15.0(3.9)	14.8(4.4)
Emotional IQ	3.1(0.3)	3.7(0.8)	3.4(0.9)	3.3(0.5)	3.7(0.8)	3.5(0.9)

Table 1: Means and standard deviations for SDQ and TEIQue Data by study group and sex for Year 4 children.

A mixed-model analysis of variance (ANOVA) with group (Pyramid intervention and waiting list control) as the between-subjects variable and repeated measures (within-subjects) on the time factor (baseline to post-intervention to follow-up) was next used to test for main and interaction effects. Mauchley's test of Sphericity was significant so we used the Greenhouse-Geisser correction. Significant main effects ($F(1,224)=105.52, p<0.001, \eta^2=0.32$), and interaction effects ($F(1,224)=112.44, p<0.001, \eta^2=0.33$), were observed for total difficulties; similarly for emotional problems, main effects ($F(1,224)=117.57, p<0.001, \eta^2=0.34$), interaction effects ($F(1,224)=118.37, p<0.001, \eta^2=0.35$), peer problems, main effects ($F(1,224)=133.85, p<0.001, \eta^2=0.35$), interaction effects ($F(1,224)=170.96, p<0.001, \eta^2=0.43$), and pro-social behaviour main effects ($F(1,224)=239.84, p<0.001, \eta^2=0.52$), interaction effects ($F(1,224)=220.23, p<0.001, \eta^2=0.49$). Post hoc analysis shows that the main effects in all cases were for the Pyramid group between time 1 and time 2 and between time 1 and time 3. Large effects were observed at post intervention and follow-up for the intervention.

Next, one-way Anova was applied to test between the groups on the SDQ dimensions at times 2 and 3 separately. Levene's test for homogeneity of variance was significant for several of the dimensions so the Welch correction was used. At time 2 main effects were observed for total difficulties (Welch $F(1,224)=154.27, p<0.001$), emotional difficulties (Welch $F(1,224)=267.27, p<0.001$), peer problems (Welch $F(1,224)=284.55, p<0.001$), and pro-social behaviour (Welch $F(1,224)=706.11, p<0.001$). At time 3 main effects were observed for total difficulties (Welch $F(1,224)=121.89, p<0.001$), emotional difficulties (Welch $F(1,224)=263.69, p<0.001$), peer problems (Welch $F(1,224)=288.04, p<0.001$), and pro-social behaviour (Welch $F(1,224)=574.89, p<0.001$).

One-way Anova showed that the Pyramid and Waiting List groups did not differ significantly at baseline on emotional intelligence. A mixed model Anova was next used to test for main and interaction effects (group by time) on emotional intelligence. Mauchley's test of Sphericity was not significant and both main effects ($F(1,134)=15.42, p<0.001, \eta^2=0.10$) and interaction effects were observed ($F(1,134)=33.72, p<0.001, \eta^2=0.21$). One-way Anova tests show main effects between groups at time 2 (Welch $F(1,134)=91.61, p<0.001$), and time 3 (Welch $F(1,134)=45.78, p<0.001$).

Main effects reflect overall changes in scores across the 3 time periods, while the interaction effects show the impact of the intervention. Because of the larger numbers in the intervention group there were sufficient changes in means scores across the total sample to show up as main effects. However the interactions and post hoc comparisons show that these effects were only for the intervention group, and that the significant differences were between time 1 (baseline) scores and both time 2 (end of treatment) and time 3 (follow up) scores. The intervention produced a significant reduction in total difficulties and a significant increase in prosocial behaviour and emotional intelligence values and this change was maintained through to the 12 week follow up.

Year 7 children

Means and standard deviations for the 4 difficulties dimensions of the SDQ (emotional, conduct, hyperactivity, and peer problems), the pro-social dimension, and the total difficulties score, were calculated and appear in Table 2. The first analysis utilised a one-way analysis of variance (Anova) to test for differences between the groups at baseline (time 1) and this shows that no significant main effects were observed supporting the utility of the waiting list as a control group.

Pyramid group who received intervention						
	Teacher rating data			Self-Report Data		
	T1 Mean (Sd)	T2 Mean (Sd)	T3 Mean (Sd)	T1 Mean (Sd)	T2 Mean (Sd)	T3 Mean (Sd)
Emotional	3.9(2.4)	2.7(1.6)	2.7(1.0)	4.2(2.3)	2.6(1.4)	2.9(1.1)
Conduct	2.1(1.5)	1.7(1.0)	1.7(0.7)	2.4(1.6)	1.6(0.9)	1.8(1.2)
Hyperactivity	3.4(2.6)	2.2(1.5)	2.4(1.2)	3.0(2.1)	2.5(1.7)	2.6(2.3)
Peer	2.6(1.9)	1.8(0.7)	1.7(0.6)	2.9(1.7)	1.9(1.1)	1.5(0.7)

Pro-social	6.7(1.5)	8.5(1.5)	8.5(1.0)	7.1(1.3)	8.4(1.4)	8.6(1.4)
Total difficulties	11.9(5.2)	8.6(3.2)	8.6(2.3)	12.5(5.4)	8.4(3.3)	8.8(3.5)
Internalizing	6.6(3.2)	4.5(1.8)	4.5(1.3)	7.2(3.4)	4.5(1.9)	4.5(1.4)
Externalizing	5.4(3.5)	3.9(2.1)	4.1(1.6)	5.4(3.1)	4.1(1.9)	4.3(3.2)
Emotional IQ				2.8(0.5)	3.7(0.5)	3.6(0.5)
Waiting list control group						
	T1 Mean (Sd)	T2 Mean (Sd)	T3 Mean (Sd)	T1 Mean (Sd)	T2 Mean (Sd)	T3 Mean (Sd)
Emotional	3.6(1.9)	3.4(1.5)	3.6(1.0)	3.4(2.1)	3.5(1.5)	3.9(1.8)
Conduct	2.2(1.4)	2.1(1.2)	2.2(0.9)	2.3(1.2)	2.2(1.8)	2.2(1.5)
Hyperactivity	3.1(0.9)	2.7(1.0)	3.1(0.8)	3.1(1.4)	3.1(0.9)	3.3(1.7)
Peer	2.9(2.0)	3.0(1.1)	3.1(0.9)	2.8(1.6)	3.2(1.2)	3.1(2.0)
Pro-social	6.4(2.1)	7.8(1.2)	7.7(0.9)	7.1(1.4)	7.5(1.7)	7.6(1.6)
Total difficulties	11.9(3.7)	11.2(3.2)	12.5(5.0)	11.5(4.1)	12.1(3.3)	11.9(2.7)
Internalizing	6.5(3.1)	6.4(2.0)	6.7(1.7)	6.2(3.0)	6.8(2.1)	6.9(3.5)
Externalizing	5.3(1.7)	4.8(1.7)	5.2(1.4)	5.4(2.1)	5.3(1.7)	5.5(2.6)
Emotional IQ				2.8(0.6)	2.7(0.6)	2.8(0.8)

Table 2: Means and standard deviations for SDQ and TEIQue Data by study group for Year 7 children.

A mixed-model analysis of variance (ANOVA) with group (Pyramid intervention and waiting list control) as the between-subjects variable and repeated measures (within-subjects) on the time factor (baseline to post-intervention to follow-up) was next used to test for main and interaction effects. Mauchley's test of Sphericity was significant so we used the Greenhouse-Geisser correction.

Effects teacher rating scores

Significant main effects ($F(1,292)=10.53$, $p<0.001$, $\eta^2=0.13$), and interaction effects ($F(1,292)=14.26$, $p<0.001$, $\eta^2=0.11$), were observed for total difficulties; similarly for emotional problems, main effects ($F(1,292)=8.80$, $p<0.001$, $\eta^2=0.03$), interaction effects ($F(1,292)=7.72$, $p<0.001$, $\eta^2=0.26$), peer problems, main effects ($F(1,292)=3.66$, $p<0.05$, $\eta^2=0.01$), interaction effects ($F(1,292)=6.49$, $p<0.001$, $\eta^2=0.15$), and pro-social behaviour main effects ($F(1,292)=58.06$, $p<0.001$, $\eta^2=0.18$), interaction effects ($F(1,292)=16.77$, $p<0.001$, $\eta^2=0.21$). Post hoc analysis shows that the main effects in all cases were for the Pyramid group between time 1 and time 2 and between time 1 and time 3.

Effects self-rating scores

Significant main effects ($F(1,292)=28.09$, $p<0.001$, $\eta^2=0.02$), and interaction effects ($F(1,292)=28.17$, $p<0.001$, $\eta^2=0.09$), were observed for total difficulties; similarly for emotional problems, main effects ($F(1,292)=6.41$, $p<0.01$, $\eta^2=0.02$), interaction effects ($F(1,292)=10.45$, $p<0.001$, $\eta^2=0.27$), peer problems, main effects ($F(1,292)=3.66$, $p<0.05$, $\eta^2=0.01$), interaction effects ($F(1,292)=6.49$, $p<0.001$, $\eta^2=0.15$), and pro-social behaviour main effects ($F(1,292)=58.06$,

$p<0.001$, $\eta^2=0.18$), interaction effects ($F(1,292)=16.77$, $p<0.001$, $\eta^2=0.21$). Post hoc analysis shows that the main effects in all cases were for the Pyramid group between time 1 and time 2 and between time 1 and time 3.

Discussion

The aim of this study was to test the efficacy of the Pyramid Plus intervention in two cohorts of school children, P4 (aged 7-8 years old) and P7 (aged 10-11 years old), who had been identified as being shy and withdrawn, and exhibiting some symptoms of internalising behaviour. The results show that the intervention had a significant impact and that this impact was maintained through to follow up. In the intervention group scores on emotional problems and peer problems were significantly decreased at the end of the intervention and at the 12 week post intervention follow up compared to the waiting list control. In addition scores on prosocial behaviour and emotional intelligence were significantly increased for the Pyramid children at both points compared to the waiting list control. These findings provide strong support for the Pyramid intervention.

The Pyramid model focuses on internalizing problems which are most likely to go undetected in children and even if detected may go unreported or untreated [1]. In their substantial systematic review Bayer et al. [4] identify a paucity of interventions for internalizing problems, "we believe that further research is urgently needed on early prevention for emotional problems, because there is a paucity of effective programmes" (p. 706). The current study meets that need. It may very well be that the lack of success in some interventions may reflect their failure to encompass emotional or internalizing problems which may underpin many behavioural issues.

Apart from the more serious mental health issues, a considerable body of research has shown that the success of social functioning in middle childhood is related to the ability to self-regulate emotion [46,47]. Additionally, children who are shown to have strong emotional regulatory control are more likely to receive favourable peer ratings and be viewed as socially competent by their teacher [46]. Thus, the improvements made in the Pyramid group emotional symptoms scores demonstrate that post-intervention these children had acquired a greater level of emotional control suggesting that this would facilitate their ability to effectively initiate and maintain interaction with both peers and adults [48] competencies necessary to ensure they flourish at school.

As with any study in a real-world setting there are limitations. Probably the main limitation was the reliance on teacher ratings for measurement for year 4 children. This was to some extent counteracted by the fact that the teachers were not aware of which children had taken part in the intervention when they carried out their rating. The 12 week follow up is probably too short to assess long term impact although the size of the effect does increase our confidence that the intervention has produced some long term benefit.

School-based interventions such as Pyramid Plus are simple, easily run and could be widely accessible. In terms of the current health agenda one must argue that Governments could do a lot worse than to establish such programmes as part of the curriculum.

References

1. Bayer J, Hiscock H, Scalzo K, Mathers M, McDonald M, et al. (2009) Systematic review of preventive interventions for children's mental health: what would work in Australian contexts? *Aust N Z J Psychiatry* 43: 695-710.
2. Hiscock H, Bayer JK, Lycett K, Koumoune OC, Shaw D, et al. (2012) Preventing mental health problems in children: The Families in Mind population-based cluster randomised controlled trial. *BMC Public Health* 12: 420-429.
3. Asendorpf JB (2010) The development of shyness and social withdrawal. Guilford Press, USA.
4. Bryer F, Signorini J (2011) Primary pre-service teachers' understanding of students' internalizing problems of mental health and wellbeing. *Issues in Educational Research* 22: 233-258.
5. Degnan KA, Fox NA (2007) Behavioral inhibition and anxiety disorders: multiple levels of a resilience process. *Dev Psychopathol* 19: 729-746.
6. Howard S, Dryden J, Johnson B (1999) Childhood resilience: Review and critique of literature. *Oxford Review of Education* 25: 307-323.
7. Karapetian AM, Grados JJ (2005) Enhancing resilience in children: A proactive approach. *Professional Psychology: Research and Practice* 36: 238-245.
8. Bongers IL, Koot HM, van der Ende J, Verhulst FC (2003) The normative development of child and adolescent problem behavior. *J Abnorm Psychol* 112: 179-192.
9. Degnan KA, Fox NA (2007) Behavioral inhibition and anxiety disorders: multiple levels of a resilience process. *Dev Psychopathol* 19: 729-746.
10. Niemelä S, Brunstein-Klomek A, Sillanmäki L, Helenius H, Piha J, et al. (2011) Childhood bullying behaviors at age eight and substance use at age 18 among males: a nationwide prospective study. *Addictive Behaviour* 36: 256-260.
11. Biederman J, Hirshfeld-Becker DR, Rosenbaum JF, Hérot C, Friedman D, et al. (2001) Further evidence of association between behavioral inhibition and social anxiety in children. *Am J Psychiatry* 158: 1673-1679.
12. Copeland WE, Shanahan L, Costello EJ, Angold A (2009) Childhood and adolescent psychiatric disorders as predictors of young adult disorders. *Arch Gen Psychiatry* 66: 764-772.
13. Jones DJ, Lewis T, Litrownik A, Thompson R, Proctor L, et al. (2012) Linking childhood sexual abuse and early adolescent risk behavior: The intervening role of internalizing and externalizing problems. *Journal of Abnormal Child Psychology*.
14. Degnan KA, Henderson HA, Fox NA, Rubin KH (2008) Predicting social wariness in middle childhood: The Moderating Roles of Child Care History, Maternal Personality and Maternal Behavior. *Social Development* 17: 471-487.
15. Rankin WL, Degnan KA, Pérez-Edgar KE, Henderson HA, Rubin KH, et al. (2009) Impact of behavioral inhibition and parenting style on internalizing and externalizing problems from early childhood through adolescence. *Journal of Abnormal Child Psychology* 37: 1063-1075.
16. McCulloch A, Wiggins D, Joshi H, Sachdev D (2000) Internalizing and Externalizing Children's Behaviour Problems in Britain and the US: relationships to family resources. *Children and Society* 14: 368-383.
17. Zwierynska K, Wolke D, Lereya TS (2013) Peer victimization in childhood and internalizing problems in adolescence: a prospective longitudinal study. *J Abnorm Child Psychol* 41: 309-323.
18. Keiley MK, Bates JE, Dodge KA, Pettit GS (2002) *Advances in psychology research*, Nova Science Publishers, USA.
19. Huisman M, Araya R, Lawlor DA, Ormel J, Verhulst FC, et al. (2010) Cognitive ability, parental socioeconomic position and internalizing and externalizing problems in adolescence: Findings from two European cohort studies. *European Journal of Epidemiology* 25: 569-580.
20. Condy JS (2006) Resilience in children. A review of literature with implications for education. *Urban Education* 41: 211-236.
21. Crews SD, Bender H, Cook R, Clayton GM, Frank KL, et al. (2007) Risk and protective factors of emotional and/or behavioural disorder in children and adolescents: A meta-analytic synthesis. *Behavioural Disorders* 32: 64-77.
22. Harvey J, Delfabbro PH (2004) Psychological resilience in disadvantaged youth: A critical overview. *Australian Psychologist* 39: 3-13.
23. Masten AS (2007) Resilience in developing systems: progress and promise as the fourth wave rises. *Dev Psychopathol* 19: 921-930.
24. Rak FC, Patterson EL (2001) Promoting resilience in at-risk children. *Journal of Counselling & Development* 74: 368-373.
25. Kitano KM, Lewis BR (2005) Resilience and coping: Implications for gifted children and youth at risk. *Roeper Review* 27: 238-245.
26. Masten SA, O'Dougherty WM (2010) *Handbook of adult resilience*, Guilford Press, USA.
27. Rutter M (1985) Resilience in the face of adversity. Protective factors and resistance to psychiatric disorder. *Br J Psychiatry* 147: 598-611.
28. Luthar SS, Zelazo BL (2003) *Adaption in the context of childhood adversities*, Cambridge: University Press, England.
29. O'Dougherty WM, Masten SA (2005) *Handbook of resilience in children*, Kluwer Academic /Plenum Publishers, USA.
30. Luthar SS, Sawyer JA, Brown PJ (2006) Conceptual issues in studies of resilience: past, present, and future research. *Ann N Y Acad Sci* 1094: 105-115.
31. Herrenkohl TI, Sousa C, Tajima EA, Herrenkohl RC, Moylan CA (2008) Intersection of child abuse and children's exposure to domestic violence. *Trauma Violence Abuse* 9: 84-99.
32. Barrett PM (2005) *Friends for Life! for youth. Participant workbook and leader's manual*. Brisbane, Australian Academic Press, Australia.
33. Fredrickson BL (2005) *The Science of Well-Being*. Oxford University Press, USA.
34. Fredrickson BL (2013) *Advances in Experimental Social Psychology*, Burlington: Academic Press, USA.
35. Ohl M, Mitchell K, Cassidy T, Fox P (2008) The pyramid club primary school-based intervention: Evaluating the impact on children's socio-emotional health. *Child and Adolescent Mental Health* 13: 115-221.
36. Pyramid (2007) *Pyramid scheme club leader training manual*. Pyramid, London.

37. Shure MB, Spivack G (1980) Interpersonal problem solving as a mediator of behavioral adjustment in preschool and kindergarten children. *Journal of Applied Developmental Psychology* 1: 29-44.
38. Shure MB (2000) *Raising a thinking child workbook* Champaign, Research Press, USA.
39. Berndt TJ (2002) Friendship quality and social development. *Current Directions in Psychological Science* 11: 7-10.
40. Berndt TJ (2004) Children's friendships: Shifts over a half-century in perspectives on their development and their effects. *Merrill-Palmer Quarterly* 50: 206-223.
41. Contin Y (2011) *About Pyramid*.
42. Goodman R (1997) The Strengths and Difficulties Questionnaire: a research note. *J Child Psychol Psychiatry* 38: 581-586.
43. Tuckman B, Jensen M (1977) Stages of Small Group Development. *Group and Organizational Studies* 2: 419-427.
44. Tuckman BW (1965) Developmental sequence in small groups. *Psychol Bull* 63: 384-399.
45. Mavroveli S, Petrides KV, Sangareau Y, Furnham A (2009) Exploring the relationships between trait emotional intelligence and objective socio-emotional outcomes in childhood. *Br J Educ Psychol* 79: 259-272.
46. Eisenberg N, Fabes RA, Murphy B, Karbon M, Smith M, et al. (1996) The relations of children's dispositional empathy-related responding to their emotionality, regulation, and social functioning. *Developmental Psychology* 32: 195-209.
47. Fabes RA, Hanish LD, Martin CL, Eisenberg N (2002) Young children's negative emotionality and social isolation: A latent growth curve analysis. *Merrill-Palmer Quarterly* 48: 284-307.
48. Denham SA, Blair KA, DeMulder E, Levitas J, Sawyer K, et al. (2003) Preschool emotional competence: pathway to social competence? *Child Dev* 74: 238-256.