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Home Environment and Psychosocial Development of Pre-school Children in South India

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Abstract

One hundred and fifty Pre-school children with equal number of males and females, fifty from a small township and one hundred from village areas in Southern India were studied on parameters of physical and psychosocial development, through direct observation, assessment and interview with mothers with reference to their home environments. In these children, psychosocial development in terms of gross motor, fine motor, conceptual readiness, language, and personal-social skills were found to be more closely associated with stimulating child rearing practices rather than macro-environmental factors such as residence, and parental education and income.

There were some significant urban/rural differences in performances favouring urban children, which could be attributed partly to differences in child rearing practices.

Key words -

Home environment,
Psychosocial development,
Rural Pre-school children

In the western countries home environment is reported to be associated with cognitive development in the second year of the infant's life [1], [2], [3]. According to Kagan [4], development and home environment association is seen to be fairly robust and prediction of cognitive and emotional development seems to occur in children between 3 and 6 years. In this age group home environment associations are strong and course of future development can be foreseen with some degree of accuracy.

Studies in the Western context regarding relationship between home environment and development fall into one of the three following models with respect by Bradley et al [5]. These are: model I rooted in psycho-analytical, ethological and attachment theories asserts the primacy of the early environment on children's development, model II proposes the predominence of the contemporary environment and model III stresses the cumulative effects in stable environments. In India, historically Ayurveda [6] was the first document to consider feeding practice as the central dynamic factor in personality formation.

In the last three decades Indian workers have looked at child development from cultural perspectives. Khatri [7] highlighted child rearing practices which emphasise dependency and submission, while Ramanujam [8] focused on child rearing characterised by adult considerations and values. Nandi [9], Hoch [10], Kakar [11] and Roland [12] dealt with the themes of lack of separation an individuation. All the authors emphasised the cultural factors in the formation of personality of the Indian child.

Though there have been several studies in India related to nutritional status and cognitive development, very little work has been done in the area of psychosocial development in the context of 'normal' rural home environment. Nearly 80% of the population in India live in rural areas and differ along several important socio-cultural dimensions from the urban population. There is higher illiteracy in rural families, predominantly agrarian occupation and lower income. The urban population has higher literacy, income and are employed in different professions. Apart from the difference in urban and rural population, rates of infant mortality reflect a definite bias against female children particularly in rural areas in the Indian ethos. Exploration into environmental variables and their effects on psycho-social development of children in the Indian context seem to be in order.

The general aim of the present study was to describe the child-rearing conditions and patterns of psychosocial development in a group of Pre-school children from stable homes and of adequate nutritional status growing up in urban and rural India and to examine the relationship between the two. Also, urban-rural differences in development were hypothesised to exist, these differences being linked to certain identifiable environment factors. Sex differences in development though studied, are not reported here. Exploratory and cross sectional nature of the study needs to be emphasised here.

Methodology

Description of the study area

The study was conducted in Ramanagaram district, 51km from Bangalore, capital of Karnataka state, in the Southern part of India. From the urban Ramanagaram, Ramanagaram Town (population 2,604, 889) and from rural Ramanagaram, (population 1,53,630 consisting of 38 villages) a cluster of 6 villages) (population 4,823) were taken for the study. Most subjects were Hindus, consisting predominently of Vokkaliga caste and the rest with equal representation of other castes. Main language spoken was Kannada. While urban families lived in rented homes and had regular jobs, the rural families lived in their own homes which were generally thatched or tile roofed cottages. The main occupation of the rural folk was agriculture and sericulture. The district is famous for its production of silks, and terracota pottery and laquered wooden toys.

Particular effort was made to select a stable nonmigrant community with adequate nutritional level. This was done to exclude at risk populations living below the poverty line, for e.g. in slums, in order to avoid vitiating the results with compounding effects of malnutrition and adverse home environments.

This area which was chosen for the study is neither served by Integrated Child Development Scheme (ICDS) of Government of India (as a part of which day care centres are run for Pre-school children in a given village) nor are the private nurseries widely prevalent, and this choice was made to minimise the

possible extraneous influences on development other than home environment.

Sample

A total sample of 150 Pre-schoolers in the age range of 2 years 10 months to 3 years 8 months in urban and rural settings in South India, in the community were studied. Fifty children were from the town and 100 were from villages with equal number of boys and girls in both the samples. As mentioned earlier the sample consisted of children who were not exposed to any kind of Pre-school experience.

Instruments

The following instruments were used to gather data for each child.

. Information Schedule: A structured information schedule was developed to assess home environment and psychosocial development of Pre-school children. The schedule was based on review of literature and discussion held in a national workshop of experts. Broadly, the schedule covered information on sociodemographic details. The socio demographic details were age, residence, education, occupation and income of family, number of children, order of birth alongwith the following aspects:

i) Details of physical and human environment

ii) Child rearing practices: of interaction between the family members, specific activities such as feeding, sleeping, toilet training, washing, bathing, dressing, socialisation through play and communicational, and patterns of disciplining and expectation.

iii) child variables such as prosocial behaviour and temperament.

iv) Early development details, parameters of physical and psychosocial development (Total number of items 243: see appendix).

2. Interview schedule on child's life at home and handling by the mother (developed by the Department [13]) was used. The schedule covers different aspects of child's home life such as feeding, toilet training, sleeping, bathing, washing, dressing, socialisation, play, communication and expected social behaviour. The schedule is administered to the mother. The scoring is on a three point rating scale. The three categories are always, sometimes and never. As reported by the authors, the reliability and validity of the tool is not established as it was constructed with the primary aim of collecting data on child's life at home.
3. Assessment checklist for Pre-school children (Mishra and Roy 1985 cf Saraswathi et al 1984) [13]. This checklist was developed and standardised for assessment of current developmental abilities of Pre-school children (2.5 to 5.5 years). The different areas covered are gross motor, fine motor, conceptual and readiness skills and language and personal social skills. There are 28 items for these five major areas of development. The construct validity of the checklist was established by 16 experts. It was administered by 65 teachers trained in it use, to 450 Pre-schoolers. Internal consistency of the subsections ranged from r=0.70 to 0.89. Retest reliability was 0.96. The construct validity on a sub-sample 108 children on the assessment checklist and item list developed by the National Council for Educational Research and training (NCERT) revealed validity coefficients for motor and conceptual skills of 0.85 and 0.87 for language and personal-social skills 0.70 and 0.82 respectively.

Procedure

Before the main study, a pilot study was conducted on a sample of 40 non school going children between 2 ½ -5 years of age of lower middle class urban and rural homes, by a single investigator, a

doctoral scholar, specialising in the area of clinical child psychology. After having found the tools satisfactory, two additional field workers were trained. The training consisted of reading the related literature and schedules, video demonstration of the interview and assessment as well as practical demonstration by the senior investigator. Retest (by different investigators) and interrater reliability was tested between the three investigators for different segments for 4 child-mother dyads. Wherever discrepancies were found, explanations were sought for the discrepancies. Interrater reliability gradually increased from an average of 0.80 to 0.98 with practice. However, whenever a child was retested there was a drop in performance which was observed to be function of lack of interest on part of the young child when required to repeat the performance, indicating retesting of young children may not be a suitable technique for assessing reliability. However, on all the other segments retest reliability was high.

Main study: A total sample of 167 children were screened and 17 were excluded due to the presence of mental retardation, physical handicaps, epilepsy or psychiatric problems (as rated on Richman scale 1971) 50 urban children and 100 rural children with equal ;number of boys and girls in the age of 2 years 10 months to 3 years 8 months formed the sample. As already mentioned, the sample consisted of children from stable homes with adequate nutrition, and with no suspected intellectual retardation or emotional disturbance or hitherto not been exposed to Pre-school experience.

The three investigators visited the project areas over a period of 4 months before the harvesting season and administered the instruments after obtaining consent. It took approximately 4-6 hours to examine a child-mother dyad. With the exception of one mother being suspicious of "child lifting", all the mothers were very interested in participating in the study. In addition, the senior investigator offered help in referring sick children and adults to appropriate medical facilities in Bangalore. Quite a few rural mothers sought information about right kind of upbringing of children from the investigators.

Results

As there were several variables to be compared and significant differences, that show up may occur due to chance factors, a Hotelling T^2 comparison of urban/rural and gender differences across different sets of predictor variables and criterion variable was carried out (Table I). Results show that all urban rural differences are significant at varying levels of significance, whereas gender differences except for psychosocial development were not significant.

Table I - Combined effects using Hotelling T. square technique separately for 5 groups of variables, for urban/rural and, male/female population

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A.Environmental variables

Sociodemographic variables

The results indicate that the urban and the rural groups are fairly representative of the population trends in India. The sociodemographic details show that the township parents are significantly better educated, with higher income (significant at <.05 levels for education of both parents and P<.001 level

for income). The urban fathers have regular jobs and the rural fathers are farmers.

Physical environment

Physical environments of urban homes differ significantly, being rented homes ($p<.01$) better illuminated, ($p<.001$) better ventillated ($p<.01$) and possess material objects like magazines, toys, T.V., radio etc.

Family interactions

Of the 25 variables studied, only 3 were significantly different between urban and rural families; these were interaction in general, and physical interaction, and assistance given by the mother is significantly more in urban homes. (Table II)

Table II - Variables which differed significantly between urban and rural homes - out of 25 variables regarding mother vs. child, father vs. child, sibling vs. child and other vs. child interaction

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Mother child interaction

Child and mother interaction related to development of skills in the child is given in Table III.

Table III - Showing child vs. mother variables with significant urban/rural differences in the areas of feeding, toilet training, bathing and washing, communication, disciplining, leisure activity, play, prosocial behaviour and temperament - (Total items - 135)

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In this table it can be seen that urban children are better placed in terms of nourishment, maternal, responsiveness to activities and communication, as well as availability of toys. Their daily schedule is more structured and they are encouraged to be independent by their mothers; and the mothers are at the same time overprotective. They also adapt to the new situation easily and persist in a task even when it is difficult. The rural children sleep more, have a prolonged bladder control, are expected to obey and threatened to be punished and have relaxed daily schedule and indulge in cooperative play.

B.Psychosocial development

The physical growth characteristics reveal that the urban and the rural Pre-schoolers are very similar on the parameters of height, weight and head circumference, the difference being statistically nonsignificant and comparable to national norms [14].

Comparison of psychosocial development of the urban and the rural children, on parameters of gross and fine motor development, readiness skills, language and personal social skills, showed that the groups differed significantly on fine motor and conceptual readiness skills in favour of the urban children (Table IV).

Table IV - Psychosocial development of urban children

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II. Gender-wise comparisons of psychosocial development

The following gender differences were noted:

i) Though the urban boys and the rural boys were similar in height, weight and head circumference, the urban boys were superior to the rural boys only with reference to fine motor skills. (t value 2.22, $p<.05$).

ii) The urban girls and the rural girls were similar in physical parameters, and urban girls were significantly superior to rural girls in fine motor skills.(t value 2.23 $p<.05$)

The results show that, the urban boys being the most advantaged and the rural girls being least advantaged, with urban girls and rural boys being in the middle in some of the aspects of their development.

When a comparison between the urban boys and the rural girls were made, the urban boys were not only taller and heavier, they also had better gross motor, fine motor and conceptual readiness skills. Interestingly, the rural girls had comparable language and personal social skills.

III. The relations between home environment and growth and development

In order to examine the multivariate relationship between predictor variables (sociodemographic variables, physical home environment, family interaction, child variables, and child rearing practices) and psychosocial development, a canonical analysis was attempted (Table V). Ninety two predictor variables (left set) and 5 criterion variables (right set: gross motor, fine motor and so on) were selected and subjected for canonical analysis. The results showed that of the possible 5 canonical factors, only one factor (factor I) was significant (Canonical Rc=0.925; X^2=609.72; df=460; $p < 0.01$). The variables from left (predictor) and right (criterion) sets which significantly loaded on this factor are set out in Table V. As is evident from this table, a considerable amount (57%) of variance of cross-sectional performance of children in all the five areas of assessment is explained by predictor variables. There was hardly any contributions from macroenvironmental variables (socio-demographic and physical home environment), whereas several items from child variables (12 item) and child-rearing factors (13 items) loaded significantly on factor I. Among the child-rearing practices, items from the areas of leisure time activities, communication, play and disciplining had significant loading on factor I. It is worth noting here that many items with large loadings were child rearing practices [mother encourages child to play (0.49), allowed to play with liking children (0.43), mother actively attends while the child sings (0.41)]. Nevertheless, there were 12 child variables, (which are apparently determined by constitutional factors) which loaded significantly, with items such as 'shows curiosity' (0.43), 'asks questions (0.42)', plays with toys (0.42)' loading heavily on factor I.

Table V - Canonical loadings and redundancy index of the canonical analysis for the first factor

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[Note: Only those variables which had significant loadings ($r > 0.2$) at 0.01 level for df=150) are included]

Discussion

Studies on varying cultural groups and their influence on development of children have been of interest to developmental psychologists in the recent years. Identifying variations in child development as a function of different child rearing practices has been of utmost importance in different cultures especially in developing countries. The present study highlights the impact of two subcultures i.e. of urban and rural India.

To the best knowledge of the investigators, this is the first study of its kind in India focusing on stable urban and rural homes. However, results have to be interpreted with caution of the following reasons: first, because of the cross sectional nature of the study, and second, the limitation of the instruments in terms of reliability and validity, particularly the instrument used for home environment. The intercorrelation between the five areas of aspects of psychosocial development i.e. gross motor, fine motor conceptual readiness, cognitive language and personal social skills showed correlations which were significant at 0.001 level, indicating that the subsections tapped different yet overlapping functions. The correlations ranged from 0.389 for gross motor vs personal social to 0.779 between fine motor and conceptual readiness skills.

The results of canonical analysis (Table V) offer valuable insights into the nature of relationship between child and environmental factors on the one hand and psychosocial developmental performance on the other. Most notably, the distal or macro-environmental variables (such as residence, sex, parental income and occupation, and physical home environment) do not seem to have a bearing on children's performance, whereas, proximal or micro-environmental variables such as child-rearing practices seem to significantly influence the child's development. In other words, the way the mother handles the child's leisure time, or encourages play, seems to make a crucial difference to the child's leisure time, or encourages play, seems to make a crucial difference to the child's development, rather than whether the child is from a rural or urban, rich or poor family. On the surface, the results of canonical analysis seems to be at odds with the finding of urban/rural or gender differences in development. But these findings can be reconciled by arguing that it is the differences in the environments, rather than the residence or gender per se, which influence the development. In other words, the urban/rural and gender differences in development are linked to differential home environments which seem to go along with them. However, any interferences, based on canonical analysis regarding environment and development relationships, have to be guarded because many child characteristics (presumably of constitutional origin) have also loading on the first factor. With this rider, the implication of this study is that it is probably feasible to enhance developmental performance of children, irrespective of their residence, sex and parental education, by providing for stimulating interactions with care-givers within, or outside home. It has also been found in North America that parental involvement and play materials were two of the most potent variables related to cognitive development during infancy and Pre-school years [3], [15]. The similarities across cultures are noteworthy.

Several other observations emerge from the present study. Both the urban and rural children are comparable in their nutritional status and have no difference in height, weight and head circumference. However, urban children fared better in fine motor and conceptual readiness skills compared to their rural counter parts. Can this be attributed to environmental factors? A joint perusal of urban-rural differences and results of canonical analysis throws light on this question. Of the 39 items which

showed urban-rural differences, 8 items figured in canonical analysis as predictors. These items were macro-environmental (better lit urban homes), child (3 items - bladder control present, child asks questions, plays with toys-being more in urban), and child rearing practices (4 items - takes bath at specific times, child's questions are replied to, child given toys when desire, and over protective mother - being more in urban families). Notably, 5 of these 8 variables relates to environment, 4 being child rearing practices. From this data it is possible to infer that better performance of urban children, at least partly, is related to differential child rearing practices. Appearance of overprotection as a positive predictor of development is intriguing. It is possible that this item has measured, in addition to overprotection per se, constructs such as amount of parental involvement and/or attention in these very young children thereby favouring development. However, further studies are needed to confirm this.

With reference to temperamental characteristics, the urban children appear to have an advantage in terms of being able to adapt to new situations with ease. They can also persist with a task even when it is difficult. These may be due to structured daily schedules of the urban child as well as the extent of stimulation provided by the mother. In contrast, the rural mother is flexible regarding schedules, has a soothing influence as suggested by oil bath and massages in infancy, long hours of sleep and soothing presence if the child is awakened, conforming to adult norms of eating and obedience. While the urban mother provides an environment which is obviously good for the cognitive development, the rural mother deals with the child in a naturally relaxed fashion but with emphasis on conforming behaviour, which probably explains the adequate development in terms of language and personal-social skills. However, it is interesting that presumably constitutionally endowed characteristics of temperament differ in urban and rural children, probably due to difference in child rearing practices.

Interestingly rural children indulge more in cooperative play, which may be due to the absence of toys and as well as the need to be outside home, playing with naturally available materials in the environment such as sand, sticks, leaves etc. This too in turn perhaps contributes to the development of language and personal social skills with an attitude of cooperation rather than competition.

To sum up, it is evident that longitudinal studies to put to test the above speculations with refined methodology are needed. It is also necessary to explore the nature of relations between aspects of development as well as subculture specific and sex specific developmental outcomes.

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