'Not by bread alone': impact of a structured 90-minute play session on development of children in an orphanage

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Abstract

Background and objectives In developing countries, caring for the large number of babies in orphanages is very hard work. Whereas the physical needs of most of the children are met, play often gets neglected. Studies have repeatedly shown that babies in such institutionalized settings suffer from severe psychomotor retardation. The aim of this project was to develop an intervention programme of structured play. We hypothesized that such an intervention would result in acceleration of psychosocial development in otherwise healthy institutionalized children.

Design Prospective longitudinal.

Setting Mother Teresa's Orphanage, run by Missionaries of Charity.

Subject and methods All 30 children in the orphanage aged 6 months–2.5 years, were assessed for their Motor, Mental and Social Quotients, using the Indian adaptation of Bailey's Scale of Infant Development(DASII) and the Vineland's Social Maturity Scale. A structured 'Regime of Play' was then built into the routine of the orphanage. A repeat developmental assessment was performed at the end of 3 months to assess the impact.

Results Out of the original cohort of 30, 19 children were available for post-intervention assessments. The remainder were adopted before their assessments. Their mean Motor Quotient rose from 63.7 to 81.7, mean Mental Quotient rose from 65.8 to 89.6 and the mean Social Quotient rose from 61.9 to 91.3, a gain of 18, 23 and 30 points respectively ($p < 0.0001$). There was also an overall change in the environment of the orphanage. Children became more active, playful, responsive and independent. Contrary to what caretakers assumed, their workload actually decreased. The responsiveness in the children awakened as a result of play, acted as a positive feedback for caretakers to continue the play sessions.

Conclusions This study shows that short daily sessions of play can significantly improve the development of children in such institutions. It is vital to remember that children grow 'Not by Bread Alone'.

Keywords
play, development, orphanages, social theory of learning

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Introduction

Even in the best run orphanages in India, the need for psychosocial stimulus is often neglected. Research from outside India suggests that development of deprived children improves dramatically when their environment becomes more stimulating (Casler 1961;Yarrow *et al.* 1972; Broussard & Decarie 1971; Rosenblith 1992). Studies from India have also shown this need for early stimulation programmes (Somen 1986; Sharma 1989). However, despite being aware of the concept, little effort is made to stimulate children in orphanages (Raghunath 1991; Singh 1993). One of the reasons is that the caregivers are under great pressures catering to the physical needs of a large number of children. This study devised a simple and easily applicable 'Regime of Play' and incorporated it into the daily routine of an orphanage.

This project was started because the Sister Superior of the Missionaries of Charity asked us, at the Department of Paediatrics, to look for some method of improving the development of children in their orphanage in Delhi. The orphanage authorities were having difficulties in the adoption of these children because of their severe psychosocial, motor and language delays. When we visited the orphanage, we found that the infants remained in their cots most of the time and were handled only for feeding and cleaning. They cried little, had expressionless faces and responded poorly to overtures. Older children had poor motor co-ordination and walked rarely. They stood in their cots, only to be carried from one place to another by the caregiver. When approached by a stranger, they would make their bodies stiff, cling to the stranger and cry inconsolably. They had little vocalization, never smiled and were fed sloppy food by the caregivers. They were seldom exposed to the outside environment for the fear that they would get sick and further burden the caregivers.

We report the pre-assessment survey of these children. The structured play regime is described. This paper discusses the motivation and modelling of the orphanage's caregivers in this regime and looks at the developmental score changes after 3 months of intervention. This is the first study of its kind in India, which is tested with pre- and post-intervention assessments and which lends itself to emulation in other orphanages.

Subjects and methods

All children aged 6 months–2.5 years (n = 30), were taken up for the intervention programme. One section catered to the babies 6–12 months and the other to babies 1–2.5 years. The children were assessed for their development using the Developmental Assessment Scale for Indian Infants (DASII) (Indian Adaptation of Bayley's Scale of Infant Development, based on Baroda Norms) (Phatak 1995) and the Indian Adaptation of Vineland's Social Maturity Scale (VSMS). These test scales have been validated previously on Indian children and used in different parts of India. To check the reliability of the results, the child psychologist and the paediatrician did assessments separately. Congruence of scoring was looked at.

A play regime for these children was then developed with help of a child psychologist and the Child development unit of a local university college (Figure 1). The sessions of 90 min duration catered to motor, cognitive and language stimulation. To avoid monotony and provide variety, different activities were planned for different days of the week. The day's activities started with outdoor sessions. During the time children played outside, some of the workers were free to complete their chores of cleaning the ward and preparing the food. For these sessions, an unused area with swings, slides, seesaws etc. and lots of plants and flowers was used. A sandpit was constructed in one corner of this area. A small inflatable pool was brought in for water activities. For indoor sessions, a play area was designated for each ward. For bigger children, the play area had separate subsections like dressing area, music area, manipulation and kitchen areas. The walls were made colourful with pictures and charts all over.

The 3-month intervention period was divided into two phases. In the first phase, of one-month's duration, various activities were introduced according to the schedule, and the workers were trained to perform them under the guidance of the child psychologist. There were eight workers in each ward working in two shifts. Most of them

	Activities	Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
6-12 Months	Cognitive Stimulation	45 minutes	Items of daily use -manipulation -reaching out for objects	Use of sound producing toys like rattles, bells, drums etc.	Manipulation of objects of different shapes and sizes	Paper play -crushing of paper -use of things made out of paper	Exposure to outside environment -plants -flowers -birds -animals	Use of sound producing toys like rattles, bells, drums etc.
	Motor stimulation	45 minutes	• Massaging • Helping the babies to roll over • Crawling • Making babies sit with support		• Helping babies stand and walk with support • Reaching out for objects • Manipulation of objects			
	Language stimulation	Carried out throughout the 90 minutes session	• Music to be played daily • Singing songs, rhymes, lullaby's • Talking to babies during all activities		• Cuddling of babies • Feeding the babies with good eye to eye contact • Talking to babies while feeding			
1-2 1/2 Years	Outdoor Session Cognitive Stimulation	25 minutes	Sand and water play - use of sand pit and water pool	Group games like football, cricket, making of train etc.	Paper play - folding of paper - crushing - making of paper puppets and balls.	Use of clay - making of different shapes - manipulation	Exposure to outside environment -plants, trees -flowers -birds -animals	Use of colours -hand printing - leaf printing - colouring of paper and different objects
	Motor stimulation	25 minutes	• Helping the children stand and walk without support • Running • Jumping			• Climbing stairs • Activities on swings, slides, see-saws • Use of pull-along toys		
	Break	15 minutes	• Encourage feeding with own hands • Drinking from glasses instead of bottles			• Group activities like dancing		
	Indoor Session Use of Play Area	40 minutes	Children to be divided in different sub-sections by rotation during the session • Manipulative Area • Manipulation of blocks of all shapes and sizes • Kitchen Area • Names and use of different objects • Dressing Area • Names and use of different objects • Music Area • Playing of drums, bells, ghungroos, xylophone, whistles etc.			• Use of peg boards, form boards, shape trays etc. • Dressing in front of the mirror		
	Language stimulation	Throughout the 90 minutes session	• Children to be constantly talked to • Brief and clear instructions for all activities • Identification of different pictures and objects			• Repetitions as many times as possible • Music to be played daily • Singing songs, rhymes, lullaby's		

Figure 1. Short structured 90-min play sessions: one each for 6–12 months and 1–2.5 years.

were illiterate. Modelling techniques rather than a didactic programme were utilized in their training. Workers saw the trainers conduct the play sessions and slowly emulated them, each worker at his or her own pace. During the second phase, the same schedule was followed with reduced supervision of the caregivers allowing them to take over the sessions themselves.

Repeat developmental assessments were performed at the end of 3 months to look at the impact of the intervention. There were 30 children originally at the start of the intervention. A total of 11 children dropped out during the intervention as they were adopted by suitable couples; 18 others joined in at different points of time during the 3-month intervention period taking the number of those tested in the post-intervention group to 37. The researchers had no control over this. It is conceivable that if these new children were more advanced developmentally it could raise the mean developmental scores in the post intervention results, an increase that could falsely be attributed to intervention. To obviate this error, we analysed the children who did have both pre- and post-intervention assessments (n = 19) separately, to look for developmental gains.

The 18 children who joined in at different points of time did not experience the full duration of intervention. The small sample size of these children with shorter intervention did not permit a separate analysis of how varying duration of the programme affected their developmental scores.

Statistical methods

We used the Student's *t*-test to test the differences between the pre and post intervention groups. Ethical approval of the Institutional Research Review Board was obtained for the study.

Results

Table 1 shows the results of the assessments. A total of 19 children had both pre- and post-intervention assessments. Their mean Motor Quotient rose from 63.7 to 81.7, their mean Mental Quotient rose from 65.8 to 89.6 and their mean Social Quotient rose from 61.9 to 91.3, a gain of 18, 23 and 30 points respectively ($p < 0.0001$ for all 3 Quotients).

There was a marked change in the overall environment. The infants were more responsive, active and had better head and body control after the intervention. They began to reach out for objects, crawl and play with toys. They started enjoying music a lot, laughing and babbling. The older children, also, became more active, responsive and enjoyed dancing to music. They played on swings and seesaws with improved co-ordination, laughed a lot and began using sentences of up to two words. They were more independent, drank from glasses and ate with their own hands. Where there had been dead calm previously, delightful chaos reigned.

The outlook and behaviour of the caregivers also showed significant change. They were apprehensive initially that such an intervention meant increased burden of work for them. Their initial reluctance gave way to acceptance and later enthusiastic participation as they realized that the intervention was good fun for them also. The initial improvements in children provided ongoing positive feedback for workers as they responded more often to children's gestures and spent more time with them. The

Table 1. Comparisons of mean motor, mental and social quotients in children with both pre-and post-intervention results

Variable	n	Mean motor quotient (SD)	Mean mental quotient (SD)	Mean social quotient (SD)
Pre-intervention	19	63.8 (13.6)	65.8 (14.6)	61.9 (22.6)
Post-intervention	19	81.7 (12.7)	89.6 (9.7)	91.3 (12.4)
Difference		17.9	23.7	29.4
p-value		<0.0001	<0.0001	<0.0001

workers also realized that the intervention actually decreased their workload, as the children became more independent.

Discussion

According to Baig L., it is estimated that there are about 32 million destitute children in India. A large number of them are in orphanages and institutions. One out of 20 babies is abandoned soon after birth owing to social or economic pressures. This amounts to a million abandoned children each year. It is a big load for orphanages to care for such orphaned and abandoned children. Even the best run orphanages fail to provide a child with the stimulation that he can receive from a family. Studies performed in orphanages in India and abroad provide a grim picture of the developmental status of these children (Spitz 1945; Bowlby 1952; Rutter 1971; Broussard & Decarie 1971). Most of them suffer from psychosocial, language and motor delays. The reasons given for this are: lack of individualized stimulation, inconsistency of caregivers, low caregiver:child ratio and recurrent infections (Fischhoff 1979; Kaler & Freeman 1994; Wolff *et al.* 1995).

The pre-intervention levels of development of children in our study were very similar to the developmental levels of children in other orphanages in India as cited in previous studies (Somen 1986). The short intervention of 3 months resulted in significant improvement in the children, with a gain of 18, 23 and 30 points in mean Motor, Mental and Social Quotients respectively.

One could argue that the improved post-intervention test scores might be the effect of learning achieved from the previous instance of testing. However, it must be stated that there were 67 items on the motor scale and 163 items on the mental scale of DASII test. The effects of practice on such a wide variety of test items would result in the gain of only a few points, not the large increases seen in this study.

Another point of criticism could be that the intervention might have involved teaching of skills required to perform the test. The schedule of play (Figure 1) consists of stimulation in all areas of development. There was no effort made to train the children in specific skills to perform better in the post intervention assessments.

The paediatrician making the pre- and post-intervention assessments was not blinded to the fact of intervention. However, the DASII scale is scored so objectively that it minimizes the effect of such a bias. Moreover, the children were also assessed by the child psychologist who did not know the scores given by the paediatrician. The results of the two individual assessments were similar (variance $< 2\%$). The very distinct differences in the pre- and post-intervention scores also militates against an improvement based entirely on such a bias.

We relied on 'Social Theory of Learning' to change the behaviour of workers on whom the success of the programme depended. Studies looking at how professionals change their work behaviours have found that the two most potent variables are the presence of a 'Respected Champion' initiating the programme, and 'Peers learning from Peers', which escalates the behaviour exponentially. Behaviouralists also note that human behaviour changes most when there is self-motivation based on perceived benefit to one's own self interest (McArtor *et al.* 1992; Cohen *et al.* 1994; Kay & Wardsworth 1995; Mowatt et al. 1997). The fact that the champion of the project was a very respected Sister Superior of the orphanage helped in the acceptance of the programme. The child psychologist and paediatrician themselves were on the floor modelling the play sessions, instead of resorting to didactic methods. This also improved the acceptance of the programme.

In our analysis this short Structured Programme of Play has great potential for emulation in other orphanages owing to three factors. The regime is simple and structured so that caregivers do not have to spend time thinking up innovative play schemes. The structured play session is set into the daily schedule, preventing the sessions from dying out or being lost in a myriad of other duties. A play area designated in each ward acts a constant reminder to caregivers and children.

Conclusion

Once a programme is developed, play can easily be incorporated into the busy schedule of caregivers in

orphanages. However, careful attention must be paid to the major 'Theories of Social Learning' to enlist the enthusiastic support of the caregivers. Such an intervention accelerates the motor, mental and social development of infants and young children in orphanages.

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