Using a social and emotional competence scale to assess the impact of the Aucouturier Psychomotor programme (PPA) on Grade 1 learners in a Primary School in KwaZulu-Natal previously exposed to that Programme

REPORT for PEISA and the School

by

Ashley van Heerden, Mary van der Riet, Lance Lachenicht, Micaela Lambert, Nombuso Matenjwa, Amanda Mwelase, Chrissanne Cuppusamy, Mulalo Mashamba, Nonkululeko Khuzwayo, Itumeleng Manoko, Yvonne Mdakane, Samkele Dlamuka, Nkazimulo Ntanzi

from

University of KwaZulu-Natal

School of Applied Human Sciences

Discipline of Psychology

5 November 2018

1. Introduction

Successful engagement in the schooling environment plays a role in schooling outcomes (Denham, 2006). Poor educational outcomes can be a consequence of cognitive ability (Vitiello, Greenfield, Munis, & George, 2011). However, research also suggests that positive socioemotional behaviours are crucial in encouraging school readiness and success (Jones, Greenberg & Crowley, 2015). Socio-emotional competence has also been related to enhanced well-being, mental health and non-violent communication (Denham, 2006; Huffman, Mehlinger, & Kerivan, 2000; Peth-Pierce, 2000).

The Psychomotor Education Institute of South Africa (PEISA) implements the Aucouturier Psychomotor programme (PPA) in thirty eight schools and crèches in KwaZulu-Natal. This programme is a developmental-based approach which aims to foster socioemotional development in young children (Meusel, Kocheleff & Fonti, 2012).

This study aimed to assess children's socioemotional behaviours in relation to their participation in the PPA run by PEISA. The study was conducted with Grade 1 learners at a primary school in KwaZulu-Natal. The study examined the influence of the PPA on Grade 1 learners through observing and comparing the behaviour of children who had participated in the programme with those who had not. Using the Minnesota Preschool Affect Checklist Revised/Shortened (MPAC-R/S) the researchers conducted a structured observation of the two groups of children while they were on the playground, and in free time in the classroom. The aim was to understand whether there was a difference in the social and emotional behaviours of the two groups of children, and to what extent this could be attributed to the PPA.

2. Socio-emotional competence and school readiness

The formative schooling years expect children to follow directions, sit still, get along with others, and complete academic tasks in an organized manner (Denham, 2006). Children are also required to learn alongside and in collaboration with teachers and peers (Denham, Bassett, Mincic, Graling & Zinsser, 2012a). However, many children struggle to adapt to this

new environment and this can result in poor schooling outcomes (Bloodworth, Weissberg, & Walberg, 2004; Green Parker, Deacon, & Hall, 2011).

Children's social and emotional competence can thus play a crucial role in school success, future school attendance and life prospects (Anderson, Case & Lam, 2001; Denham, Blair, DeMulder, Levitas, Sawyer, Auerbach-Major, & Queenan, 2003; Jennings & DiPrete, 2010). Socio-emotional skills relate to emotional knowledge, impulse control, positive peer interaction and involvement, as well as prosocial behaviours (Denham, Bassett, Mincic, Kalb Way, Wyatt, & Segal, 2012b). Research has shown that children who struggle with social interaction and emotional regulation, and those who are emotionally inflexible and irritable, may not possess the adequate personal resources to focus and cope with the learning environment. However those adept at social interaction and who can understand and regulate emotions, might be able to remain positively engaged with classroom tasks (Graziano, Reavis, Keane, & Calkins, 2007; Miller, Seifer, Stroud, Sheinkopf, & Dickstein, 2006).

Children's socioemotional competence has been found to have positive associations with school readiness (Elias & Haynes, 2008) and academic achievement (Denham, 1986; Denham et al, 1990). Longitudinal studies have also found that socioemotional relationship skills can predict achievement scores for children (Caprara, Barbaranelli, Pastorelli, Bandura & Zimbardo, 2000; Elias & Haynes, 2008). Although most of the research has been conducted in the United States of America, some South African studies have also found a relationship between socioemotional competence and successful schooling outcomes in early childhood (Margetts, & Phatudi, 2013; Priolo, Filho, Pompermaier, Almeida, N.V. F, & Souza et al., 2016).

Within the South African context developing socioemotional competence is particularly critical. Many children experience the risk factors of dysfunctional families, poverty and coercive parenting styles (Zigler & Bishop-Josef, 2006). Researchers have commented on South African children's high levels of exposure to violence arguing that South Africa is ranked amongst the most violent countries in the world, with violence being depicted as a normative socioemotional response to resolve conflict (Shields, Nadasen & Hanneke, 2014). Over half of South African children are reported to observe, experience or even engage in violent conflict (Statistics South Africa, 2013). These environmental risk factors may

facilitate the development of aggressive behaviours and impede children's capacity to develop effective emotional strategies (Priolo et al., 2016).

International studies show that child aggression affects schooling outcomes such as difficulties in learning and low grade attainment (Priolo et al., 2016). The development of socioemotional competencies, particularly reduction of aggressive tendencies, within the South African context is crucial. Socioemotional behaviours may also differ according to age and gender.

Age and socioemotional behaviours

The pre-school period (3-6 years) has been characterised as a crucial time for promoting healthy development (Phillips & Cabrera, 1996). Significant developmental advances particularly regarding executive functioning, self-regulation and social cognition occur in this time (Priolo et al, 2016). Denham et al. (2012a) report that developing socioemotional competence in the preschool period is associated with having social and emotional strategies in later life. Preschool children are also at an age critical to the formation of social relations as they have to extend social relationships beyond the nuclear family to peer and teacher relations (Levitt, Guacci-Franco & Levitt, 1993). This period has thus been suggested as the best time to implement interventions aimed at the development of socioemotional behavioural competencies (Denham et al., 2012a).

Gender and socioemotional behaviours

Research has shown gender differences in socioemotional competencies. Girls seem to adjust to school (academically, emotionally and socially) with greater ease than boys (Denham, Zahn-Waxler, Cummings, & Iannotti, 1991). Other studies have found that girls have more prosocial and emotional knowledge than their male counterparts (Denham, McKinley, Couchoud, & Holt, 1990; Eisenberg & Fabes, 1998). Boys are often considered more aggressive than girls (Denham et al., 1990), and as displaying problem behaviours towards the external environment (in the form of anger) (Chaplin & Aldao, 2013). In comparison to girls, boys also tend to fair worse in school readiness (Herndon, Bailey, Shewark, Denham & Bassett, 2013). Therefore, boys represent a vulnerable subgroup who may possess greater difficulties in socioemotional learning and development than girls.

3. The psychomotor education programme

From 1967 the "*Companie française d'Education et de Rééducation Psychomotrice*" was founded by Bernard Aucouturier, a Professor of physical education. In 2010 Bernard Aucouturier founded the "*Ecole Internationale Aucouturier*" (EIA) which provides training in the PPA method of psychomotor internationally. The PPA operates under the principle that by providing children with a non-judgmental, safe place in which they can express themselves freely and engage their sensory-motor perceptions, children will foster positive emotional and social competencies (Meusel, Kocheleff & Fonti, 2012). The programme aims to enhance children's self-confidence, autonomy, unity of the body, positive emotional regulation, non-violent communication, and self-respect. The PPA thus aims to foster children's socioemotional relationships (Meusel et al., 2012), which could have benefits for school readiness and reducing aggressive tendencies.

4. The study

4.1 Rationale, objective and aims

This study aimed to assess children's socioemotional behaviours in relation to their participation in the PPA run by PEISA. The study was conducted with Grade 1 learners at a primary school in KwaZulu-Natal. The findings of this study might be useful in motivating for the inclusion of the PPA in the foundation phase schooling system.

The specific objective of this study was to assess whether there is a significant difference in the socio-emotional behaviours of the two groups of children (psychomotor and non-psychomotor), hypothesizing that children who have been exposed to the PPA will possess significantly more positive socio-emotional behaviours than children who have not. The study used the Minnesota Preschool Affect Checklist Revised/Shortened (MPAC-R/S) to assess children's socioemotional behaviours (more details on this observation scale are provided below).

The aim of this study was thus to: Observe the socioemotional behaviours of Grade 1 using the MPAC-R/S, in order to assess if significant differences and/or similarities exist in the socioemotional behaviours of children who have been exposed to the PPA, in relation to those who have not.

4.2 Research design

The study adopted a structured observation and a correlational design to assess the influence of the PPA programme (independent variable) on children's socioemotional behaviours (dependent variable).

4.3 Setting, permission and recruitment

The study was conducted at a primary school in KwaZulu-Natal which was known to have a cohort of Grade 1 pupils some of whom had participated in the PPA, and some of whom had not because they came from schools where PPA was not offered. This provided the researchers with a site to compare two groups of children. The school is a government school (fees for 2018 were R1620/month) which offers PPA from Grade RRR to Grade R. Children at the school come from three language groups, mother tongue English (53.4%), mother tongue Afrikaans (16.3%) and mother tongue Zulu (14.1%). The children on average live 4.76 kilometres from the school, with the maximum distance travelled being 35 kilometres.

The research process was approved through the Humanities and Social Sciences Research Ethics committee (HSSREC, HSS/2150/017CA) of the University of KwaZulu-Natal. Permission to conduct the study in a local school was obtained through the Department of Education, KwaZulu-Natal. Through PEISA, the Principal and the Grade 1 educators of the school were contacted and consulted about the proposed study. Permission was given to work with the Grade 1 pupils at the school.

The parents of all of the children in Grade 1 were informed of the study and asked to give their consent for their child's participation. The consent form process was active meaning that whether a parent or guardian agreed or disagreed about their child's participation, the form had to be returned. If no form was returned, or if the response to the request was 'no', then

the child was not considered as part of the final participant pool. Assent was also obtained from the child participants. The process of informing them of the research, what it involved, and how they would be observed was done verbally at a group meeting in the school hall. Then in each class the children were given an opportunity to ask any questions and were told that they could drop out of the study at any point with no consequence. The children were asked if they wanted to participate in the study. If children wanted to partake in the study they wrote their name on a green piece of paper. If they did not want to partake they wrote their name on a yellow piece of paper. Only the children who assented to participate in the study were considered as part of the final participant pool.

After these consent and assent processes, the remaining children constituted the sample of the study (92 of 178 possible Grade 1 children at the school).

Additional ethical considerations: The identity of the children who were observed in the study has been kept confidential. The identity of the educators in the schools has also been kept confidential. All of the child participants were given numerical codes for data capture. Only the primary researchers have access to data sheets and this information has been securely stored with the primary investigator of the study. In addition, teachers and parents will not be provided with information related to any child's socioemotional competence.

Risks and benefits

Due to the non-intrusive nature of this observation study, there was minimal risk to the child participants. The study did not interfere with learning time as children were observed during their play time. In addition the researchers restricted their interaction with the children and focused on the observation.

No incentives were offered to the children for their participation in the study, however as a form of compensation, all of the Grade 1 learners were given cupcakes and stickers after the observations had been completed.

4.4 Sample

The sample (N=92) comprised 44 boys and 48 girls in Grade 1 aged between 6-9 years old (M = 6 years, 11 months) from one primary school in KwaZulu-Natal. These gender characteristics are mirrored in South African gender patterns (Statistics South Africa, 2015). The sample comprised 56 (60.1%) children who had completed the PPA and 36 (39.1%) who had not completed the programme.

4.5 Data collection

The study used the Minnesota Preschool Affect Checklist Revised/Shortened (MPAC-R/S) (Denham et al., 2009) to assess children's socioemotional behaviours. The MPAC-R/S is an observation tool which measures children's socio-emotional competence in free play. It involves 'live coding' in 5 minute sessions and focusses on positive, negative and 'inappropriate' affect. The MPAC-R/S observation tool has been recommended for use with children and also to assess the effectiveness of interventions (Denham et al., 1993). The MPAC-R/S has standardised administrative and quantifiable scoring procedures (Denham, Warren-Khot, Bassett, Wyatt, & Perna, 2012). The reliability and validity of the measure has been demonstrated extensively in previous research (e.g., Denham, 1986; Denham et al., 1990, 2003; Leerkes, Paradise, O'Brien, Calkins, & Lange, 2008).

This measure was adapted and shortened from the MPAC-R for enhanced reliability and ease of utility by Denham and colleagues (MPAC-R; Denham & Burton, 1996; Denham et al., 1991). This measure contains 21 questions (see Appendix 1) and focusses on positive and negative affect, positive and negative involvement, lapses in impulse control, positive reactions to frustration, unusual behaviours, leadership and prosocial behaviours.

The MPAC-R/S requires the researcher to code children's observed behaviour in 5 minute intervals across four different days. For example, one question asks the observer to note whether the child *"displays negative effect in any manner (i.e. facial, vocal or bodily affect). The behaviour must match the context of the situation"*. The observer then codes for this behaviour by marking whether it is present or absent. The observations take place during less

structured periods (i.e. break time) where play and peer interaction occur outside of teacher-led instructional time.

The observers were 10 students of the Masters in Research Psychology class at the University of KwaZulu-Natal, and one person from PEISA. Training of the observers involved watching 12 training videos of children during free play. In four training sessions, the observers independently coded the observed behaviours. After each 5 minute observation, the coding was compared and discrepancies were discussed.

4.5.1 Observation procedure

The 11 observers were assigned to the different Grade 1 classrooms to observe particular children, and they were also allocated a coloured bangle (hair band). Before break time, whilst the children were eating, the researchers visited each class and put bangles on all of the children's wrists. Each child was given two bangles. Children who were to be observed by a particular observer were given bangles of the same colour (for example Observer 1 would observe all children with neon green bangles). This assisted the observers in finding their participants on the playing field. To minimise bias, observers were unaware which children had completed the PPA in Grade R and which had not.

At break time the observers set a timer for five minutes and focused their observation on one particular participant. During the observation time, the observer recorded the presence of the behaviours questioned on the observation schedule. Across one break time of 30 minutes, four different children were observed. If an observer was interrupted by a child, the observation would stop and another 5 minute period initiated. Each observer could only observe the child allocated to that five minutes, ignoring any other child's behaviour. At the end of the five minutes the observer would locate another child wearing the same colour observation bangle and the timer would be set for five minutes again. This observation enabled the observer to capture 'real-life' behaviours within the children's routine. Four observations occurred per child over a number of weeks. Initially boys were observed, and then girls.

4.6 Data analysis

Analysis of data was conducted through use of the IBM SPSS Statistics Data Editor 25. Analysis aimed to determine the significance of the psychomotor education programme in relation to the Grade 1 children's socioemotional behaviours. In this study all four observations for a particular question were summed to create a total score out of 5 (1= *behaviour never occurred*, 5= *behaviour occurred all four times*). Three of the participant's results were excluded from the analysis because they were absent from school on one or more of the observation days.

For this study the measure possessed good internal consistency ($\alpha = 0.71$). This means that the questions correlated well with each other, and could be assumed to be measuring socioemotional qualities.

The study focused on a particular research question viz. whether there is a significant difference in the socio-emotional behaviours of the two types of children (psycho-motor and non-psychomotor). We assumed that children who have been exposed to the PPA will display significantly more positive socio-emotional behaviours than children who have not.

In analysing the data we assumed that there might be several factors which contribute to socio-emotional behaviours (for example, gender, age, location, language and family composition). We had to separate out the effects of these factors and the effects of the PPA. Firstly, Pearson correlation coefficients were used to analyse the relationship between the PPA and the factors assessing for socioemotional behaviours. Following Pearson correlational analysis, multiple linear regression analyses were conducted as they provide a more sophisticated test to determine whether the results of the correlational analysis will remain significant when controlling for factors such as gender, age, location, language and family composition.

Guided by prior literature, gender (1= *boy*, 2 = *girl*), and age were added in the first block of the hierarchical regression analysis as control variables (in the SPSS table). This was due to the fact that gender has previously been associated with children's socioemotional well-being (Denham et al., 2012b). For instance, girls have been found to have higher levels of

socioemotional competence than boys (Denham et al., 2003). Socioemotional competence has also been found to increase with age (Denham et al., 1991).

In the second block distance in kilometres from the school (referred to as location), language (1 = *English*, 2 = *Afrikaans*, 3 = *Zulu*, 4 = *Tshivenda*, 5 = *Other*) and family composition (1 = *both biological parents*, 2 = *single-parent*, 3= *third generation*, 4 = *foster parents*, 5 = *biological and step parent*) were added in as stepwise variables. Although there is evidence that these factors influence socioemotional behaviours, these factors have been studied less extensively than gender and age. Location was utilised as a proxy for socioeconomic status (SES) as the study did not directly inquire about the SES of children and was not sensitive enough to detect fine dissimilarities between SES of the sample. Children living further away from the centre of the town, and the school, might come from more rural contexts, and might be of lower SES.

In all analysis alpha was determined as 0.05. This means that there is only a 5% risk of concluding a significant score when there isn't one. Furthermore, data analysis was run subsequent to careful examination of necessary assumptions for the statistical tests, ensuring they were all adequately fulfilled.

5. Results

5.1 Descriptive statistics

The majority of the children in the study are girls, English-speaking, live within 5km of the school and reside with biological parents; 58% of the sample reside with both biological parents, with only one child residing in a foster home. The PPA was distributed fairly equally across genders. 25 boys had participated in the PPA, whereas 19 did not and 31 girls had participated in the PPA and 17 had not.

5.2 Factor analysis

Analysis of the MPAC questions was conducted through a factor analysis to see how appropriate it might be as a measure in the South African context (it has previously been developed and used in the USA). This analysis lead to the identification of seven socioemotional domains, seen in the *Table 1* below. The questions related to each factor are included in Appendix 2.

Table 1

Socioeconomic domains in accordance with a factor analysis

Factor 1: Prosocial and leadership behaviours	These are well liked children who display prosocial and leadership behaviours. Denham et al. (1991) refers to this as prosocial-peer oriented.
Factor 2: Positive-Negative Affect	Children that score highly on this factor display positive affect (smiling), whereas children who score low on this factor have a predominantly negative demeanour. This would fall under emotionally positive in accordance with Denham et al. (1991).
Factor 3: Isolated-Frustrated Peer Dimension	These children are isolated from social tasks or become aggressive and irritable within them. They struggle within social interactions and may be depicted as outcasts or unlikable.
Factor 4: Activity focused or productive	These children are activity oriented; engrossed in tasks, independent and consequentially leaders. In line with personality traits.
Factor 5: Positive-negative coping	These children are able to verbally express their feelings and do not direct their frustration at the person implicated. Denham et al. (1991) terms this as positive reactions to frustration
Factor 6: Optimism	These children respond well to negative encounters, they show predominantly positive affect
Factor 7: Unusual behaviours	These children are aggressive unprovoked and are emotionally detached.

5.3 The Aucouturier Psychomotor programme and socioemotional behaviours

Correlations. Prior to regression analysis, Pearson product-moment correlation coefficients were conducted to examine the relationship between the PPA and the seven factors related to socioemotional behaviours. The output (seen in the *Table 2* below) showed that prosocial behaviour and leadership was the only factor significantly correlated to the PPA (r (92) = –.03, p = .35). This is also illustrated in the bar graph (*Figure 1*) below.

Table 2

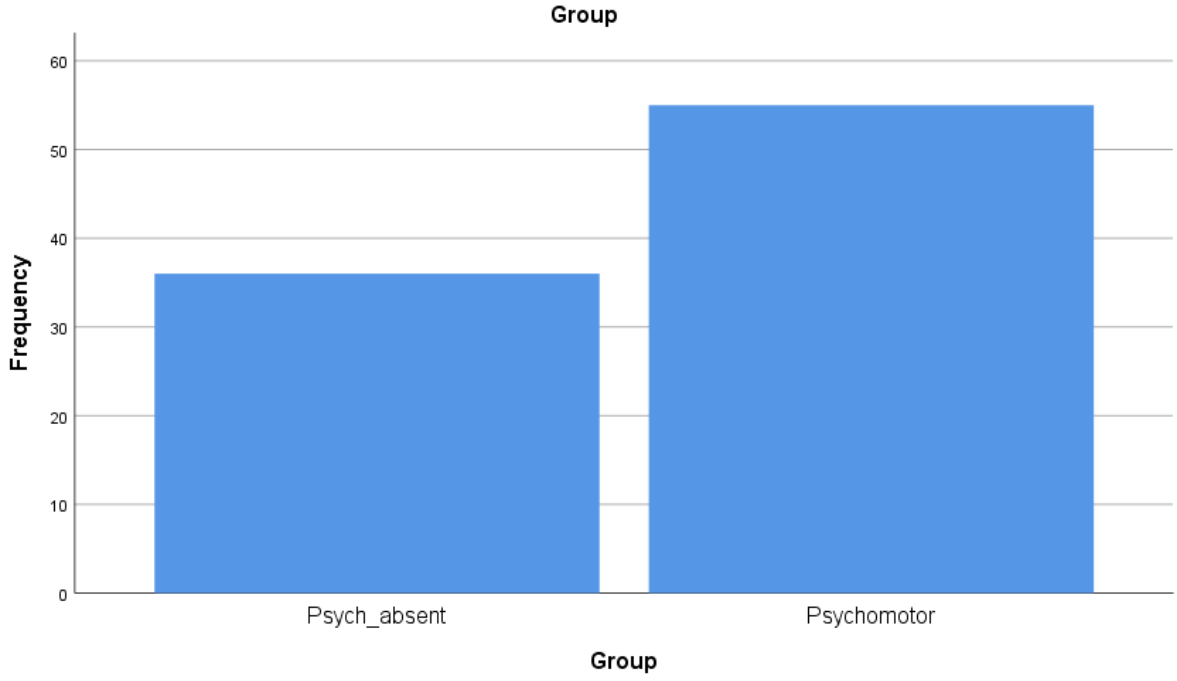
Correlations of the Aucouturier Psychomotor programme in relation to socioemotional behaviours

		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Psychomotor	Pearson Correlation	.257*	.041	.125	.181	-.085	-.125	.173

*Note: * symbolises significance (P < 0.05)*

Figure 1

Bar graph showing Aucouturier Psychomotor programme in relation to prosocial behaviours and leadership



5.4 Multiple Linear Regression

Multiple regression analysis was conducted for the factor related to prosocial behaviour and leadership. A number of significant correlations existed between independent variables. Gender correlated significantly with prosocial behaviour and leadership (p= 0.1). Additionally, prosocial behaviour and leadership was significantly correlated with the PPA (p= 0.07). *Table 3* summarises the results of the correlation analysis.

Table 3

Correlations between Covariates, Age, Gender, Family Composition, Language and Prosocial behaviours and leadership

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Prosocial behaviours and leadership	-												
2. Age	-.078	-											
3. Sex [a]	-.231*	-.197*	-										
4. Single	.052	.017	-.126	-									
5. Grandparents	-.086	.108	.096*	.185*	-								
6. Foster parents	-.035	.109	-.109	-.059	-.035	-							
7. Step family	.017	-.015	-.109	-.059	-.035	-.011**	-						
8. Afrikaans	-.092	-.035	.076	-.227	.182	.258	-.043	-					
9. Zulu	.024	.013	.128	.028	.053	-.046	-.046	-.179	-				
10. Tshivenda	-.074	.297**	-.155	-.032	.238*	-.037	-.037	-.142	-.154	-			
11. Other [b]	-.101	.009	-.058	.090	-.079	-.025	-.025	-.097	-.106	-.084	-		
12. Location	.072	-.044	.064	.101	.172	.009	-.053	.378	-.157	.105	-.139	-	
13. Psychomotor [c]	.257**	.044	.079	-.020	-.036	.084	-.131	-.122	-.249	.280**	-.299**	.099**	-

[a] 1 = female, 2 = male [b] Other = All other languages in comparison to English [c]1= Np psychomotor, 0 = psychomotor
$*p < .05$, $**p<.01$, $***p<.001$

Gender and age also significantly correlated with prosocial behaviours and leadership [(R = .26, R^2 = .05, F [2, 89] = 3.31, p < .05). When Psychomotor was added into the model, an additional 8.1% of variance in prosocial behaviours was accounted which was a highly significant amount [F(1,88) = 8.41, p = .0005]. The other variables: location, language and family composition did not significantly contribute to the model and were excluded. What this means is that of all the variables that may contribute to children displaying prosocial behaviours and leadership, such as age and gender, the PPA was a significant factor, independent of all the other variables. Thus, we can say that the implementation of the PPA has a strong correlation with children engaging in prosocial behaviour and leadership.

The PPA seems to have the greatest influence on a child's prosocial behaviours and leadership (β = 0.29). Having participated in the PPA and being a girl were positively associated with prosocial behaviours and leadership. Overall, the model (meaning the framework we have constructed with all the variables – gender, age and the PPA) has a correlation of 0.39 with prosocial behaviours and leadership, and explains 15.1% of the variance in prosocial behaviours, F (3,4.568) = 14.73, p < 0.05 (see Table 4 below). This variance percentage makes the finding significant. Thus, in relation to the main aim of the study, it appears that children who have engaged in the PPA have significantly more prosocial behaviours and leadership than children who have not engaged in the PPA.

Table 4

Results of hierarchical multiple regression analysis predicting children's prosocial behaviours and leadership

		Prosocial behaviours	
	Variable	ΔR^2	β
Step 1	Age	.04	-.13
	Gender[a]		-0.26*
Step 2	Psychomotor	.12	.29*
			R=.38
			Adj. R^2 = .12

Note. [a] 1 = male, 2 = female, [a] 1 = Psychomotor absent, 2 = psychomotor present
*p < .05.

6. Discussion

This study investigated the significance of the PPA implemented by PEISA in relation to children's socioemotional behaviours. It was assumed that children who had participated in the programme would display more positive socioemotional behaviours than children who did not. This hypothesis seems to be supported by the results of the study.

Pearson correlation coefficient analyses were run to determine the influence of the PPA on children's socioemotional behaviours, particularly prosocial behaviour and leadership, positive and negative affect, isolated-frustrated peer relations, activity orientation, positive-negative coping, optimism and unusual behaviour. Results indicated that the PPA was not significantly associated with positive and negative affect, isolated-frustrated peer relations, activity orientation, positive-negative coping, optimism and unusual behaviour.

However, the PPA was significantly associated with children's prosocial behaviours and leadership even when controlling for gender and age. Children who score high on this factor displayed prosocial behaviour and leadership. Behaviours associated with prosocial behaviours tend to refer to collaboration with peers, empathy, cooperating, sharing and helping etc. (Zigler & Bishop-Josef, 2006). Prosocial children tend to be well adjusted, socially competent, well regulated, and possess a positive self-concept (Hastings, Utendale, & Sullivan, 2007). Prosocial behaviours have also been found to be predictive of children's grades up to five years later (Agostin & Bain, 1997).

This was a pilot implementation of the MPAC-R/S. Overall, the measure was easy to utilise and comprehend. In general the observation tool seemed to assess similar concepts to those that are central in the PPA (that is, emotional regulation, peer relations, positive affect and emotional negativity). However it is possible that this is not the best measure to assess the link between socioemotional behaviours and the PPA.

Study limitations

Sample. Issues regarding the measure and the results may be attributed to the fact that purposive convenient sampling methods and time restraints resulted in a homogenous sample.

The sample comprised predominantly, middle socio-economic status, English speaking children. This might mean that the influence of the PPA on children's socioemotional behaviours may have been underestimated. To investigate the effects of this programme more thoroughly future studies should recruit participants who are representative of the South African population.

The sample size in this study was, in statistical terms, small. However, in a pilot study, a small sample may be justified as significant effects can now be researched in greater detail. However, the small sample size means that there are constraints on the study results. Thus, future research should assess the PPA on a larger sample as this would produce more robust findings.

Reliability and extraneous variables. Insignificant results in the study may also be due to challenges with the observer's ratings and also the two different contexts of observation. Given that the researchers had no prior experience in using this measure, it is also possible that errors occurred in raters' scoring, and this could have affected the results of the study. The study did not systematically assess inter-rater reliability which means that there might have been inconsistences in the coding. In future inter-rater reliability should be assessed and coded so the variability in coding procedures can be recorded.

Additionally due to children's absenteeism or because of an observer's inability to observe on a certain day, observations were not all conducted on the same day by all of the researchers. This is problematic as children may have behaved differently on different days. For example, if researchers observed a child on a hot day, their activity level may have been reduced. Additionally, if the children had just completed an assessment their moods may have been lowered. Thus, variability in children's behaviours may have occurred due to inconsistencies related to the days on which coding occurred.

Context and time may also have influenced the results of the study. Weather may have been a mediating factor within the analysis. Out of the 11 observations (four for girls, four for boys, one pilot and two catch-up sessions), on two of the days it rained. On these days, children were observed in the classrooms. This environment elicited different interactions between the children. For instance, within the classroom children were provided with toys, board games

and stationery. These tangible questions often encouraged different kinds of social interaction, compared to much more physical activity outside. However, as the four observation times were summed the effects of these behaviours could not be statistically analysed.

Results might also have been affected by the delay in conducting the observations. Partly due to obtaining ethical permission and also consent of guardians, the observations for this study took place from late March. This means that children were at school for two months prior to assessment of their socioemotional behaviours. Within this time, children who had participated in the PPA may have unconsciously modelled their socioemotional skills to their peers, diluting the effect of the programme. This might also have diluted the comparison between children who had participated in the programme and those who had not. On the other hand, over this time period children might also have 'lost' many of the skills learnt through the PPA, and thus the contrast between the two groups might have been diluted. The results of the efficacy of the PPA may thus have appeared insignificant due to the context and/or time in which observations occurred, rather than because it does not have an effect.

Another constraint on the findings is that this study did not assess or obtain information regarding children's cognitive ability. Understanding the participants' cognitive abilities, and discriminating the findings in relation to these abilities, would have assisted in more clearly defining the effect of the PPA. Thus, it would be helpful to know whether the PPA contributed to children's socioemotional behaviours distinct from their cognitive abilities. Future research should gather such information.

Location was also not a good proxy for socioeconomic status within this sample as over 80% of the sample lived within 10 kilometres from the school. Future studies need to obtain a more distinct measure of SES.

In order to account for issues of reliability and extraneous variables, socioemotional behaviours should be assessed via a wide range of mechanisms such as interviews, rating scales and even direct assessment. For example, additional ratings by educators could have provided contextually rich data, and a more comprehensive understanding of emotional competencies. Educators engage with the children in a different context from observers, thus

their understanding could supplement observation reports. Although these methods are not without bias, educators' perceptions of children are informative and relevant.

Causality. A final limitation is that causal relationships cannot be ascertained from the data as children's socioemotional behaviours were not assessed prior to psychomotor engagement, thus differences in children's socioemotional behaviours may be due to extraneous variables. To explore this, a longitudinal study pre- and post- psychomotor would need to be designed.

7. Conclusion

In recent years research has shown that pre-schoolers' socio-emotional development is critical for both current and prospective well-being, mental health (Denham, 2006) and academic success (Campbell & Von Stauffenberg, 2008). Given the significance of building these skills, programmes which foster socioemotional behaviours and competencies within the South African context are vital.

This research project assessed Grade 1's socio-emotional behaviours and skills in relation to a psychomotor education programme implemented by PEISA at a Primary School in KwaZulu-Natal. Results from a multiple regression analysis indicated that the PPA was significantly associated with prosocial behaviours and leadership in children, independent from gender and age. Findings underscore the need to pay increased attention to socio-emotional competence in preschools and classroom practice. This study provided preliminary evidence for the effectiveness of this programme in early childhood.

References

Agostin, T. M. & Bain S. K. (1997). Predicting early school success with developmental and social skills screeners. *Psychology Scholar*, 34, 219-228.

Anderson, K. G., Case, A., & Lam, D. (2001). Causes and consequences of schooling outcomes in South Africa: Evidence from survey data. *Social Dynamics, 27(1),* 37-59. doi: 10.1080/02533950108458703

Bloodworth M. R, Weissberg R. P., & Walberg H. J (2004). The scientific base linking social and emotional learning to school success. *Journal of Educational Psychology, 17,* 191-210

Campbell S., & von Stauffenberg, C. (2008). Child characteristics and family processes that predict behavioral readiness for school. Booth A, Crouter AC, eds. *Disparities in School Readiness: How Families Contribute to Transitions in School* (pp. 25-258). New York, NY: Taylor & Francis Group.

Caprara, G.V., Barbaranelli, C., Pastorelli, C., Bandura, A., & Zimbardo, P.G. (200). *Prosocial foundations of children's academic achievement.* Psychological Science, 11, 302–306. doi: 10.1111/1467-9280.00260.

Chaplin, T. M., & Aldao, A. (2013). Gender differences in emotion expression in children: A meta analytic review. *Psychological Bulletin, 139*, 735–765.

Denham, S. A. (2006). Social-emotional competence as support for school readiness: What is it and how do we assess it? *Early Education and Development, 17,* 57-89. doi: 10.1207/s15566935eed1701_4

Denham, S. A., Wyatt, T., Bassett, H. H., Echeverria, D., & Knox, S. (2009). Assessing social-emotional development in children from a longitudinal perspective. *Journal of Epidemiology and Community Health, 63,* 37–52.

Denham, S. A. Bassett, H. H., Mincic, M.M., Kalb, S. C., Way, E., Wyatt, T., & Segal, Y. (2012b). Social-emotional learning profiles of preschoolers' early school success*: A person-centered approach. Learning and Individual Differences, 22*, 178–189

Denham, S. A., Blair, K. A., DeMulder, E., Levitas, J., Sawyer, K. S., Auerbach-Major, S. T., & Queenan, P. (2003). Preschoolers' emotional competence: Pathway to social competence. *Child Development, 74,* 238- 256. doi: 10.1111/1467-8624.00533

Denham, S. A & Burton, R.A. (1996). A social-emotional intervention for at-risk 4-year-olds. *Journal of School Psychology. 34*, 225–245. doi:10.1016/0022-4405(96)00013-1.

Denham, S. A., McKinley, M. J., Couchoud, E. A., & Holt, R. (1990). Emotional and behavioral predictors of preschool peer ratings. *Child Development, 61*, 1145-1152. doi: 10.2307/1130882

Denham, S. A., Zahn-Waxler, C., Cummings, E. M., & Iannotti, R. J. (1991). Social competence in young children's peer relations: Patterns of development and change. *Child Psychiatry and Human Development, 22,* 29-44. doi:10.1007/BF00706057

Department of Education. (2001). *White Paper 6: Building an inclusive education and training system*. Pretoria: Department of Education.

Eisenberg, N., & Fabes, R. A. (1998). Prosocial development. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.*), Handbook of child psychology,* Vol. 3. Social, emotional, and personality development (5th ed., pp. 701–778). New York, NY: Wiley.

Elias, M. J., & Haynes, N. M. (2008). Social competence, social support, and academic achievement in minority, low income, urban elementary school children. School *Psychology Quarterly, 23*, 474–495. doi:10.1045-3830.23.4.474

Graziano, P.A., Reavis, R.D., Keane, S.P., & Calkins, S.D. (2007) .The role of emotion regulation in children's early academic success. *Journal of School Psychology, 45,* 3–19. doi:10.1016/j.jsp.2006.09.002.

Green, W., Parker, D., Deacon, R., & Hall, G. (2011). Foundation phase teacher provision by public higher education institutions in South Africa. *South African Journal of Childhood Education*, 1(1), 109-122.

Hastings, P.D., Utendale, W.T., & Sullivan, C. (2007). The socialization of prosocial development. In J.E. Grusec & P.D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 638-664). New York, NY: Guilford Press.

Herndon, K. J., Bailey, C. S, Shewark, E. A., Denham, S. A., & Bassett, H. H. (2013) Preschoolers' Emotion Expression and Regulation: Relations with School Adjustment, *The Journal of Genetic Psychology: Research and Theory on Human Development, 174,* 6, 642-663, DOI: 10.1080/00221325.2012.759525

Huffman, L.C., Mehlinger, S.L, & Kerivan, A. S. (2000) *Off to a good start: Research on the risk factors for early school problems and selected federal policies affecting children's social and emotional development and their readiness for school*. University of North Carolina FPG Child Development Center; Chapel Hill, NC.

Jones, D. E., Greenberg, M., Crowley, M. (2015). Early social-emotional functioning and public health: The relationship between kindergarten social competence and future wellness. American Journal of Public Health, 105(11), 2284- 2290.

Leerkes, E. M., Paradise, M., O'Brien, M., Calkins, S.D., & Lange, G. (2008). *Emotion and cognition processes in preschool children. Merrill-Palmer Quarterly, 54,* 102–124. doi:10.1353/mpq.2008.0009.

Levitt, M. J., Guacci-Franco, N., & Levitt, J. L. (1993). Convoys of social support in childhood and early adolescence: Structure and function. *Developmental Psychology, 29(5),* 811.

Margetts, K., & Phatudi, N. C. (2013). Transition of children from preschool and home contexts to grade 1 in two township primary schools in South Africa. *European Early Childhood Education Research Journal, 21(1),* 39-52.

Miller, A. L., Seifer, R., Stroud, L., Sheinkopf, S. J., & Dickstein, S. (2006). Biobehavioral indices of emotion regulation relate to school attitudes, motivation, and behavior problems in a low-income preschool sample. *Annals of the New York Academy of Science, 1094*, 325–329.

Priolo Filho, S. R.; Pompermaier, H.M.; Almeida, N.V. F, & Souza, D. H. (2016) Aggressive behavior of children in a daycare center. *Paidéia, 26 (4*), 235-243 doi:10.1590/1982-43272664201611

Phillips, D. A., & Cabrera, N.J. (1996). *Beyond the blueprint: directions for research on head start's families*. Washington, DC: National Academy Press.

Shields, N., Nadasen, K., & Hanneke, C. (2015). Teacher responses to school violence in Cape Town, South Africa. *Journal of Applied Social Science, 9(1),* 47-64.

Statistics South Africa (2015). General Household Survey. Pretoria, South Africa: Statistics South Africa.

Statistics South Africa (2013). *Social profile of vulnerable groups in South Africa, 2002-2012*. Pretoria, South Africa: Statistics South Africa. Retrieved from http://www.statssa.gov.za/

Zigler, E. F., & Bishop-Josef, S. J. (2006). The cognitive child versus the whole child: Lessons from 40 years of head start. In D. G. Singer, R. M. Golinkoff, & K. Hirsh-Pasek (Eds.), *Play = learning: How play motivates and enhances children's cognitive and social-emotional growth* (pp. 15-35). New York, NY, US: Oxford University Press. doi: http://dx.doi.org/10.1093/acprof:oso/9780195304381.003.0002

Appendix 1. MPAC-R/S: Minnesota Preschool Affect Checklist

				POSITIVE AFFECT
○	○	○	○	1. The child displays positive affect in any manner (i.e., facial, vocal, or bodily affect). The child's behaviors must match the context of a given situation. Examples: Smiling, laughing, singing, dancing, etc. ***Note*: This question is the baseline code for positive affect. To code either other positive question, you must code this one.**
○	○	○	○	2. The child directs positive affect specifically at a particular person when already in contact with them. Affect is directed at a specific person. This behavior does not have to be in response to someone, but someone must be the target of the child's positive affect. ***Note*: Pay particular attention to peers that the child interacts with and whether or not the child makes eye contact with his/her peers.**
○	○	○	○	3. The child displays positive affect when in a social situation but does not direct it to anyone in particular.
				NEGATIVE AFFECT
○	○	○	○	4. The child displays negative affect in any manner (i.e., facial, vocal, or bodily affect). The child's behaviors must match the context of a given situation. ***Note*: This question is the baseline code for negative affect. To code the other negative question, you must code this one.**
○	○	○	○	5. The child directs negative affect specifically at a particular person when already in contact with them. Affect is directed at a specific person. This behavior does not have to be in response to someone, but someone must be the target of the child's negative affect. ***Note*: Pay particular attention to peers that the child interacts with and whether or not the child makes eye contact with his/her peers**.

				INVOLVEMENT: PRODUCTIVE, FOCUSED, USE OF PERSONAL ENERGY
○	○	○	○	6. The child is engrossed, absorbed, <u>intensely involved</u> in activity. The child is emotionally invested in creative, productive, thematically organized, or other activity that has a positive emotional function. ***<u>Note</u>*: Does not include intense but unfocused activity (e.g., running around the room), or low level functional play (e.g., rolling a truck back and forth) because neither are thematically organized. Should last at least 30 consecutive seconds.**
○	○	○	○	7. <u>Independence</u>: The child is involved in an activity that he/she organizes for himself/herself. ***<u>Note</u>*: The child can also organize an independent activity for himself/herself within an activity organized for the group (e.g., If teachers direct children to either fix a puzzle or read a book, children still have a choice in their activity).**
				INVOLVEMENT: UNPRODUCTIVE, UNFOCUSED USE OF PERSONAL ENERGY
○	○	○	○	8. <u>Vacant</u>: The child displays a very flat, unexpressive, detached face; shows no involvement in an activity; and looks "emotionally absent."
○	○	○	○	9. <u>Listless</u>: The child looks fidgety and uninvested in the activity but still "emotionally present;" the child stays in one area but shows little/no involvement in activities or social interaction. ***<u>Note</u>*: if seems invested but not intent, code *neither* listless nor engrossed.**

				LAPSES IN IMPULSE CONTROL AND NEGATIVE RESPONSES TO FRUSTRATION, CONFLICT, AND OTHER EMOTIONALLY AROUSING PROBLEM SITUATIONS (E.G., OBJECT STRUGGLE, TEASING, REJECTION, INABILITY TO SOVLE PUZZLE, ENCOUNTERING OBSTACLE TO GOAL ATTAINMENT)
○	○	○	○	10. The child displays context-related interpersonal aggression (verbal or physical). Someone does something to which the child responds with aggression. An emotionally arousing preceding event must be observed.
○	○	○	○	<u>11. Object aggression</u>: The child hits, kicks, shoves, knocks over, or throws objects <u>in response to an emotionally arousing problem situation</u>.

				POSITIVE REACTIONS TO FRUSTRATION, CONFLICT, AND EMOTIONALLY AROUSING PROBLEM SITUATION (E.G., OBJECT STRUGGLE, TEASING, REJECTION, INABILITY TO SOLVE PUZZLE, ENCOUNTERING OBSTACLES TO GOAL ATTAINED)
○	○	○	○	12. The child promptly verbally expresses feelings arising from a problem situation, then moves on to the same or a new activity (versus withdrawing, displacing the affect onto others or objects, or staying upset). This seems to help the problem somewhat. ***Note*: This question is the baseline code for positive responses to frustration. If coding this question, *either 2 or 3* must also be coded.**
○	○	○	○	13. The child shows primarily neutral or positive affect.
○	○	○	○	*14 The child shows primarily negative affect, but the child's talking about feelings helps the situation.

				UNUSUAL BEHAVIOR
○	○	○	○	*15. The child engages in no social interaction continuously for 3 minutes or more.
○	○	○	○	16. The child displays unprovoked physical interpersonal aggression with no preceding provocation by the victim.
If yes, please describe aggression and subsequent behavior by all involved:				

				SKILLS IN LEADING AND JOINING
○	○	○	○	*17. Successful leadership: The child plays an organizing role in an activity in which another child or children "follow the lead" and participate. **Note: This question can include "bossing" another child or children around.**
○	○	○	○	18. The child smoothly approaches an already ongoing activity and gets actively involved. The child does not disrupt or antagonize other children as he/she approaches the activity. *Note*: active involvement, not just watching, is required.

○	○	○	○	19. Taking turns: The child plays with a toy or participates in an activity and then allows another to do the same. A clear beginning and end of each child's turn during an activity must be observed. ***Note*: This can also be coded if the turn taking is teacher-directed.**
○	○	○	○	20. Cooperating: The child jointly works with a peer or group of peers to achieve a common goal (e.g., holds one end of a jump rope while playing outside).
○	○	○	○	21. The child shares toys or other materials (e.g., crayon, pencil, play dough, etc.). The sharing should be more overt than children utilizing the same materials during parallel play.

Note. *'s indicate questions not used in Denham et al's most recent published research

If need be, provide a brief description of the child's activity (e.g., free play, recess) and any other pertinent observations, noting which observation:

Appendix 2: Socioemotional domains emerging from the factor analysis and the related questions

Factors	Questions in the MPAC observation schedule
Factor 1: Prosocial behaviours and leadership	18. The child smoothly approaches an already ongoing activity and gets actively involved. The child does not disrupt or antagonize other children as he/she approaches the activity. *Note*: active involvement, not just watching, is required. 19. Taking turns: The child plays with a toy or participates in an activity and then allows another to do the same. A clear beginning and end of each child's turn during an activity must be observed. *Note*: This can also be coded if the turn taking is teacher-directed 20. Cooperating: The child jointly works with a peer or group of peers to achieve a common goal (e.g., holds one end of a jump rope while playing outside). 21. The child shares toys or other materials (e.g., crayon, pencil, play dough, etc.). The sharing should be more overt than children utilizing the same materials during parallel play.
Factor 2: Negative-positive affect (Question 4 & Question 5, with the polar on this dimension being Question 1),	4. The child displays negative affect in any manner (i.e., facial, vocal, or bodily affect). The child's behaviours must match the context of a given situation. **Note: This question is the baseline code for negative affect. To code the other negative affect question, you must code this one.** 5. The child directs negative affect specifically at a particular person when already in contact with them. Affect is directed at a specific person. This behaviour does not have to be in response to someone, but someone must be the target of the child's positive affect. *Note*: Pay particular attention to peers that the child interacts with and whether or not the child makes eye contact with his/her peers. Polar dimension 1. The child displays positive affect in any manner (i.e., facial, vocal, or bodily affect). The child's behaviours must match the context of a given situation. Examples: Smiling, laughing,

	singing, dancing, etc. **Note: This question is the baseline code for positive affect. To code either other positive question, you must code this one.**
Factor 3: Isolated-Frustrated Peer Dimension (Question 9, Question 10 with the polar in this dimension being Question 3 & Question 15)	9. Listless: The child looks fidgety and uninvested in the activity but still "emotionally present;" the child stays in one area but shows little/no involvement in activities or social interaction. *Note*: if seems invested but not intent, code *neither* listless nor engrossed. 10. The child displays context-related interpersonal aggression (verbal or physical). Someone does something to which the child responds with aggression (emotionally arousing preceding event must be observed). Polar dimension 3. The child displays positive affect when in a social situation but does not direct it to anyone in particular. 15. The child engages in no social interaction continuously for 3 minutes or more.
Factor 4: Activity focused or productive (Question 6, Question 7, Question 17),	6. The child is engrossed, absorbed, intensely involved in activity. The child is emotionally invested in creative, productive, thematically organized, or other activity that has a positive emotional function. *Note*: Does not include intense but unfocused activity (e.g., running around the room), or low level functional play (e.g., rolling a truck back and forth) because neither are thematically organized. Should last at least 30 consecutive seconds. 7. The child is involved in an activity that he/she organizes for himself/herself; s/he is independent. *Note*: The child can also organize an independent activity for himself/herself within an activity organized for the group (e.g., If teachers direct children to either fix a puzzle or read a book, children still have a choice in their activity). 17. Successful leadership: The child plays an organizing role in an activity in which another child or children "follow the lead"

	and participate. **Note: This question can include "bossing" another child or children around.**
Factor 5: Negative-Positive Coping (Question 11 & Question 14)	11. The child hits, kicks, shoves, knocks over, or throws objects (emotionally arousing preceding event must be observed). 14. The child shows primarily negative affect, but the child's talking about feelings helps the situation.
Factor 6: Optimism (Question 2, Question 12, Question 13),	2. The child directs positive affect specifically at a particular person when already in contact with them. Affect is directed at a specific person. This behaviour does not have to be in response to someone, but someone must be the target of the child's positive affect. *Note*: Pay particular attention to peers that the child interacts with and whether or not the child makes eye contact with his/her peers. 12. The child promptly verbally expresses feelings arising from a problem situation, then moves on to the same or a new activity (versus withdrawing, displacing the affect onto others or objects, or staying upset). This seems to help the problem somewhat. **Note: This question is the baseline code for positive responses to frustration. You must code it to code the next questions, and if coding this question, *either 2 or 3* must also be coded.** 13. The child shows primarily neutral or positive affect.
Factor 7: Unusual behaviours (Question 8, Question 16),	8. Vacant: The child displays a very flat, unexpressive, detached face; shows no involvement in an activity; and looks "emotionally absent." 16. The child displays unprovoked physical interpersonal aggression with no preceding provocation by the victim.